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RiverWalk Feasibility Study

Tarrytown, New York

June 22, 2021

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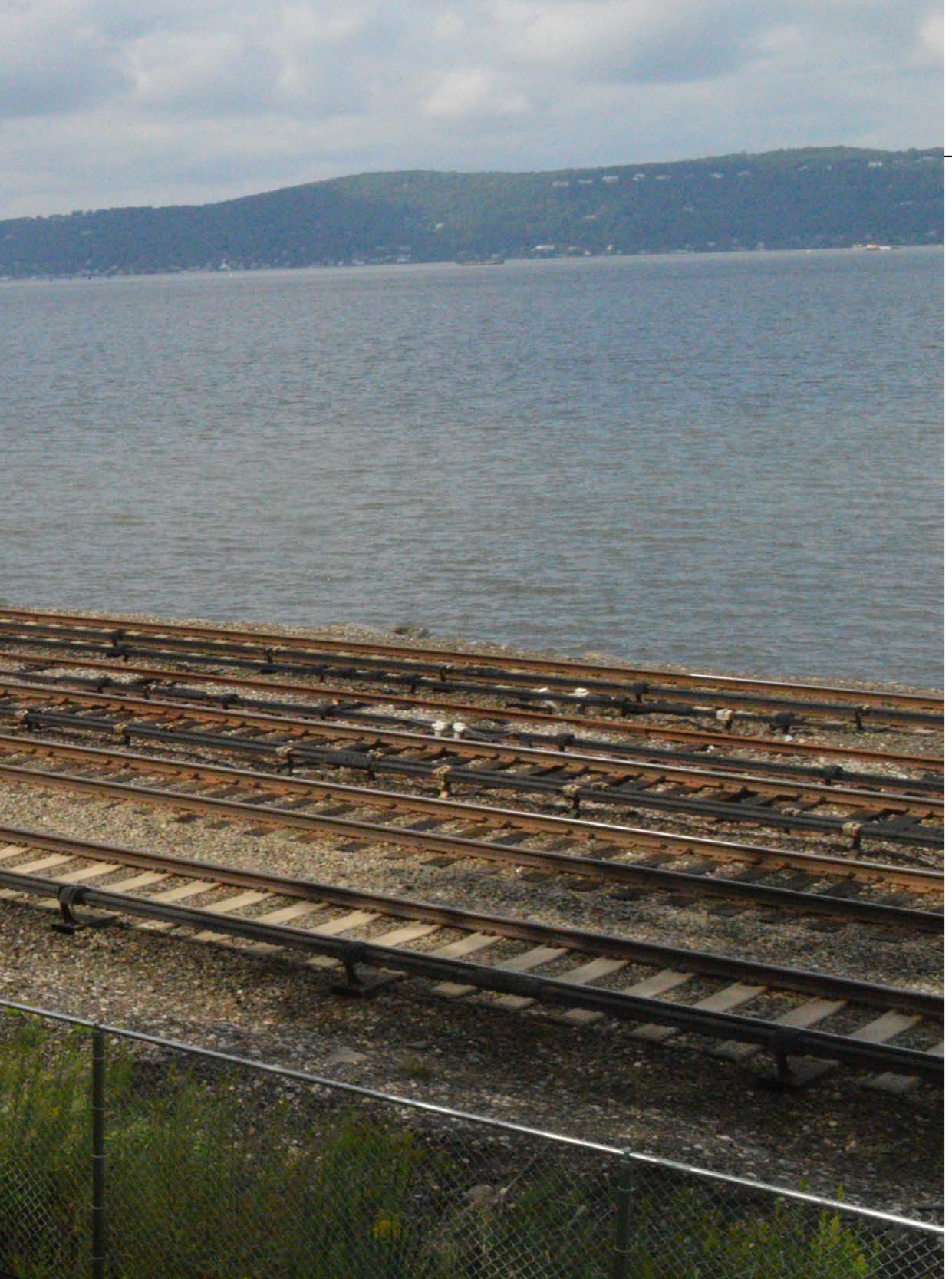
MTA Metro-North Railroad

