Rondout Riverport Shoreline Stabilization and Public Access – Phase II

City of
Kingston
New York

Project Advisory Committee – Meeting 6
July 27, 2020

Daniel Biggs, RLA
PRINCIPAL-IN-CHARGE

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PROJECT MANAGER

Weston & Sampson

Funded by and in cooperation with:
NEW YORK STATE OF OPPORTUNITY. Department of State

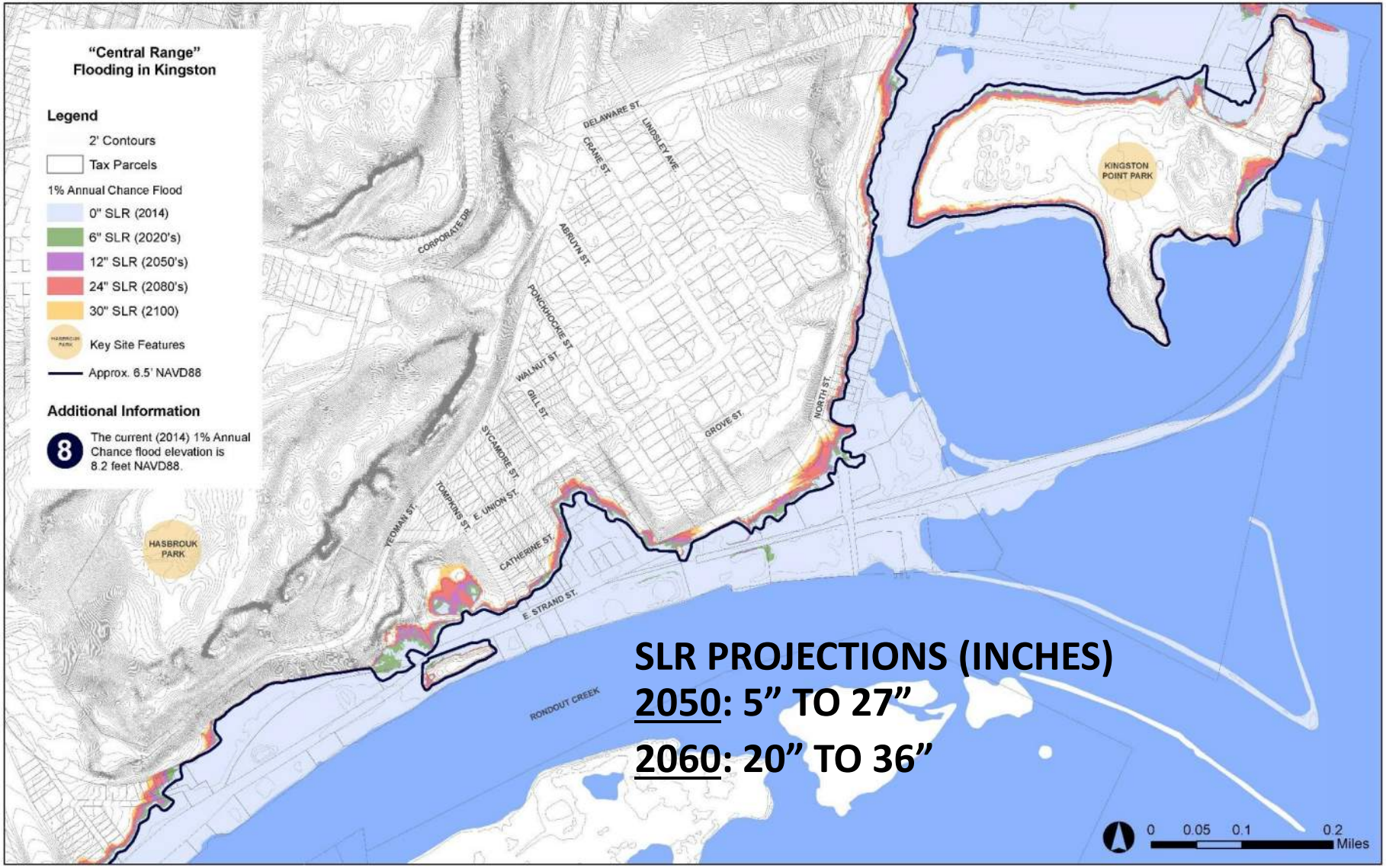
agenda

- Sign in/ Introductions
- W&S Presentation (12:00 - 1:00)
- Brief recap of January 27th, 2020 meeting
- East Strand & North Street Concept Design
  - East Strand Elevation Options
  - North Street Multi-Use Path Options
- Trolley Trail Causeway Improvement and Shoreline Stabilization
  - Preliminary design/alternatives analysis
- Kingston Rondout Lighthouse II Electric Provision/Improvements
  - Electric Provision – Central Hudson/HKWR
  - Removable docking system
  - Other utility considerations
- Discussion (1:00 – 1:30)
- Next Steps
  - Refinement of designs
  - Permitting agency review
  - Field Investigations
  - Cost Estimating
  - Next PAC Meeting (TBD)

1/27/2020 PAC Meeting

- Weaving the Waterfront and Online Survey Results
- Review of sub-project area opportunities and constraints
  - Kingston Riverwalk
  - Breakwater to Lighthouse
  - Trolley Trail & Causeway
  - East Strand & North Street
- Cost & permitting considerations for each sub-project
- Review of conventional and solar electric provision to the Kingston Point Lighthouse

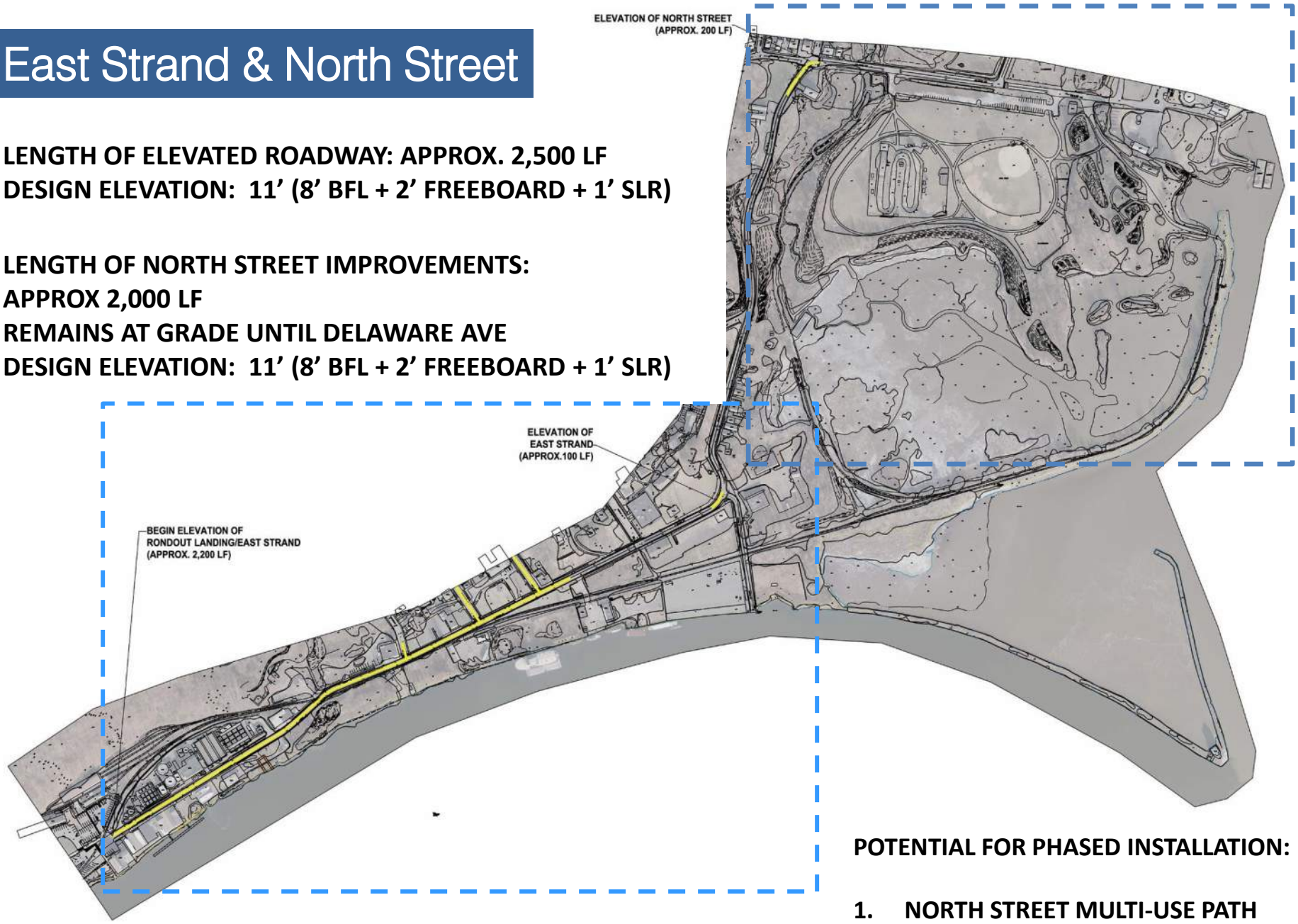
climate resiliency & adaptation



East Strand & North Street

LENGTH OF ELEVATED ROADWAY: APPROX. 2,500 LF
DESIGN ELEVATION: 11’ (8’ BFL + 2’ FREEBOARD + 1’ SLR)

LENGTH OF NORTH STREET IMPROVEMENTS:
APPROX 2,000 LF
REMAINS AT GRADE UNTIL DELAWARE AVE
DESIGN ELEVATION: 11’ (8’ BFL + 2’ FREEBOARD + 1’ SLR)



POTENTIAL FOR PHASED INSTALLATION:

1. **NORTH STREET MULTI-USE PATH**
2. **EAST STRAND ELEVATION**

East Strand Considerations

General:

- Elevation of roadway impacts adjacent perpendicular neighborhood streets, requiring elevation of grade to tie into to East Strand Street
- Impacts to existing buildings along east strand – elevation of roadway alters current pedestrian and vehicular access
- Provides desired bi-directional bike path
- Provides a safe access route from the Ponckhockie neighborhood
- Potential Phased Approach

Permit Requirements

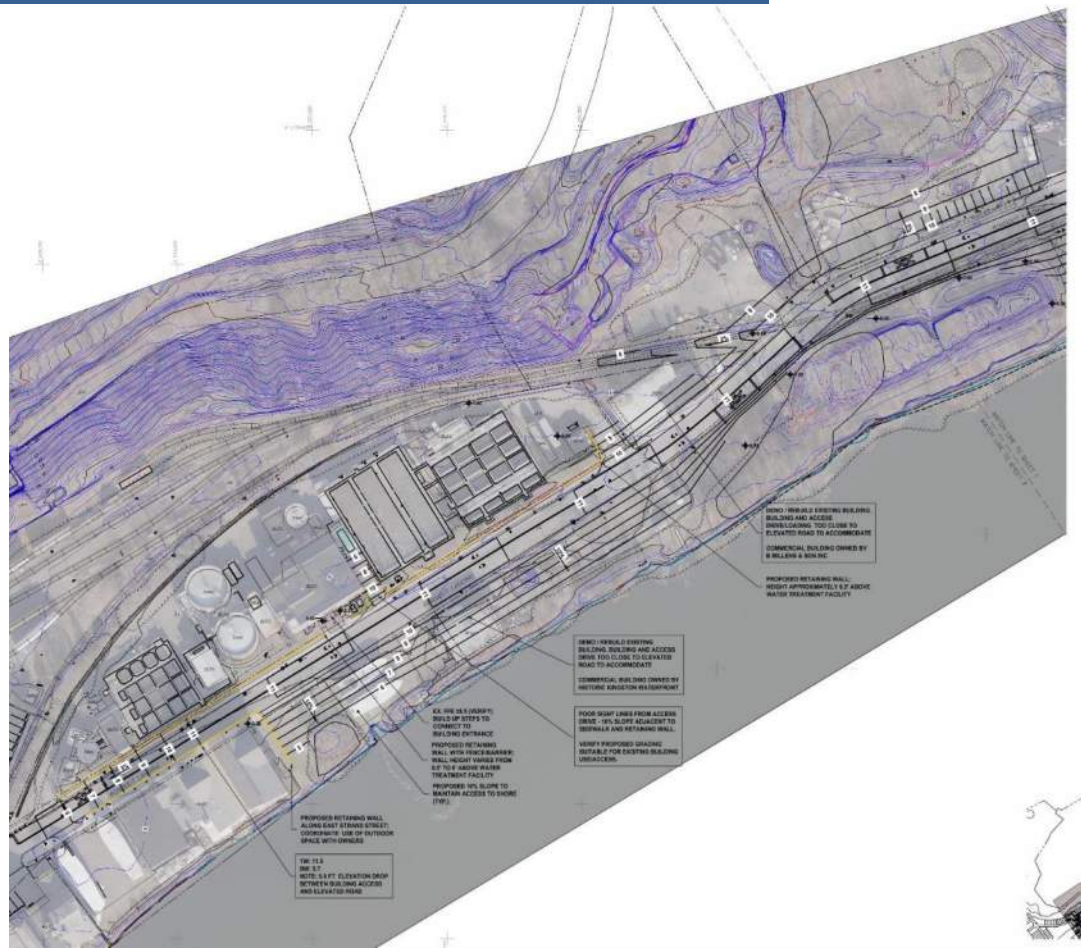
- Freshwater wetlands permit for any activity within 150’ of wetland boundary
- Potential impacts to historic/cultural resources to be determined by SHPO
- Road closure/ Maintenance of Traffic
- Threatened & Endangered species survey (near bat hibernacula – special permits
- Additional wetland delineation