NEW YORK STATE THRUWAY AUTHORITY

SITEWORKS

Westchester gov.com



ACKNOWLEDGEMENTS

The RiverWalk Feasibility Study is the result of a cooperative effort by many persons. Stantec Consulting Services Inc. acknowledges the time and effort of each individual and interest group who participated in the development of the study including the following:

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EXECUTIVE SUMMARY

The proposed RiverWalk Extension in Tarrytown has a two-fold purpose. The first is to connect the existing terminus of the Hudson RiverWalk at Van Wart Avenue with the trail at Losee Park which was recently built by the County. The second is to provide a connection to the new Governor Mario M. Cuomo Bridge ("GMMCB") which has a shared-use path (SUP) on the north side of the bridge with a parking area on Route 9. The project creates two important connections to tie together five regional trails, including the Old Croton Aqueduct, the Westchester County RiverWalk, the Shared-Use Path on Route 9, the Tarrytown - Kensico Trailway (Tarrytown Lakes), and the Empire State Trail.

Construction of this project is supported by several recently completed studies and plans including the Sleepy Hollow -Tarrytown Trails Strategy, the Tarrytown Comprehensive Plan, the Tarrytown Station Area Strategic Plan, and the Sleepy Hollow Comprehensive Plan. Improvements to the Route 9 corridor envision the completion of this portion of this multi-use path and links with a proposed greenway along Route 119, which would provide connection to the Empire State Trail.

RiverWalk has several primary and secondary benefits to the region. It will create a critical link in the Hudson RiverWalk, providing recreational opportunities and transportation alternatives to automobile travel. A direct pedestrian connection to the Tarrytown Train Station will reduce the demand on parking at the station and traffic in the area. Visitors using the new Bridge shared-use path (SUP) and this trail will bring economic benefit to the host community and link the public to historic sites along the Hudson River waterfront. These historic sites include Sunnyside, Lyndhurst, Phillipsburg Manor, Kykuit, and Rockwood Hall. In addition to providing an important transportation link, the greenway will provide public access to the waterfront.

The existing steep topography in the area and the Metro-North Railroad along the river's edge prevent safe access to the waterfront. This challenge can be resolved by the trail providing a safe crossing of the railroad and creating an esplanade along the waterfront. It provides an alternative transportation mode to connect the neighboring communities to the Tarrytown Train Station, reducing some of the demand on parking at this important Metro-North station.

To implement the construction of the trail, there are several property easements that need to be obtained. The trail traverses under the new GMMCB, which will require easements from the New York State Thruway Authority. In addition, the trail along the waterfront requires easements from Metro-North Railroad. In order to make the stair connection to the SUP, a small sliver of land is required from 303 Broadway on the north side of the bridge. The accessible portion of the trail will traverse through a portion of the Montefiore Property and Jewish Community Center on the south side of the bridge. Agreements with these entities will be required in order to build the trail.

The steep slopes and rock outcrops along the east side of the railroad present challenges to the construction of the trail. The railroad itself also poses a significant barrier to accessing the waterfront and crossing to the west side which is needed to connect to the continuation of RiverWalk in Losee Park. The Department of Homeland Security has imposed some restrictions on the trail crossing under the new GMMCB. This restriction puts limits on the proximity to bridge support piers and the number of times the trail crosses under the bridge. While the river is an attractive destination, it also poses some construction issues in getting construction equipment and materials to the site. Construction will need to take place from the waterfront side of the tracks to minimize disruption to the railroad.

The trail is designed in accordance with the latest AASHTO and NYSDOT guidelines for pedestrian and bicycle facilities. Furthermore, it will meet ADA guidelines so that everyone will be able to access and enjoy the new shared use path. The trail has also been designed to be consistent with the Westchester County RiverWalk Design Guidelines.

Numerous alternatives were evaluated during the feasibility phase. These include land routes, water routes, and various combinations thereof. Topography, rock outcrops, proximity to residences, Metro-North, and NYS Thruway considerations all influenced the selected alternatives. Three primary alternatives were developed during the process. One included a waterfront structure along the west side of the railroad with a crossing at Van Wart Avenue. The second alternative is similar, except that it traverses further south along the railroad and crosses at the exiting node near the Montefiore property. The third alternative has a smaller section along the water, crossing under the new GMMCB and then traversing south along the east side of the tracks, connecting to the existing terminus at Van Wart Avenue.

There was a public meeting to discuss the various alternatives. The majority of those in attendance selected Option C as the most desired route. This alternative is for a waterfront trail with a crossing of the railroad at the Montefiore node.

Various sudies and analyses have been identified in the Feasibility Study. It is highly probable that additional studies and analyses will be necessary to facilitate the environmental review and design processes as required by the State Environmental Quality Review Act and the National Environmental Policy Act.

The opinion of probable construction cost of the project is between $23.3 million and $45.0 million in 2024 dollars depending on which option is selected. The cost of the project is driven by the difficulty of constructing the project in a restrictive environment and the quantity of structures required.

Existing RiverWalk at Van Wart Avenue (looking south)

1. INTRODUCTION

A coalition of key stakeholders in the Village of Tarrytown, along with entities having facilities in the Village, is seeking to create a pathway that serves two purposes:

1. Connect the Westchester County RiverWalk between Van Wart Avenue and Lossee Park under the GMMCB, and

2. Connect to the new shared-use path across the northern span of the GMMCB.

A working group of municipal entities and state agencies was formed to advance the construction of the existing Westchester RiverWalk trail and the GMMCB SUP connections. Plans to connect the RiverWalk north and south routes, as well as providing an accessible connection from the new SUP to existing trail systems, was a goal of previously analyzed projects, and this new project will complete those objectives. The stakeholders include:

- Village of Tarrytown
- NYSTA
- Metro-North Railroad
- Westchester County Planning
- New York State Department of State

Potential trail connections were mapped and field verified. A single preferred route for connection to the SUP and the existing Westchester RiverWalk north and south trails under the GMMCB is the objective of this study.

Scenic Hudson works to protect and restore the Hudson River and its majestic landscape while also working to ensure it is a publicly accessible resource that enhances the quality of life in the Hudson River Valley. Over the past several years, Scenic Hudson has been coordinating with the communities of Sleepy Hollow and Tarrytown to develop a regional trails strategy (Sleepy Hollow – Tarrytown Trails Strategy) which has since been approved by both communities. Two recommendations of that regional trails strategy are to connect the RiverWalk under the new bridge which currently terminates north and south of the bridge and connect the GMMCB shared-use path to the RiverWalk. The goal is to improve multi-modal transportation and recreation options in the area by increasing the connectivity of the regional trail system.

Project History

The proposed path of this study is consistent with the accepted Tappan Zee Hudson River Crossing Project (TZHRCP) Final Environmental Impact Study (FEIS) and the associated TZHRCP shared-use path (SUP) Environmental Assessment (EA). Transportation improvements at the bridge included pedestrian and bicycle accommodations. The FEIS stated that the area bicycle and pedestrian facilities include a segment of the Westchester RiverWalk crossing underneath the New NY Bridge (now known as the GMMCB) in Tarrytown. An objective of the SUP EA was to provide safe connections from existing bicycle and pedestrian routes to the SUP and was encouraged by the public to provide limited ancillary parking accommodations and restroom facilities to increase access to the SUP.

The proposed project will be part of the Westchester RiverWalk--a planned multi-mile pathway following the Hudson River in Westchester County. RiverWalk aims to link village centers, historic sites, parks, and river access points via a connection of trails, esplanades, and boardwalks. The RiverWalk spans 14 municipalities in Westchester County and is part of the Hudson River Valley Greenway system. RiverWalk is a work in progress that is being developed through a series of projects constructed by the county, local municipalities, and other entities, including private developers. The RiverWalk's route is publicly accessible, utilizing newly-constructed sections as well as existing sidewalks, paths, and trails, such as the Old Croton Aqueduct, and paths within existing parks and facilities. The current RiverWalk has 32.9 miles completed as paved and unpaved paths, promenades, and sidewalks; 2.7 miles in design or planning stages; and 15.9 miles remaining as proposed route. The trails connect directly with 13 of 14 Metro-North Hudson Line Stations and 27 Bee-Line Bus Routes including the Tappan Zee Express.