East Strand Plans (Western Alignment) – Elevation

Slopes set to 10%
Retaining walls +/- 2’ to 6’
(awkward/unsafe streetscape)

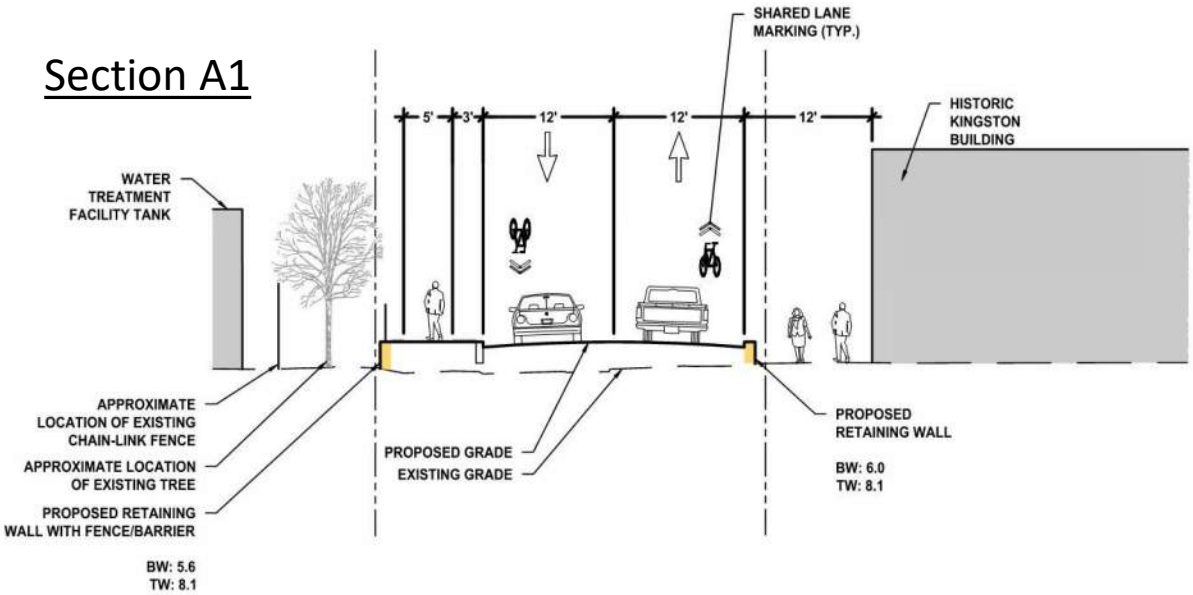
<u>Building Conflicts</u>

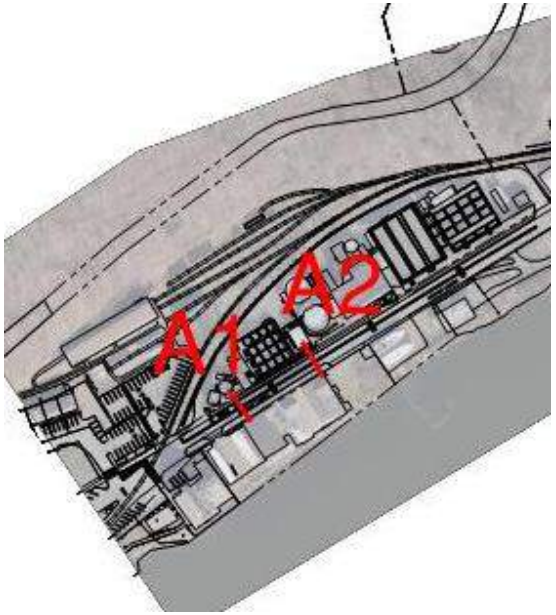
- Historic Kingston LLC Building
- Water treatment plant
- 136-198 East Strand (commercial across Water Treatment Plant)
- 159-179 East Strand (commercial building between Water Treatment Plant and railroad tracks)



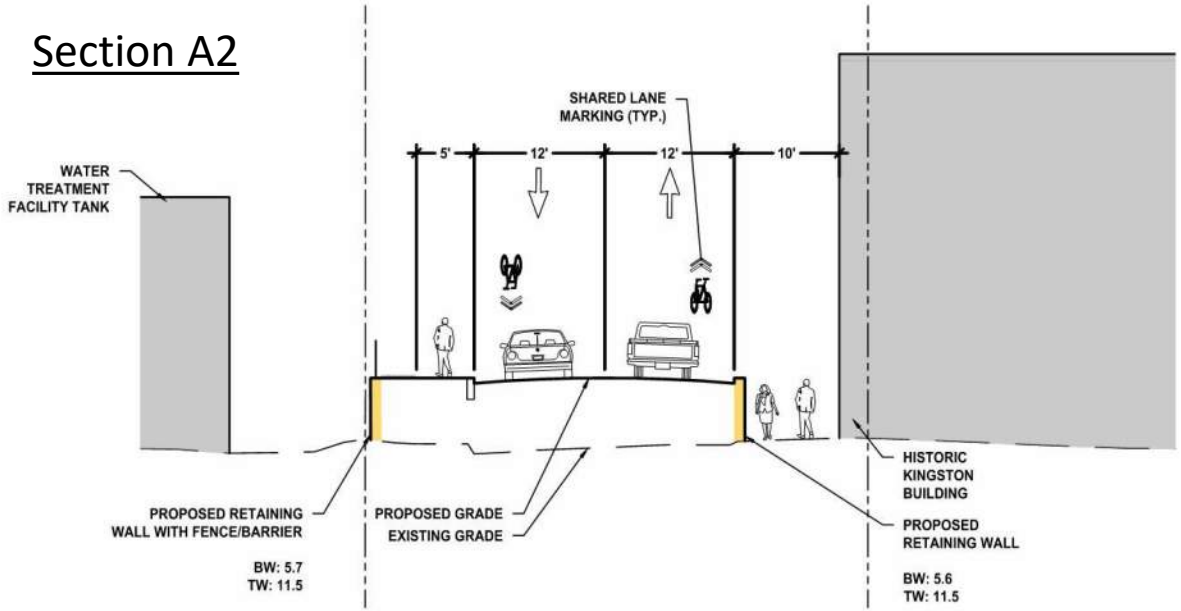
East Strand Sections

Section A1





Section A2



Weston & Sampson

East Strand Plans (Eastern Alignment)

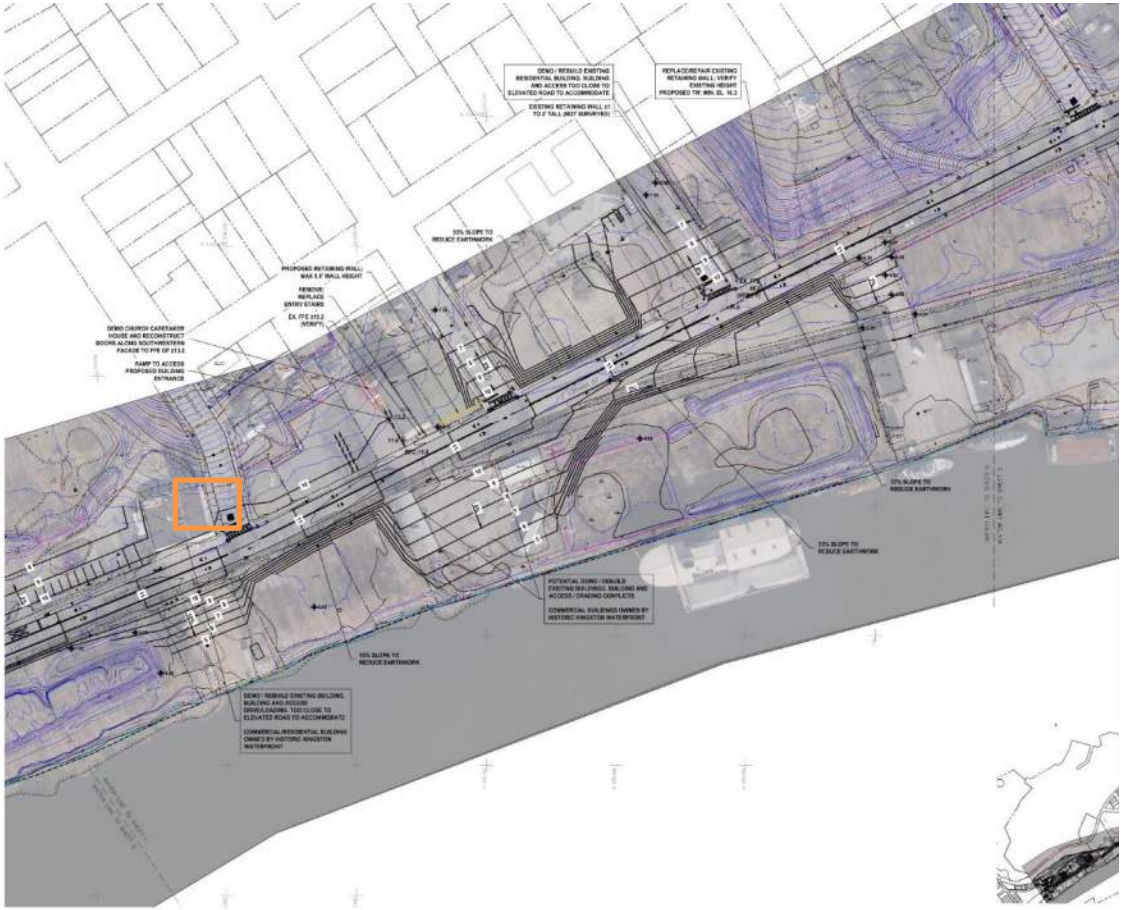
Slopes Range from 4% - 33%

<u>Building Conflicts</u>

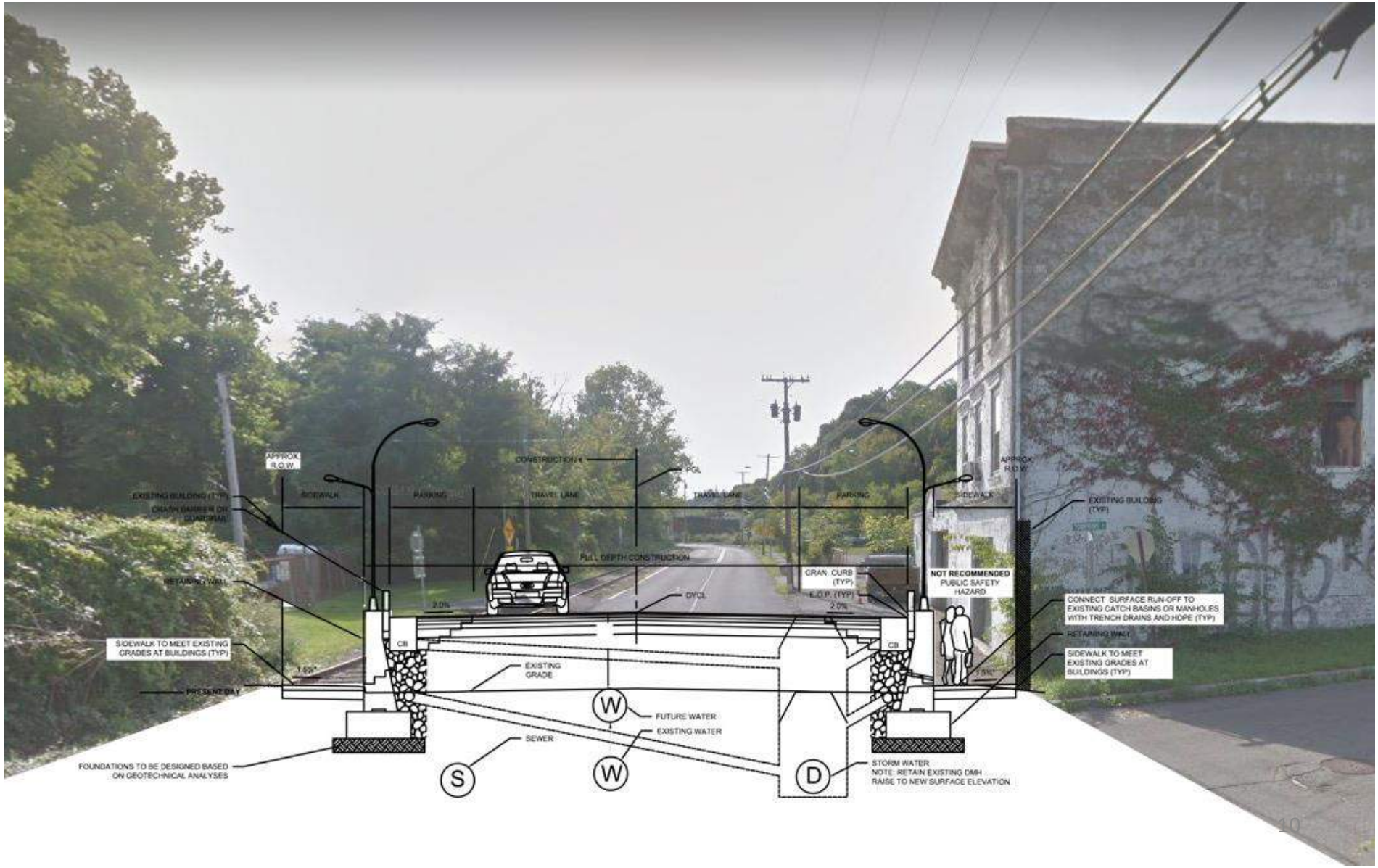
- 181-207 East Strand (@Tompkins St)
- New Central Baptist Church
- 224-258 East Strand (commercial buildings across from Church)
- 263 East Strand (residential/mixed-use building at Gill St)