Project Objectives

The purpose of the project is supported by the following objectives:

- Provide a connection of the existing Westchester RiverWalk north and south trails under the GMMCB.
- Provide access from existing bicycle and pedestrian routes to the shared-use path.
- Provide access from other existing bicycle and pedestrian routes to the RiverWalk and SUP trails connections.
- Provide public access to the waterfront.
- Minimize environmental and community impacts.
- Maintain emergency service access to the shared-use path extension, existing parking accommodations, and limited ancillary facilities; and
- Provide a connection to the Tarrytown Metro-North Station.

2. ANTICIPATED USE AND BENEFITS

Bicycle/Pedestrian Shared Use Path on the Gov. Mario M. Cuomo Bridge

One of the most anticipated features of the new Gov. Mario M. Cuomo Bridge (GMMCB) was its dedicated bike/pedestrian shared-use path (SUP), which provides new access for non-motorized commuters across the Hudson River while also offering an exciting recreational opportunity in Rockland and Westchester counties. Cyclists and pedestrians enjoy a 12-foot-wide path located on the northern side of the westbound span of the bridge. Separated from traffic by a concrete barrier, the path features six scenic overlooks across the length of the 3.1-mile crossing.

The SUP opened to the public on June 15, 2020 and has been very popular among pedestrians and bicyclists. Approximately 252,000 persons from both the Westchester and Rockland sides have used the SUP since its opening. It is assumed that half of these are using the Westchester side. Based on this 6 months of usage, there were approximately 4,850 users per weekend. The NYSTA supplemented their parking on the Westchester side with a free shuttle from the Tarrytown train station. This usage is likely higher than will be normal due to its recent opening. In addition, COVID is increasing the volume of users as people are looking for outdoor activities during the pandemic. Other trails have seen increased usage of 30% to 50% due to COVID.

GMMCB Westchester Landing and Shared-Use Path Informational Signage and Maps

GMMCB Shared Use Path

GMMCB Shared Use Path Overlooks Map

Bicycle/Pedestrian Shared Use Path on the Gov. Mario M. Cuomo Bridge

GMMCB Shared Use Path “Tides of Tarrytown” Overlook

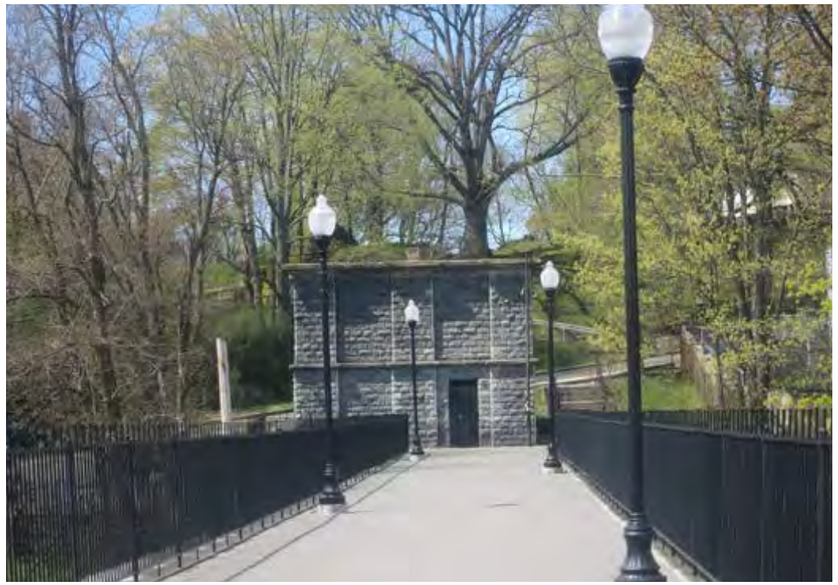
GMMCB Westchester Landing

In addition to the GMMCB Shared Use Path, there are other trails and pathways in the vicinity that would build on the vistors using the project and SUP: the Old Croton Aqueduct State Historic Park, Westchester RiverWalk, the Empire State Trail and several historic sites.

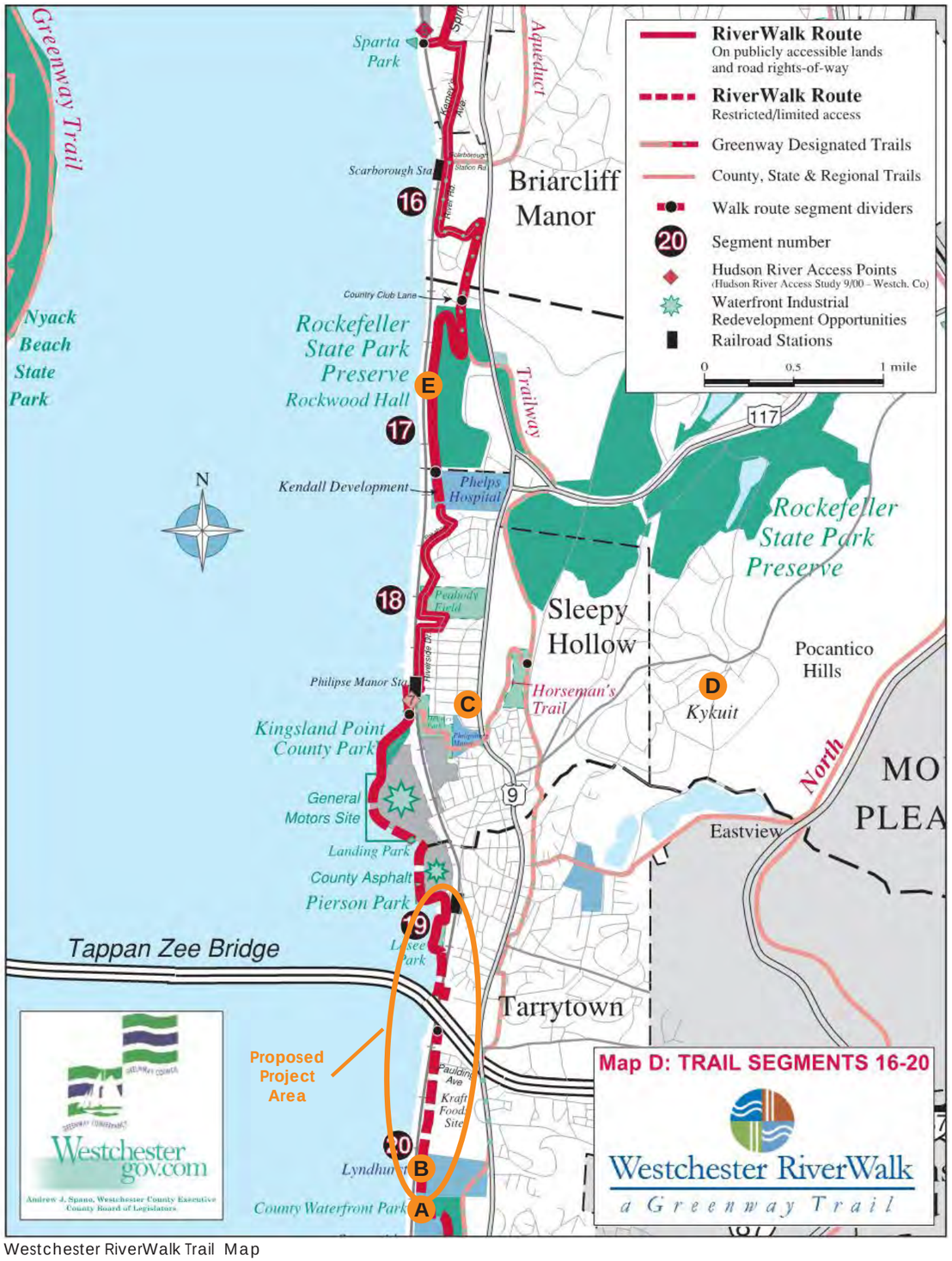
Old Croton Aqueduct

The Old Croton Aqueduct State Historic Park follows the route of the Old Croton Aqueduct, which carried water to New York City from 1842 to 1955. Most of the structure lies beneath the trail and has been designated a National Historic Landmark. The aqueduct itself remains intact; the northern sections continue to supply water to Ossining.

Panoramas of the Hudson River are visible in some areas. Many historical homes, two nature preserves, and a museum in Ossining highlighting the construction of the Aqueduct are immediate neighbors. The trail passes through 11 communities and is accessible from Metro-North Hudson Line trains and bus services along Route 9. At the project site, it is located on the east side of Route 9, less than ½ mile away.