<u>Perpendicular Road Alterations</u>

- Tompkins Street
- Sycamore Street
- Gill Street

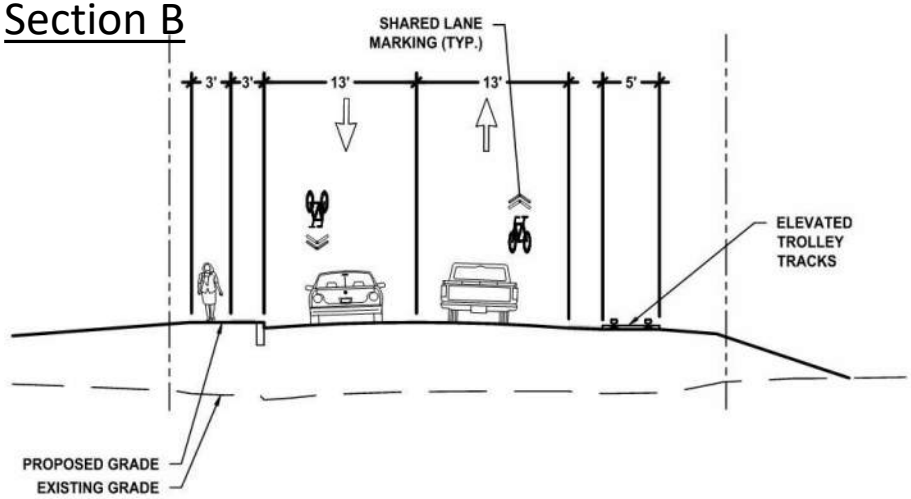


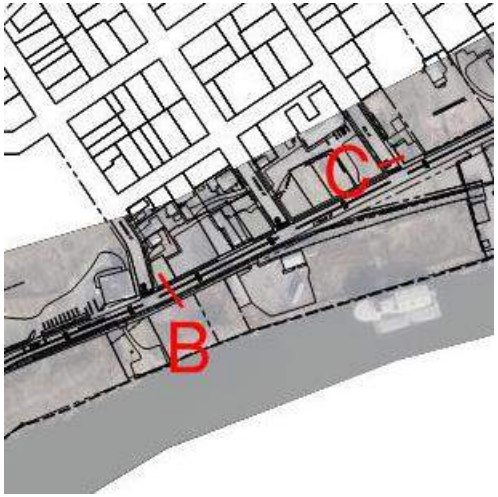
East Strand Sections 181 – 207 East Strand



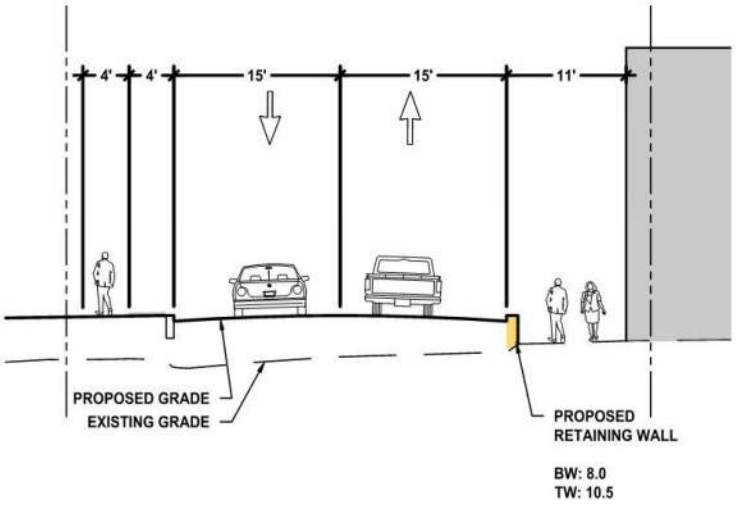
East Strand Sections

Section B

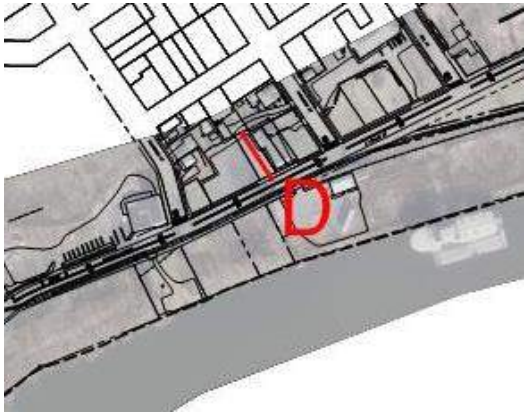




Section C

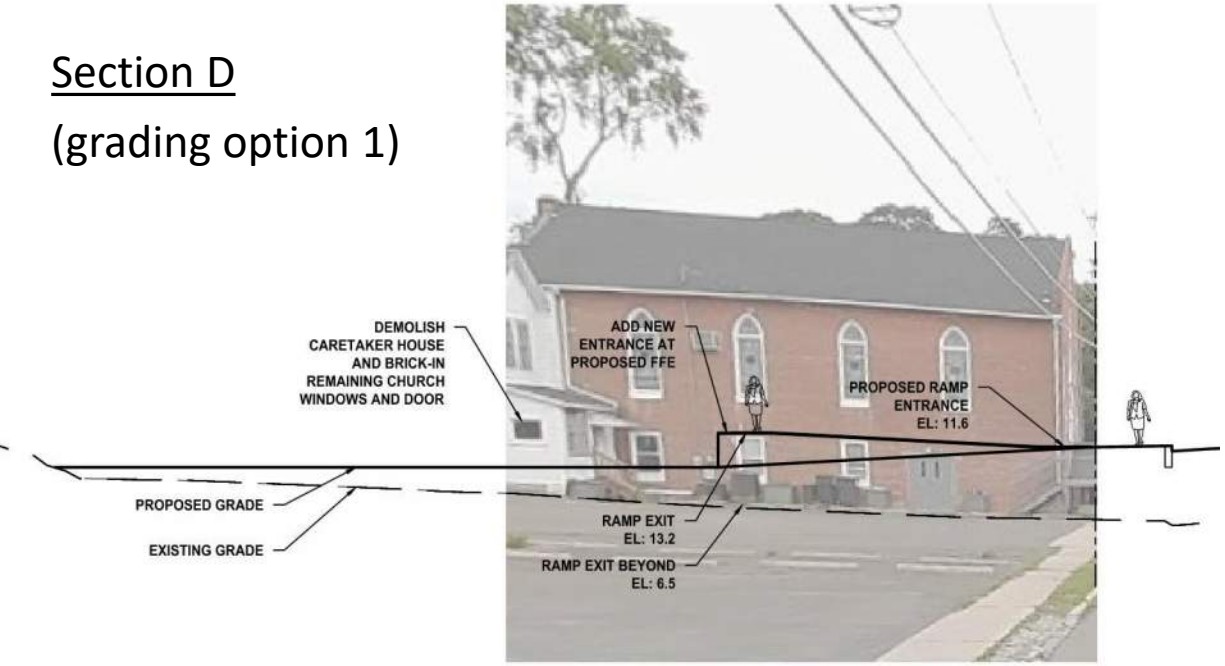


East Strand Sections



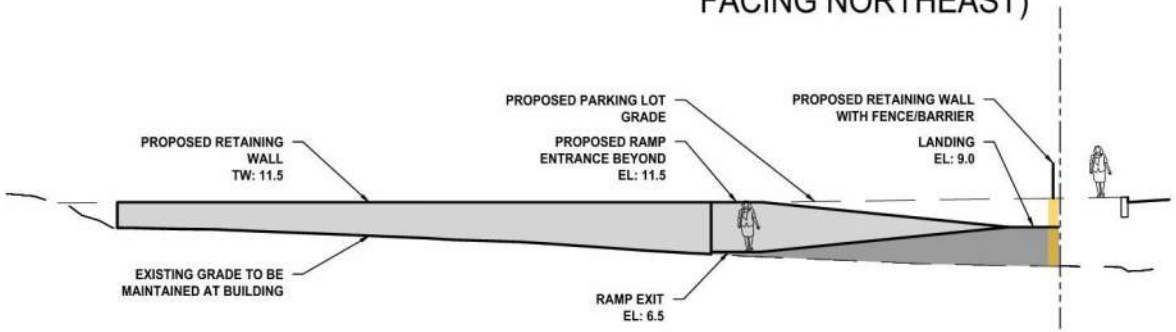
Section D

(grading option 1)



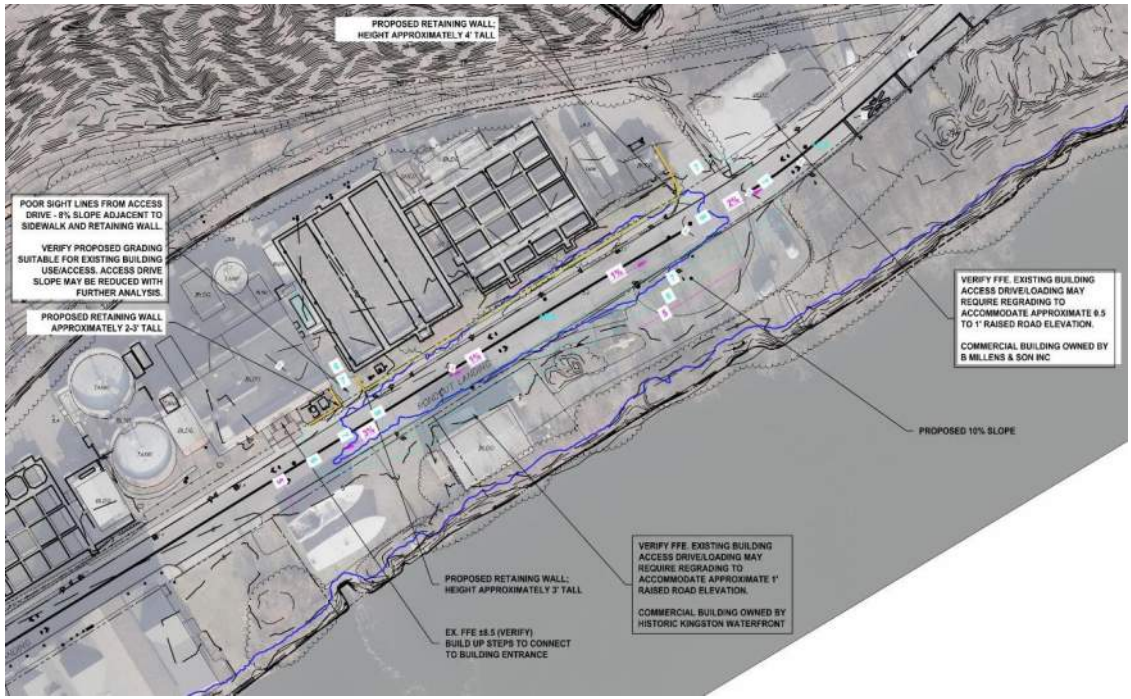
D - CHURCH RAMP PROFILE
0+00 - 1+16

(OPTION 2 - AT PARKING LOT, FACING NORTHEAST)