Old Croton Aqueduct structure



Westchester RiverWalk Trail Map

Hudson RiverWalk

The "Hudson River Trailway Plan: RiverWalk" evaluates opportunities for creating a functionally linked Hudson River waterfront for pedestrians and bicyclists through the development, enhancement and linking of trails, esplanades, and boardwalks. It began as an idea put forth in 2000 as a means for increasing public access to and along the Hudson River and has evolved into a multi-jurisdictional effort involving agencies from the local to the state level.

RiverWalk will be a continuous trailway along the entire Hudson River shoreline in Westchester County, spanning 46.6 miles from the Town of Cortlandt border with Putnam County on the north to the City of Yonkers border with the City of New York on the south. The Westchester County Planning Department has taken the initiative to coordinate efforts for the planning and implementation of RiverWalk through the consortium of 13 riverfront communities known as the Historic River Towns of Westchester (HRTW).

Potential Link to Empire State Trail

Through the Lower Hudson Valley, the Empire State Trail follows the South County Trailway. This trail is located approximately 3 miles to the east of the RiverWalk trail. Route 119 connects Route 9 in Tarrytown to the proposed trail. This road has been studied for a possible greenway to make the connection between the GMMCB and the Empire State Trail.

Economic Implications

Westchester History Trail

There are numerous historic sites and attractions in Westchester County. These include battlegrounds, cemeteries, churches, farmhouses, underground railroad depots, and waystations. These also include sites from pre-Revolutionary and Revolutionary times, as well as historic and architecturally significant manors and estates in the area. Sites within the vicinity of the trail include:

- **A** Sunnyside
- **B** Lyndhurst
- **C** Phillipsburg Manor
- **D** Kykuit
- **E** Rockwood Hall/Rockefeller Park Preserve.

Sunnyside

Sunnyside

Washington Irving, America's "Founding Father of Literature", created a romantic, picturesque estate nestled along the Hudson riverbank. The enchanted landscape of his much-loved Sunnyside has been charming guests for generations. Visitors today hear about Washington Irving's storied past and how he came to be America's first internationally famous author. His characters--from the Headless Horseman to Rip Van Winkle--are global icons, and Irving's legacy lives on at his whimsical estate.

This site is located approximately 1.5 miles south of the GMMCB in the Town of Irvington. It is located adjacent to the RiverWalk Trail.

Lyndhurst

Lyndhurst

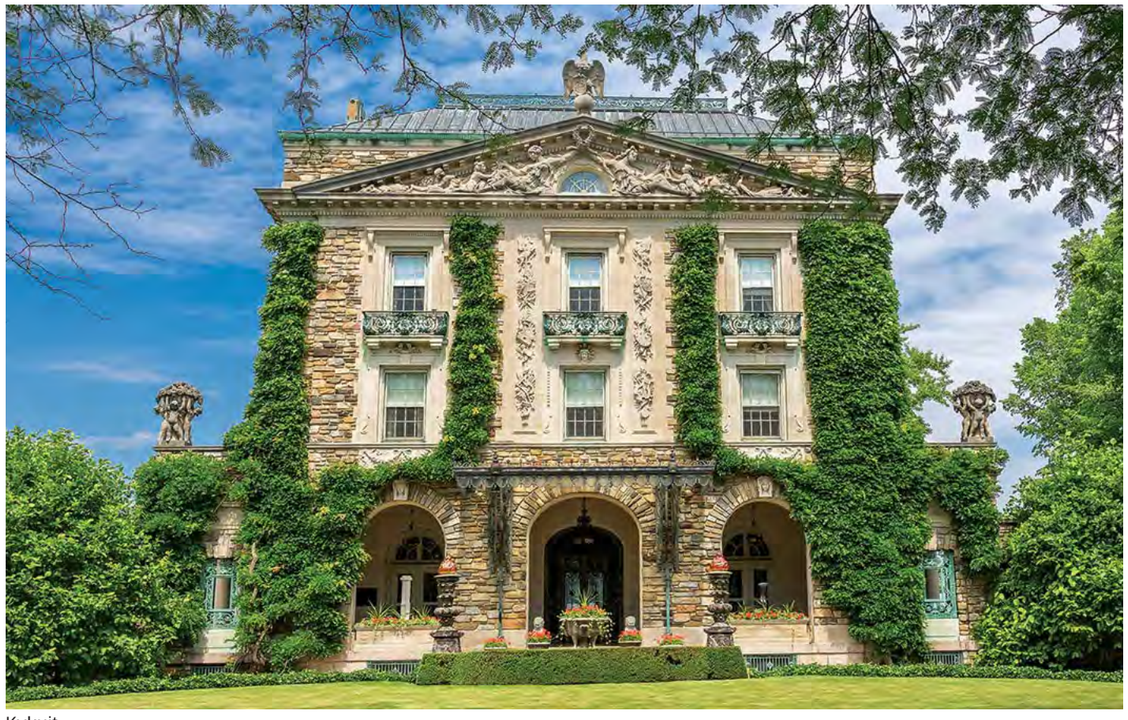
Lyndhurst, also known as the Jay Gould estate, is a Gothic Revival country house that sits in its own 67-acre park beside the Hudson River in Tarrytown, New York. It is located about a half mile south of the new GMMCB on US 9 and adjacenet to the RiverWalk trail. Designated a National Historic Landmark in 1966, the house sits within a landscape park, designed in the English naturalistic style by Ferdinand Mangold. Mangold drained the surrounding swamps, created lawns, planted specimen trees, and built a conservatory. The park is an outstanding example of 19th-century landscape design with a curving entrance drive that reveals "surprise" views of rolling lawns accented with shrubs and specimen trees. The 390-foot-long onion-domed, iron-framed, glass conservatory, when built, was one of the largest privately-owned greenhouses in the United States.