East Strand Plans (Western Alignment) – Spring High Tide

- Slopes range from 8% to 10% adjacent to roadway
- Slopes to bridge to elevated section of roadway range from 1 to 3%
- 2’-4’ retaining walls required to provide access along drives at wastewater treatment plant
- Retaining walls create poor sightlines from wastewater treatment plant
- Existing commercial buildings owned by HKWR (to south) and B Millins & Son (to north) may require regarding of access drive to accommodate elevation of roadway

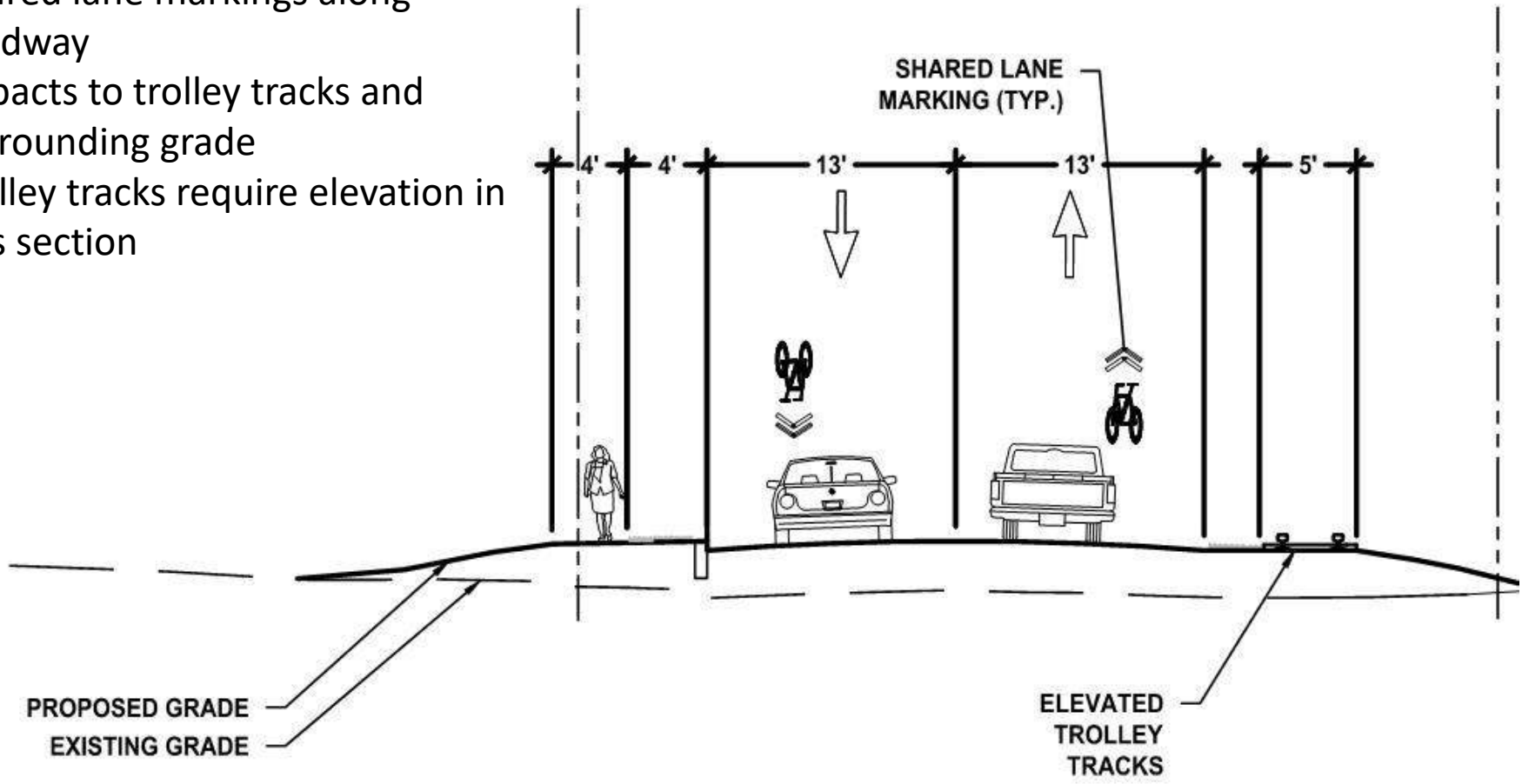


East Strand Plan (Eastern Alignment) – Spring High Tide

- Slopes range from 2% to 5% adjacent to roadway
- Slopes to bridge to elevated section of roadway set at 3%
- Trolley tracks would require elevation in this section
- Impacts to greenspace west of Gill Street
- Impacts to Sycamore street
  - greenspace on either side of roadway – no building impacts

East Strand Section (Eastern Alignment) – Spring High Tide

- Shared lane markings along roadway
- Impacts to trolley tracks and surrounding grade
- Trolley tracks require elevation in this section



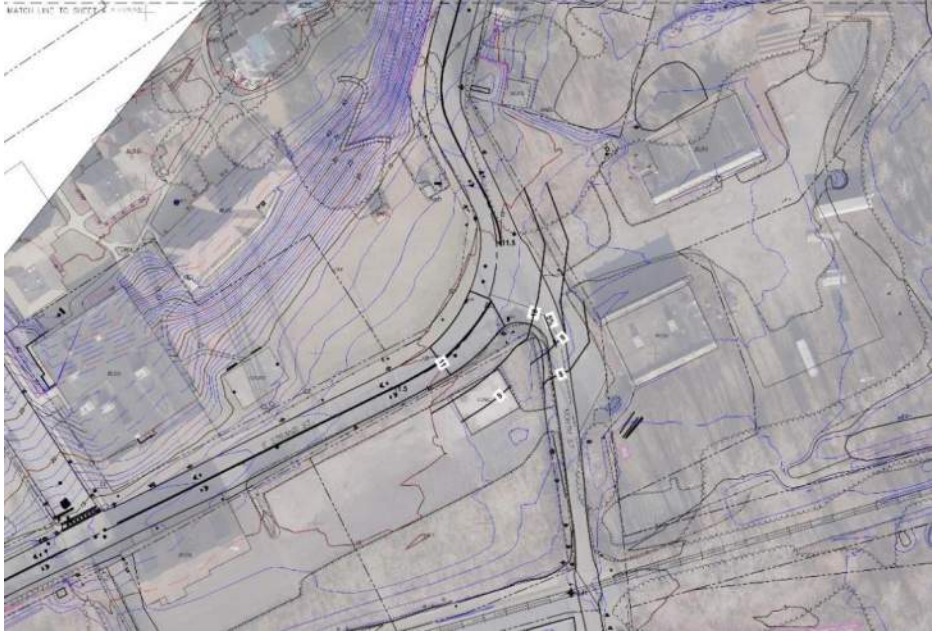
North Street Plans

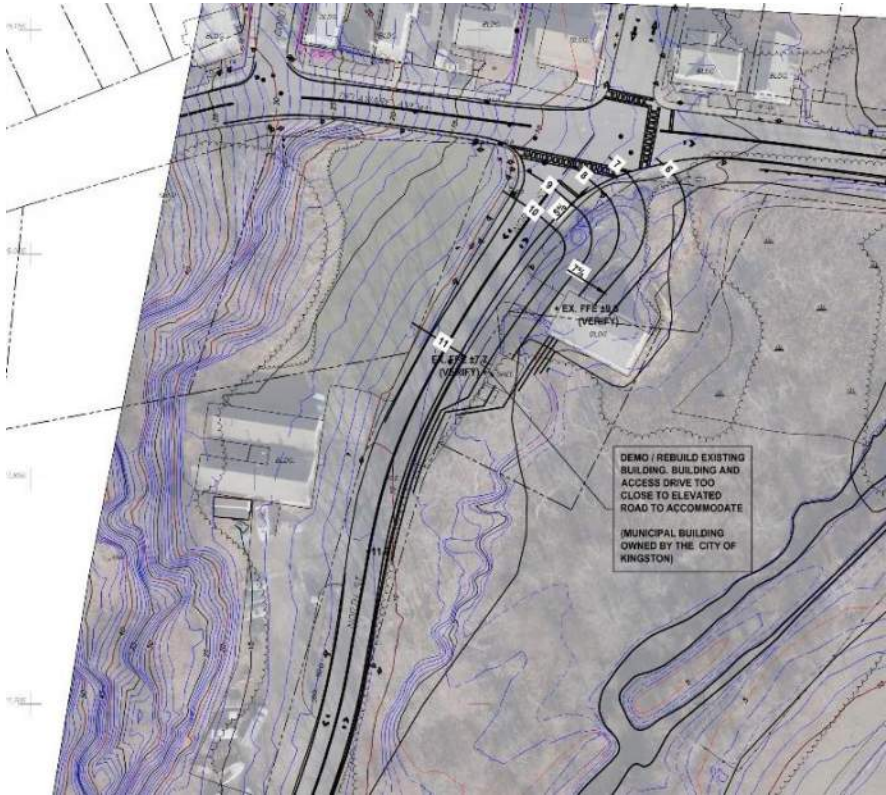
East Strand to North Street Curve

- Slopes 5% to tie into paper street and Barney Millens property

Delaware Avenue Connection

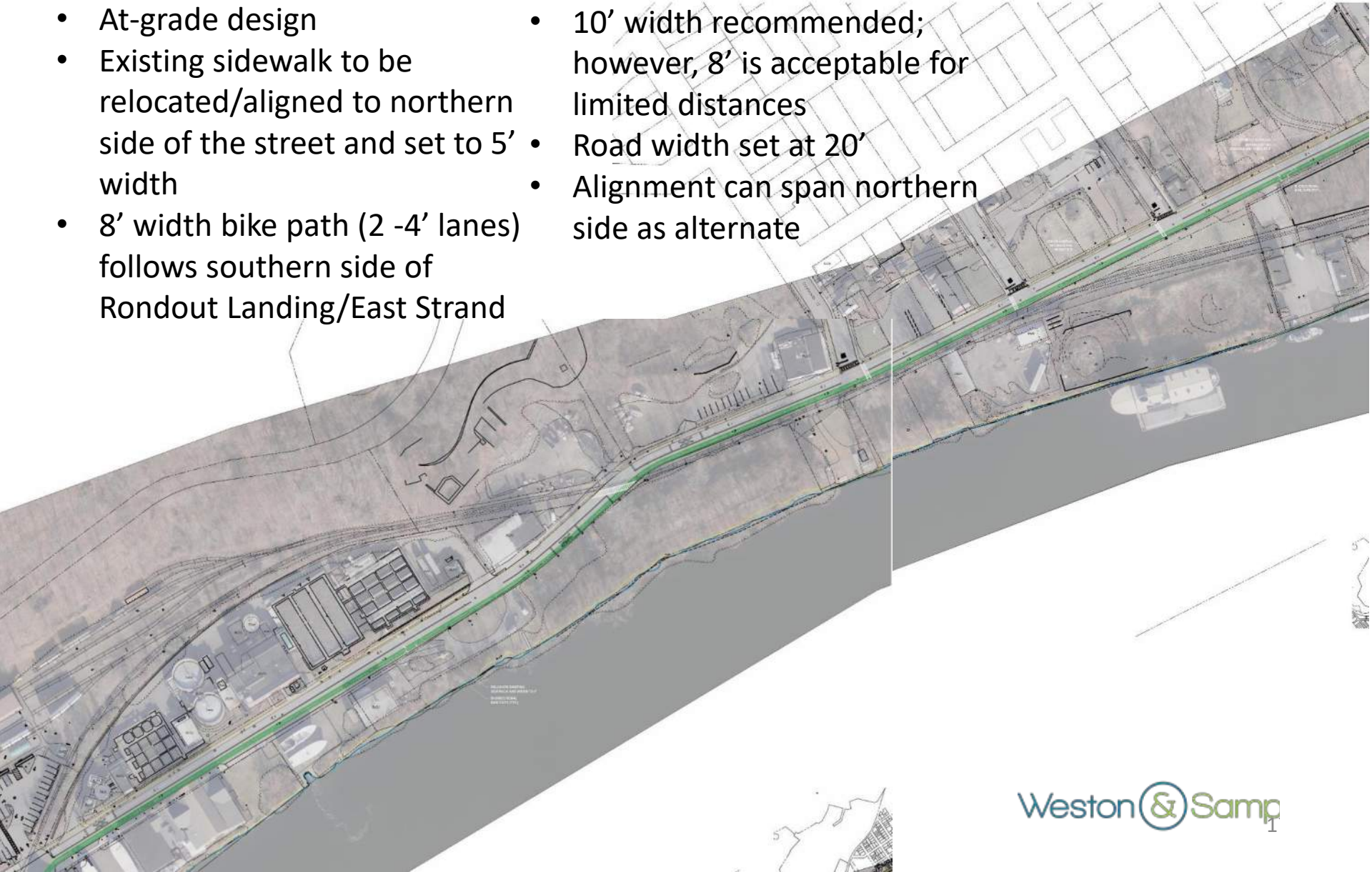
- Slopes at 7% to tie into building property
- 126-132 North Street (city-owned)
- 126 North Street (private property – commercial use property)