Phillipsburg Manor

Phillipsburg Manor

Philipsburg Manor (sometimes referred to as Philipse Manor) was an English manor located north of New York City in Westchester County within Sleepy Hollow. It is approximately 2 miles north of the bridge. Netherlands-born Frederick Philipse I and two partners made the initial purchase of land that had been part of a Dutch patroonship owned by Adriaen van der Donck. Philipse subsequently bought his partners out and added more land before being granted a royal charter in 1693 for the 52,000-acre estate, becoming its first Lord.

In 1951, it was acquired by Sleepy Hollow Restorations (now Historic Hudson Valley). Philanthropist John D. Rockefeller, Jr. funded the restoration of about 20 acres, which became today's Philipsburg Manor historic site. Philipse Manor Hall served as Yonkers City Hall from 1872 until 1908. Both homes became National Historic Landmarks in 1961 and are now house museums.



Kykuit

Kykuit

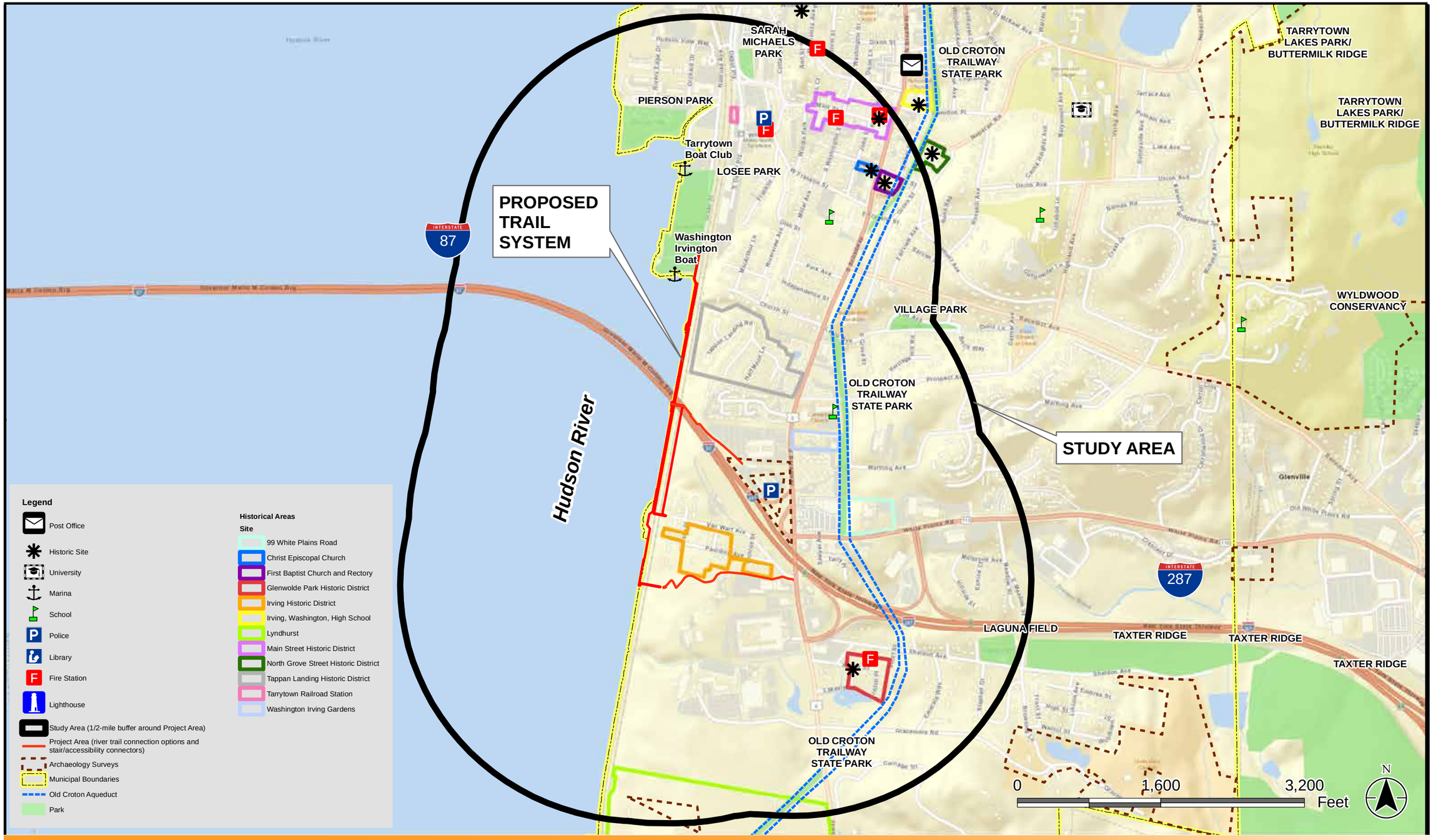
Kykuit was home to four generations of the Rockefeller family, beginning with the philanthropist John D. Rockefeller, founder of Standard Oil. Now a historic site of the National Trust for Historic Preservation, this extraordinary landmark has been continuously and meticulously maintained for more than 100 years. It is located approximately 4 miles northeast of the bridge in Sleepy Hollow.

Rockwood Hall

Rockwood Hall/Rockefeller Park Preserve