East Strand Plans (Western Alignment) – On-road Bike Path

- At-grade design
- Existing sidewalk to be relocated/aligned to northern side of the street and set to 5’ width
- 8’ width bike path (2 -4’ lanes) follows southern side of Rondout Landing/East Strand
- 10’ width recommended; however, 8’ is acceptable for limited distances
- Road width set at 20’
- Alignment can span northern side as alternate



North Street Considerations

General:

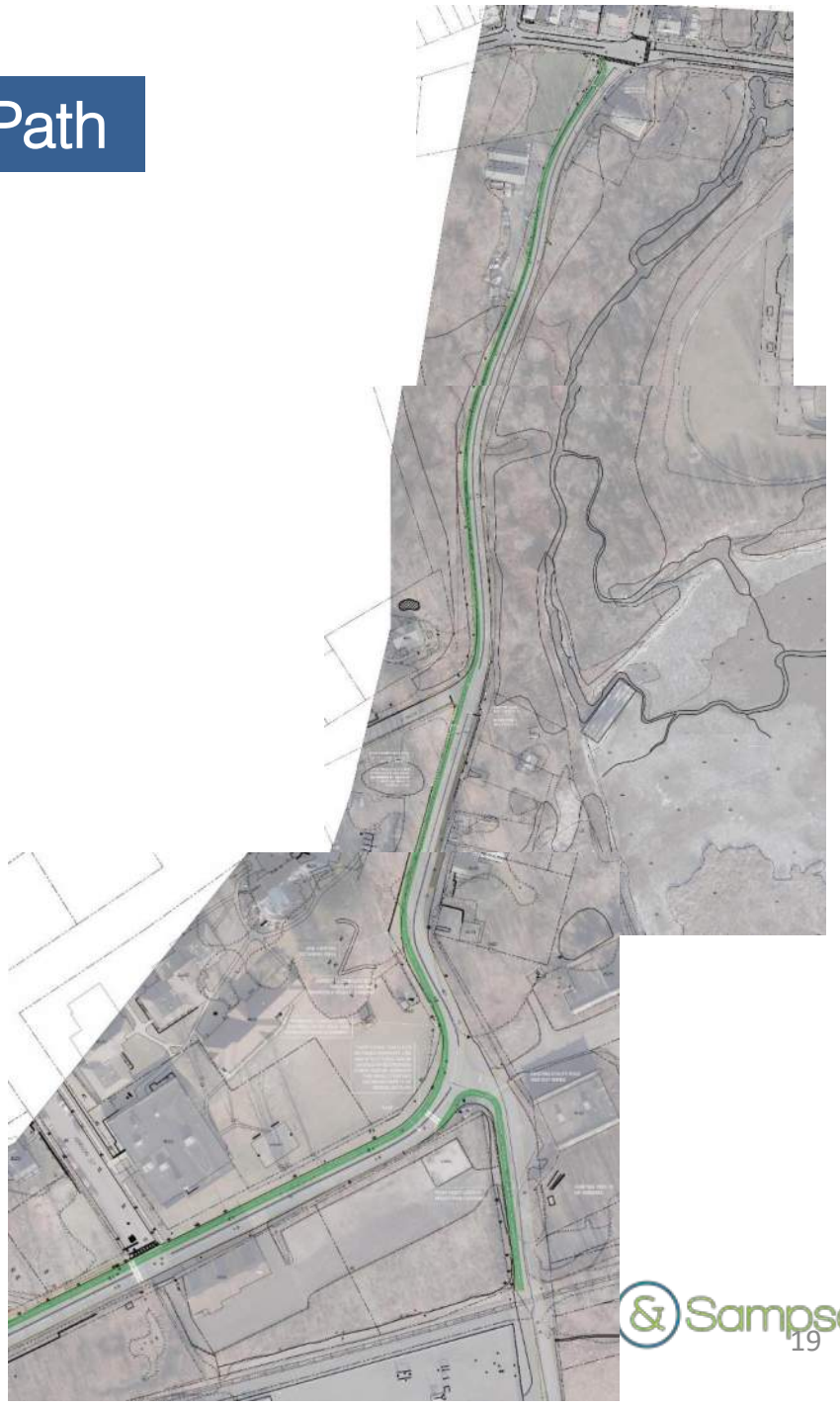
- Rebuild of retaining wall along southern portion of North Strand
- Intersection at Delaware Avenue low and will need to be elevated at a later stage
- Potentially high speeds along roadway
- Poor sight lines
- Crossing of driveways
- Restricted widths due to existing housing and limited setbacks
- Existing roadway in need of repairs
- Decision to allocate funds to north street vs. trolley trail causeway for establishment of similar path systems
- Existing utilities

Permit Requirements

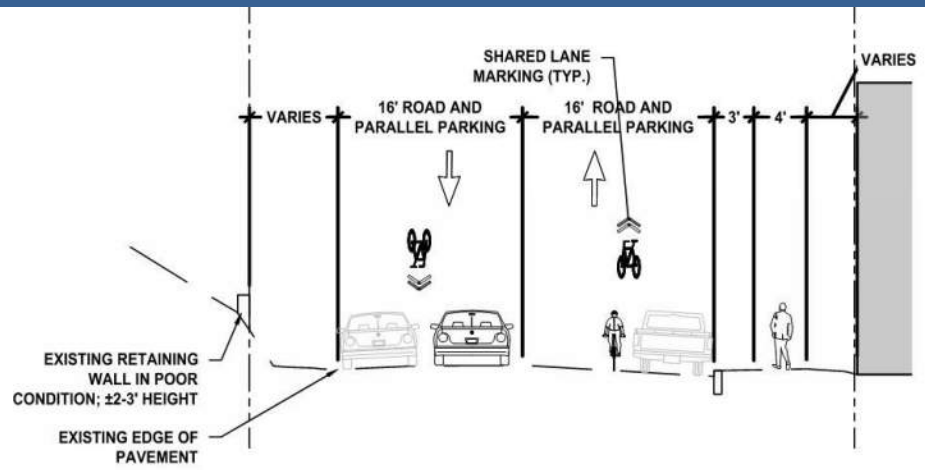
- Freshwater wetlands permit for any activity within 150’ of wetland boundary
- Potential impacts to historic/cultural resources to be determined by SHPO
- Road closure/ Maintenance of Traffic
- Threatened & Endangered species survey (near bat hibernacula – special permits
- Additional wetland delineation

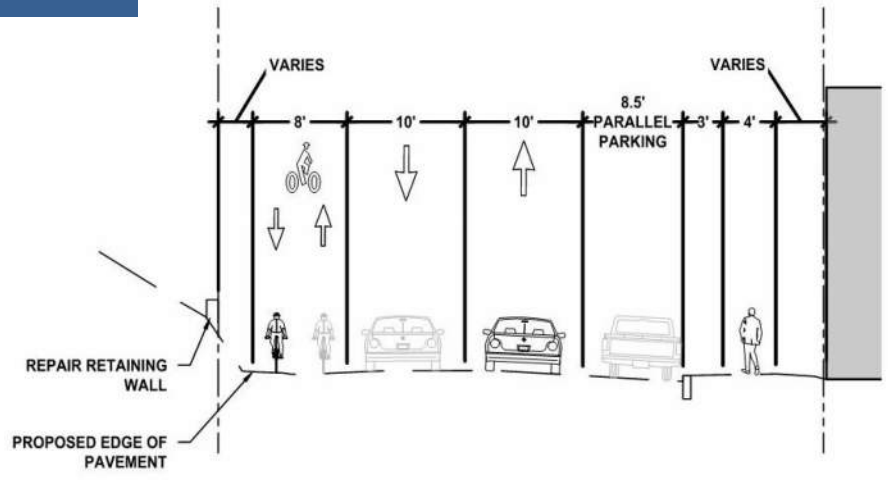
North Street Plans - On-road Bike Path

- Conflicts avoided between parked cars and cyclists
- Potential disturbance/rebuild of retaining wall along west side of North Street
- Sidewalk ends after last house on east side of street
- Path must cross East Strand to connect to riverfront/creekfront access
- Bike path layout along Delaware Avenue not considered as part of this conceptual analysis

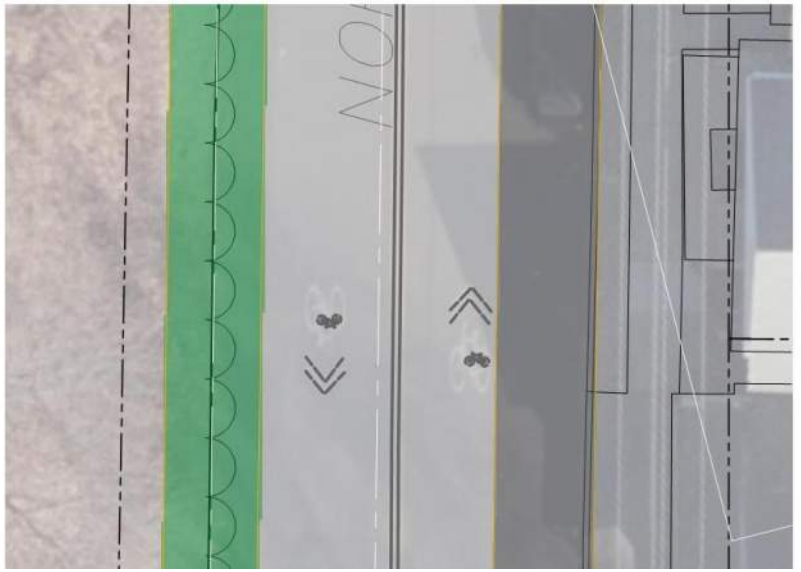


North Street Plans - On-road Bike Path





Existing

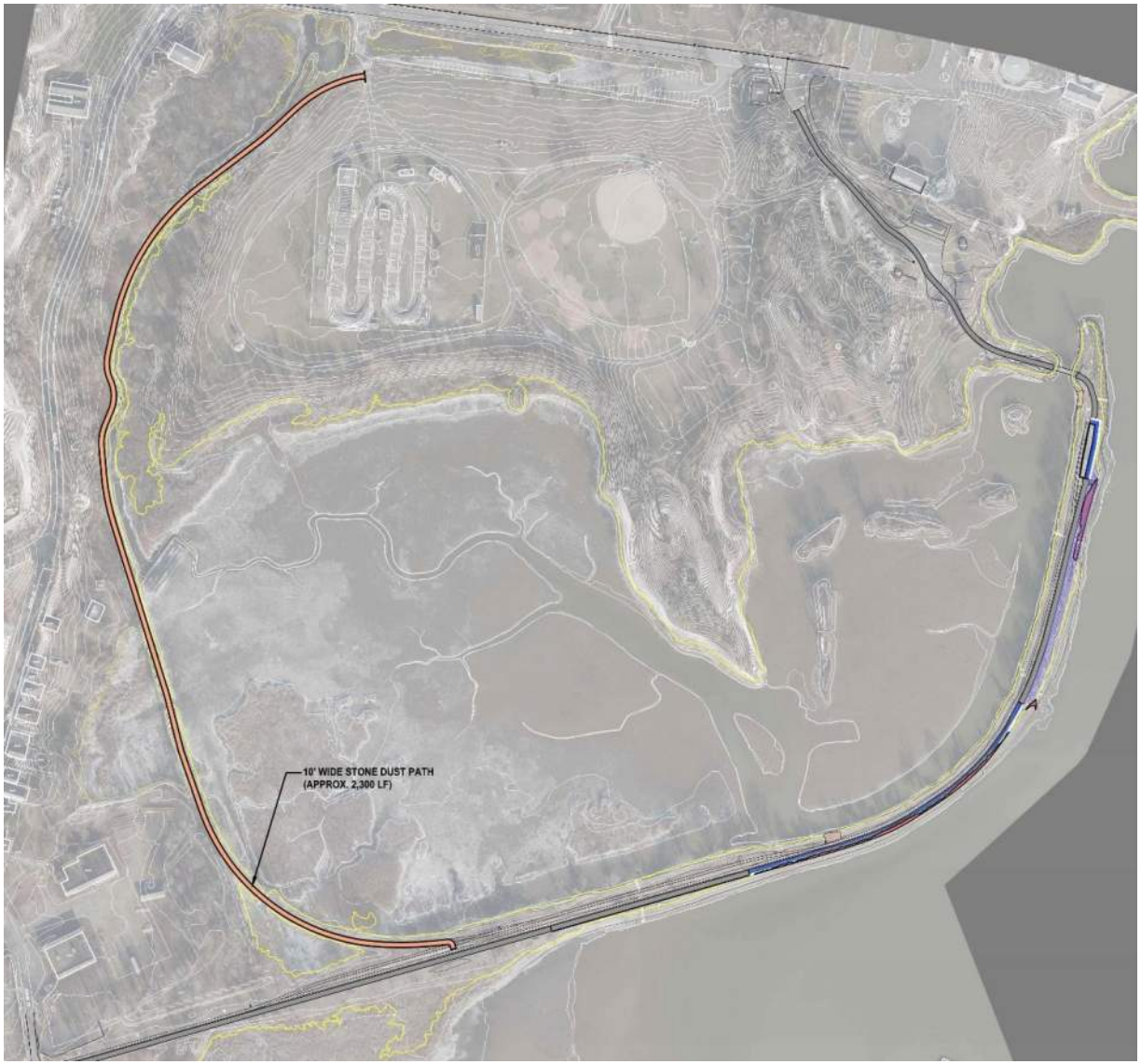


Proposed

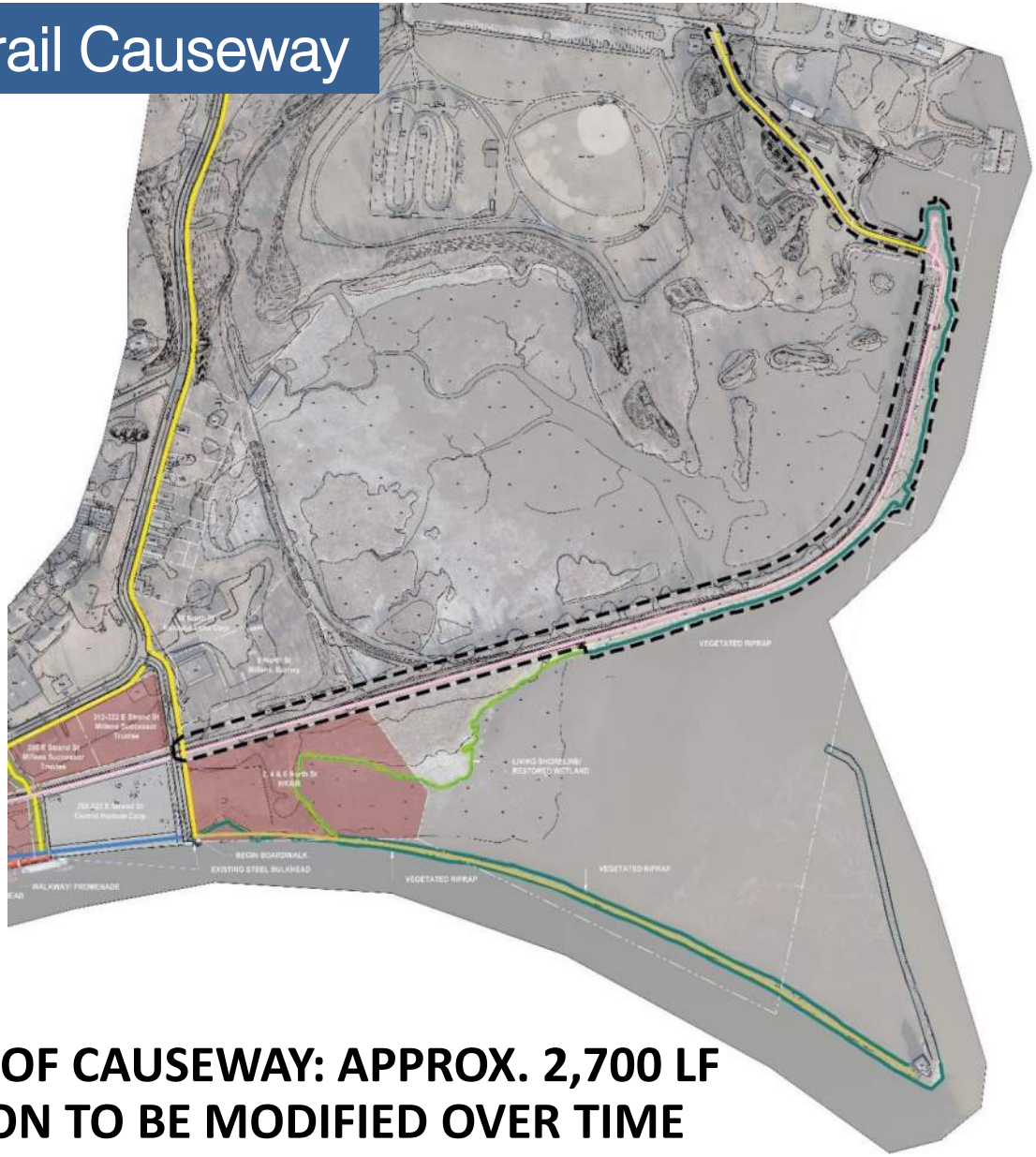
Trolley Trail Plan Development – Kingston Point Park

Alternate Trail Connection Loop at Trolley Spur

- This connector is not feasible due to constraints including steep slopes at the southern portion of KPP, western tidal creek and wetlands, and existing wetland at northern KPP parking lot.



Trolley Trail Causeway



LENGTH OF CAUSEWAY: APPROX. 2,700 LF
ELEVATION TO BE MODIFIED OVER TIME
(PHASED APPROACH)

Site photos of existing conditions taken in January 2019

Trolley Trail Causeway Considerations

General:

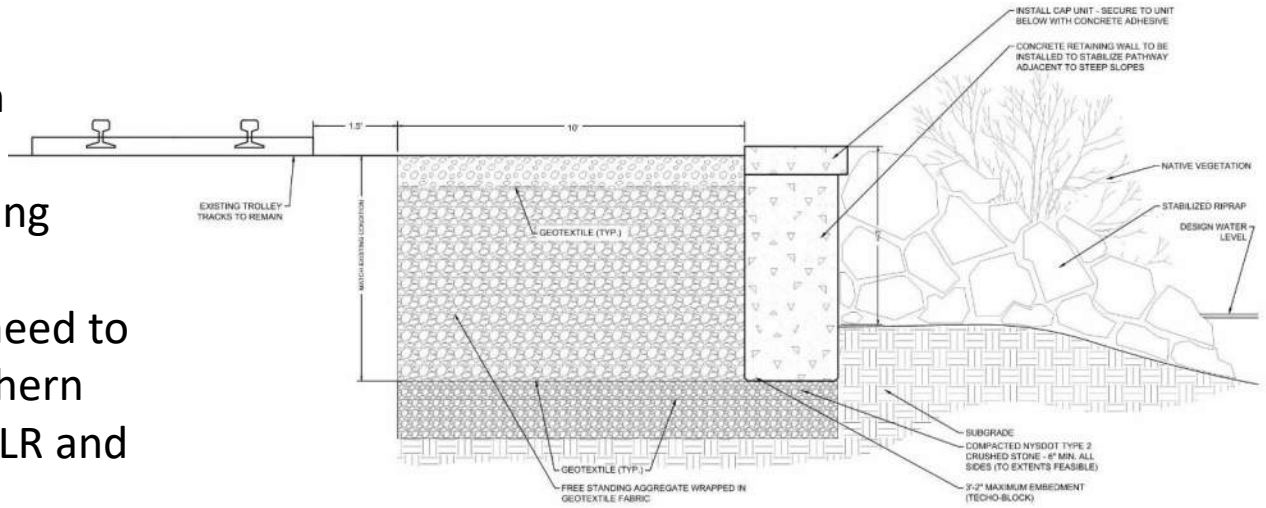
- Resource unique to Kingston
- Potential for cantilevered boardwalk that can be adapted/elevated over time
- Design to be developed to tie-into SLR adaptation scenarios along other park and riverfront properties
- Establishment of living shoreline will enhance habitat and create park-like setting
- Living shoreline would require maintenance to inhibit invasive species and protect views
- Considerable expense and effort to raise the causeway/trolley tracks to flood protection elevations

Permit Requirements

- Stream disturbance permit
- Freshwater wetlands permit for any activity within 150’ of wetland boundary
- Wetlands: KE-4/Class 1 (unusual abundance/diversity)
- Excavation/Placement permit for all work below MHW
- All disturbance to be within the existing footprint of the causeway wherever feasible
- Design must show adaptation to SLR
- Walkway width may need to be reduced to meet permit issuance standards
- Threatened & endangered species survey

Trolley Trail Plan Development –Alternatives Analysis

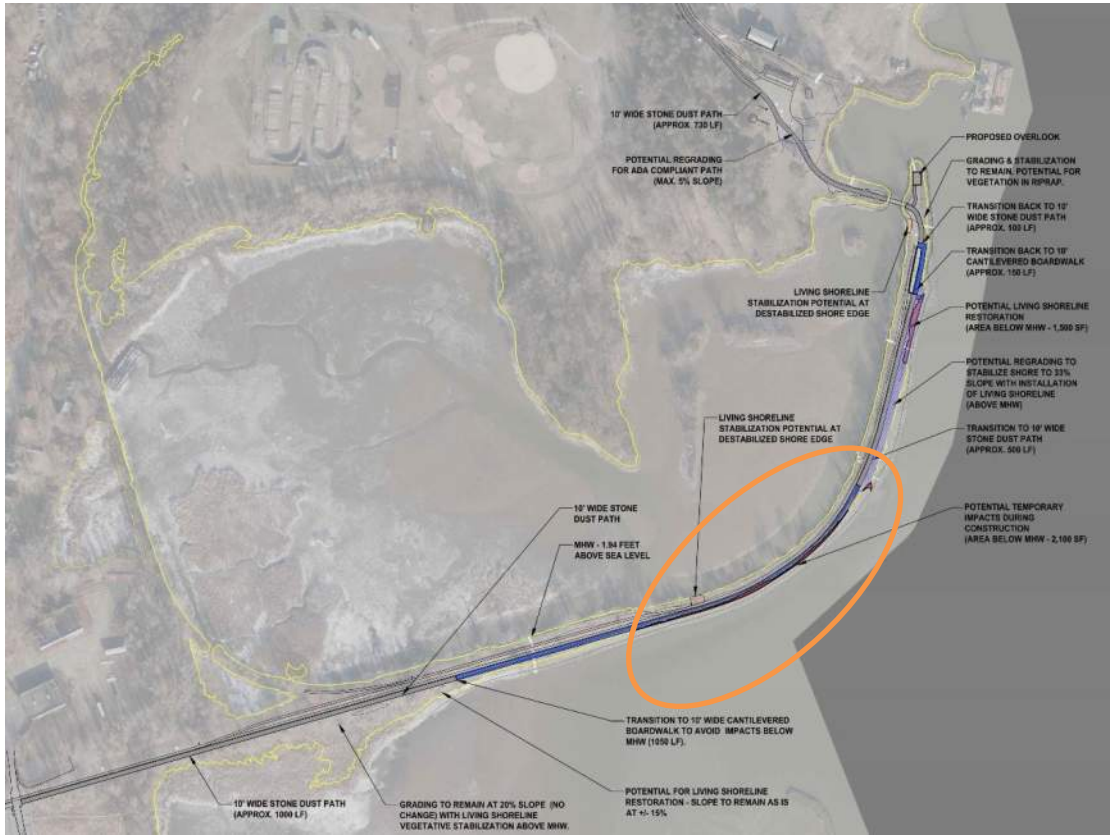
- Retaining walls/bulkheads in narrow sections
  - Not favored by permitting agencies
  - Additional wall would need to be constructed on northern side to accommodate SLR and elevation of trail
- 6’ and 8’ alignments
  - Grading presents significant impacts below MHW
  - Width is not ideal for multi-modal path
  - Not feasible in most restricted sections of the trail



- Trolley track elevation will need to be analyzed further – retaining walls would be needed on both sides to elevate tracks

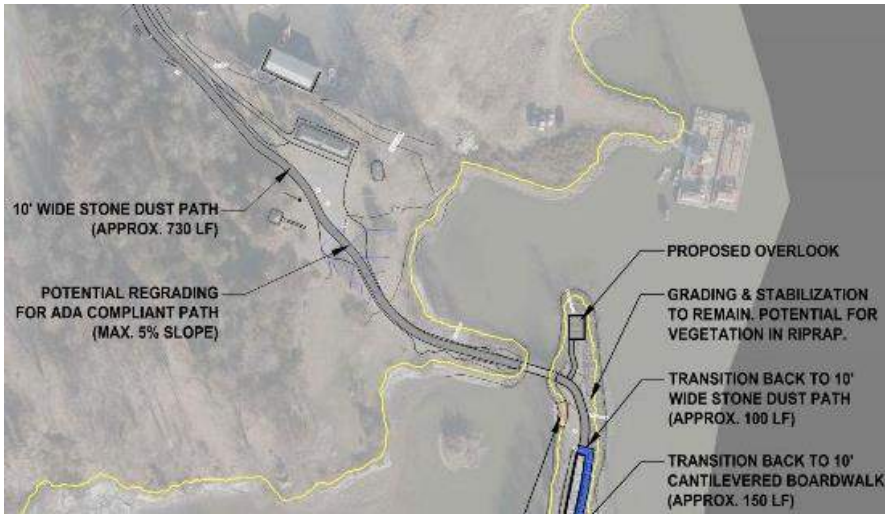
Trolley Trail Plan Development – Causeway – Phase A

- Construct cantilevered boardwalk along sections of narrow trail
- Boardwalk pilings disturb less area below MHW
- Pilings designed to be raised to accommodate SLR
- Other sections of path widened to 10’ where possible and stabilized with stone dust
- Living shorelines implemented along length of causeway wherever feasible
- Installation of additional riprap/stabilization measures may be required where existing erosion is occurring



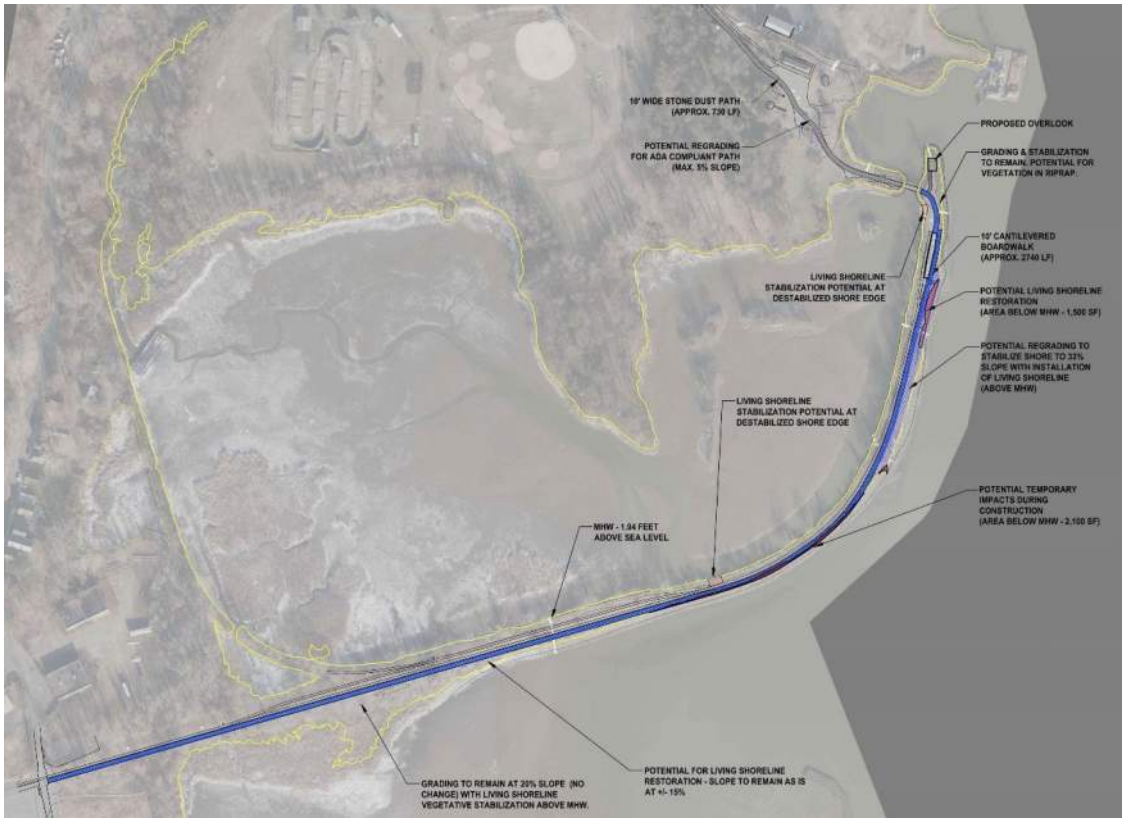
Trolley Trail Plan Development – Kingston Point Park

- Trail to be improved to create better access (stone dust)
- Phase 1B Archaeological Assessment revealed several pre-historic artifacts
- Phase II will be conducted to determine if site should be placed on National Register
- City will retain ownership of artifacts
- Additional wetland delineation may be required – pending review of existing mapping



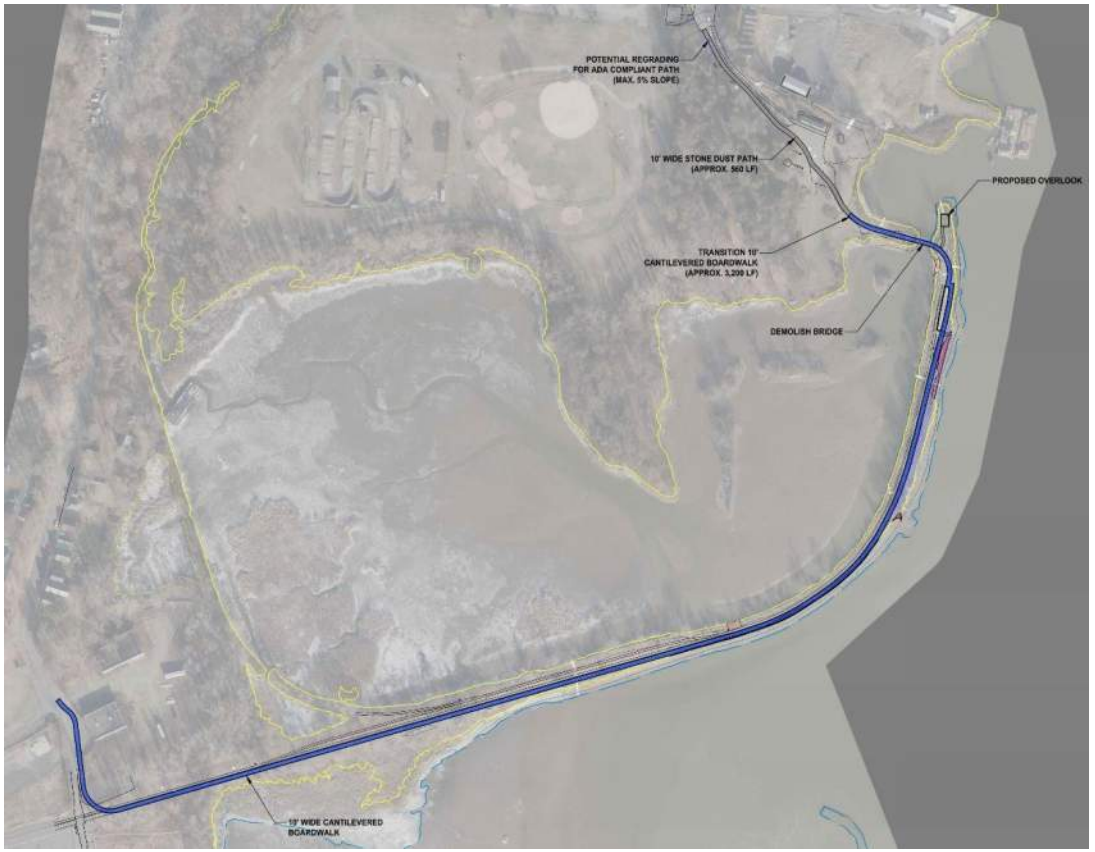
Trolley Trail Plan Development – Causeway – Phase B

- Construct cantilevered boardwalk along length of the causeway
- Pilings designed to be raised to accommodate SLR
- Living shorelines protected and restored during and after construction
- Consider whether elevation of trolley tracks is feasible/desired by the community
- Elevation of tracks will require bulkheads on both sides of the causeway – flooding and tidal flow/wetland impacts

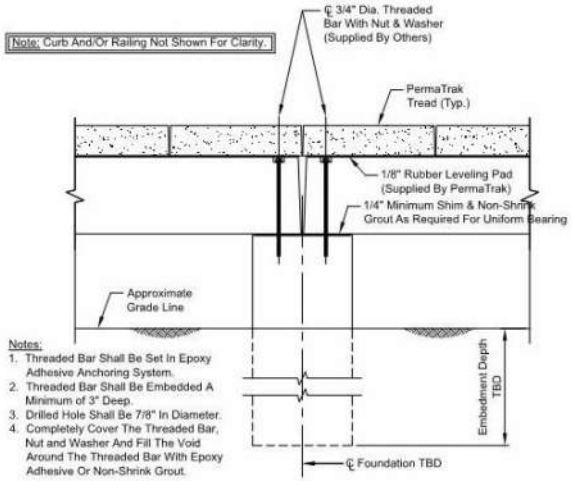


Trolley Trail Plan Development – Causeway – Phase C

- Initial phase of elevation – 2030's levels predicted to rise 6" in central range scenario
- Construct cantilevered boardwalk to tie into trail at Kingston Point Park where SLR elevation is determined
- Construct cantilevered boardwalk to tie into North Street/East Strand where SLR elevation is determined
- Pilings designed to be raised to accommodate SLR
- Living shorelines protected and restored during and after construction
- Flow between Hudson River and Tidal Wetlands maintained

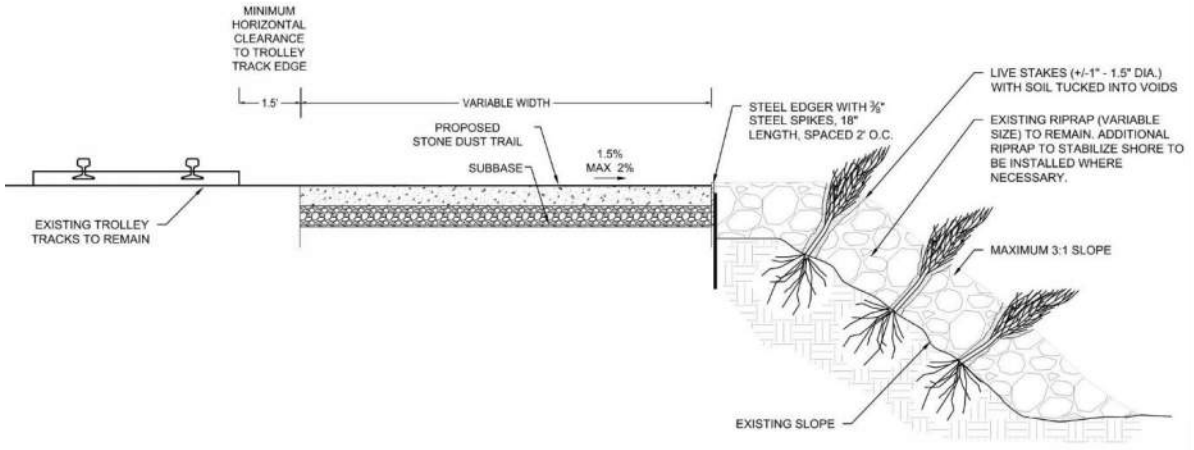


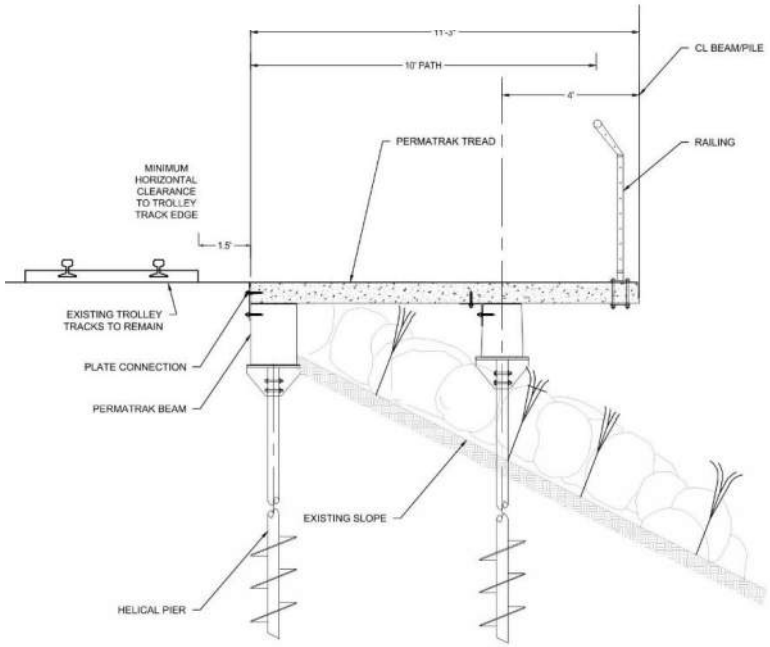
Trolley Trail Plan Development – Trolley Trail Causeway



TYPICAL PIER CONNECTION DETAIL

Scale: Not To Scale





KPLH - Introduction

The lighthouse, located in the Hudson River at the mouth of the Rondout Creek, is owned by the City of Kingston. The City is responsible for maintenance, but the structure is utilized by the Hudson River Maritime Museum for seasonally offered tours of the historic site. The property is registered historic and has an active light station owned and maintained by the US Coast Guard. This light is a self-contained automatic solar powered system.

On October 29th, 2012 Hurricane Sandy struck Ulster County, NY. Tidal surge in the Hudson River entered the exterior basement door and flooded the basement of the historic (1915) Kingston Lighthouse (a.k.a. Rondout II Lighthouse) located on an islet in the Hudson River. Water flooded to the basement ceiling, soiling the floors, walls, ceiling, and damaging the basement's contents and the buildings electrical service/system, plumbing, sump pump, oil tanks and boiler.

Restoring the Rondout II Lighthouse to its condition prior to Superstorm Sandy will require electric and heat service to be reestablished. The source of the electric and the service on land was disconnected by Central Hudson as part of a site remediation project. Additionally, the City of Kingston is interested in moving away from an oil heating system as was previously present, to a cleaner and more sustainable heating system.

Weston & Sampson and the City are identifying and designing an electric system while also determining the best source of electricity. Options are traditional electric lines, solar, or a combination. The electric system that is chosen will depend on the design for access along the breakwater to the lighthouse. A preferred heating and plumbing system is also being identified and designed. Sewer or composting services are being explored to provide bathrooms at the lighthouse, and options for the delivery of potable water are in development.

Existing Conditions

Aerial drone footage of the lighthouse

Erosion along the jetty, observed in January 2019

The solaris boat

The lighthouse basement, which lacks utility connections

KPLH – Electric Provision

HKWR Property Crossing

- 120/240V estimated service
- Can utilize trolley trail property for portion of span
- Must cross HKWR property to reach jetty
- Easement required
- Potential provision to concrete utility box/connection on HKWR property (not included in project scope/FEMA grant)
- Stream disturbance permit required
- Freshwater wetlands permit may be required for any activity within 150’ of wetland boundary

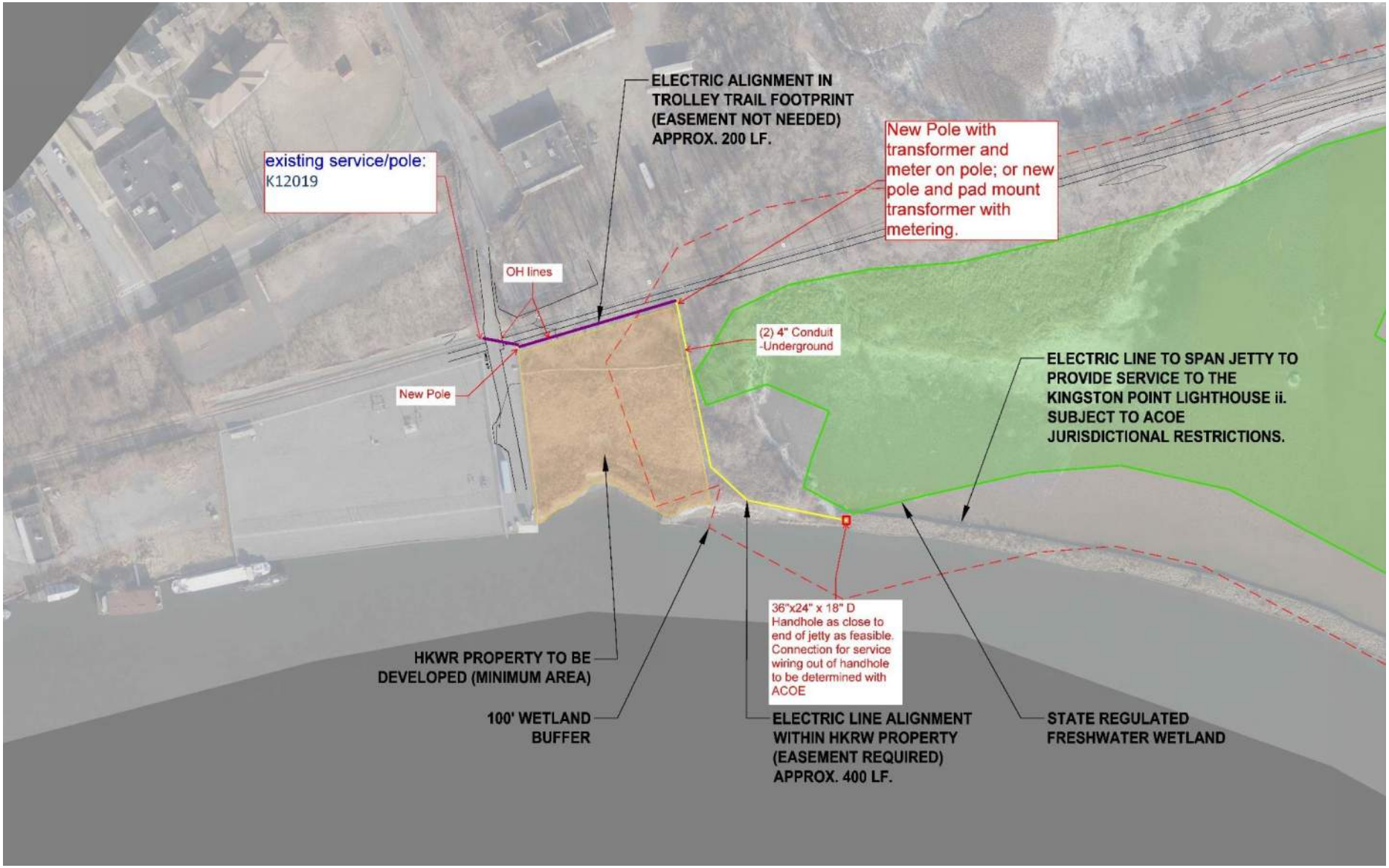
Span along Jetty

(Conduit laid parallel to breakwater)

- ACOE Allowance: Replace in-kind and in-place
- 33 USC 408 Permit
- Section 10 Rivers and Harbors Act
- Section 404 of Clean Water Act

Cost: *TBD*

Kingston Point Lighthouse Electric Service Connection



Kingston Point Lighthouse Electric Service Connection

KPLH – Sustainable Options

Type	Costs	Construction	Permitting	Durability	Sustainability	Aesthetics / Historic Preservation	Timing
Solar Boardwalk	high	fair	good	good	good	fair	
	Unique installation in an environmentally sensitive area on existing jetty.	Construction will take place over water and will require aquatic transport of materials. Jetty protection and stabilization will be required.	Must stay within footprint, shading must be avoided. Sediment, wetland, resource disturbance, and time of year considerations.	Flood hazard minimal. Sturdy construction will minimize risk of wind damage. Maintenance may need to be performed from a boat.	Excellent, innovative approach to providing pedestrian access and electric service to the lighthouse.	Solar boardwalk visually pleasing but may obstruct views from the Rondout Riverport to the Hudson River. Glare potential.	Phase I - needed to provide power to the lighthouse for subsequent improvements
Solar Gangway	high	moderate	good	good	good	fair	
	Unique installation adjacent to a historic resource.	Construction will take place over gangway and will require aquatic transport of materials. Existing structure that may require modifications to ensure structural stability.	Little disturbance anticipated. Time of year considerations and potential structural modifications.	Minimal concern. Adequate support/stabilization required.	Will not supply all needed power but will supplement traditional grid power and provide the City with a visual indicator of sustainable initiatives.	Not in keeping with historic character of exterior elements of building, but limited in size and affixed to gangway, which is not a historic element.	Phase II - needed to provide supplemental power to lighthouse if convential electric line is chosen
Solar Array on Pilings	high	fair	poor	fair	fair	fair	
	Unique installation over water with complex environmental and logistical factors.	Installation will be placed in river with challenging construction and material transport logistics.	Sediment and resource disturbance, shading, acoustics (pile driving), siting, and wetland considerations.	Maintenance must be performed from a boat. Potential ice floats, wind, and wave action concerns.	Can supply all necessary power but will negatively impact aquatic ecology for a period of time.	Monolithic structure placed in Hudson River. View obstruction and glare potential.	Phase I - needed to provide power to the lighthouse for subsequent improvements
Solar Barge	very high	difficult	unknown - good	good	good	good	
	Unique marine vessel construction with relatively new technology.	Local resources and expertise an asset; however, technology is under development.	Barge a mobile structure that could be located to minimize impacts.	Barge must be stored properly before storms. Maintenance must be peformed by staff with unique skill set.	Innovative electrical supply that could be used for other riverfront events and educational purposes.	Depends on construction of barge. Views not likely to be obstructed.	
Compost Toilet	moderate	easy	easy	fair	good	poor	
	Initial purchase + maintenance costs. Potential conversion to historic aesthetic.	Transport and installation in building.	Disposal of waste.	Individual/intermittent use appropriate. Heavy use/large events negatively impact system.	Significantly less water consumption and recycling of waste.	Modern structure which tends to be bulky. Custom build a possibility.	Phase I - needed to provide facilities not only to visitors but to staff required for subsequent improvements

KPLH – Conventional Options

Type	Costs	Construction	Permitting	Durability	Sustainability	Aesthetics / Historic Preservation	Timing
Sewer	high	difficult	fair	fair	fair	good	
	Sewer line to tie into existing line at road. Line to be buried and housed in a waterproofed, protected structure in the jetty.	Adequate slope may be difficult to achieve. Jetty disturbance required to construct vault/conduit. Must cross HKWR or Kingston Gas holdings property to tie into East Strand.	Jetty disturbance required. Sediment disturbance, time of year, and other environmental factors relevant. Construction could take place within existing jetty footprint.	Risk of failure in storm events. Protected by waterproof concrete vault/conduit.	Water usage, treatment, construction concerns.	Pipes are buried/not visible. Upgrades may be necessary in house.	Phase I - build with installation of other facilities
Gas	high	difficult	fair	fair	poor	good	
	Gas line to tie into existing line at road. Gas can be buried and housed in a waterproofed, protected structure in the jetty.	Jetty disturbance required to construct vault/conduit. Must cross HKWR or Kingston Gas holdings property to tie into East Strand.	Jetty disturbance required. Sediment disturbance, time of year, and other environmental factors relevant. Construction could take place within existing jetty footprint.	Risk of failure in storm events. Protected by waterproof concrete vault/conduit.	Fossil fuel extraction and pollution concerns; existing grid/infrastructure not yet in place to provide efficient, cost effective electric heat	Pipes are buried/not visible. Upgrades may be necessary in house. Furnace may need to be installed on second floor -flood regulations.	Phase I - build with installation of other facilities
Electric	moderate	easy	moderate	fair	fair	good	
	Electric line to be buried and housed in a waterproofed, protected structure in the jetty. Electric costs high to heat entire building in winter.	Jetty disturbance required to construct vault/conduit. Must cross HKWR or Kingston Gas holdings property to tie into East Strand.	Jetty disturbance required. Sediment disturbance, time of year, and other environmental factors relevant. Construction could take place within existing jetty footprint.	Risk of failure in storm events. Protected by waterproof concrete vault/conduit.	Sustainable option if the current grid is moving to renewable sources.	Conduit is buried/not visible. Upgrades may be necessary in lighthouse.	Phase I - electric of primary importance relative to other utilities; however, combining construction efforts more cost effective
Water	high	moderate	moderate	good	moderate	good	
	Water line to be buried and housed in a waterproofed, protected structure in the jetty.	Jetty disturbance required to construct vault/conduit. Must cross HKWR or Kingston Gas holdings property to tie into East Strand.	Jetty disturbance required. Sediment disturbance, time of year, and other environmental factors relevant. Construction could take place within existing jetty footprint.	Risk of failure in storm events. Protected by waterproof concrete vault/conduit.	Depends on aquifer and climactic conditions.	Pipes are buried/not visible. Upgrades may be necessary in lighthouse.	Phase I - build with installation of other facilities

Kingston Point Lighthouse Floating Dock

next steps

- Next Steps
  - Design revisions
  - Permitting review of preliminary designs
  - Further Field investigations (Phase II Archaeological Assessment/Wetland Delineation)
  - Cost Estimating Services
  - Next PAC Meeting (TBD)

Rondout Riverport Shoreline Stabilization and Public Access – Phase II