Further northeast of the bridge, approximately 5 miles away, is Rockwood Hall. This Gilded Age mansion in Mount Pleasant was best-known as the home of William Rockefeller, brother of John D. Rockefeller, both co-founders of the Standard Oil Company. Other owners of the house or property included Alexander Slidell Mackenzie, William Henry Aspinwall, and Lloyd Aspinwall. The property was once up to 1,000 acres in size. The mansion at its height had 204 rooms, making it the second-largest private house in the U.S. at the time, only behind the Biltmore mansion in North Carolina. The estate is currently an 88-acre section of the Rockefeller State Park Preserve.

These various historic sites along the Hudson River attract many visitors to the area, and RiverWalk provides a transportation alternative to access these sites, reducing dependence on automobiles.



RIVERWALK EXTENSION FEASIBILITY STUDY - HISTORIC DISTRICTS

TARRYTOWN, NY

Stantec

Climate and Transportation Alternatives

As we begin to feel the affects of climate change, environmentally-conscious commuters are seeking alternative modes of transportation rather than using fossil fuel burning vehicles. Walking and biking provides these alternatives. In addition to concern for the environment, people are seeking healthier lifestyle choices. Riding a bike or walking improves the health of the population while also providing a diversion from the stress of life. Both the desire to protect the environment and to live a healthier life create demand for more bicycle and pedestrian facilities.

Congestion on Route 9

The existing Route 9 through the Villages of Sleepy Hollow and Tarrytown is extremely congested. Numerous accidents have occurred along this route, and travel can be very frustrating at certain times of the day. The road traverses through an important commercial corridor for these villages which require on-street parking, further congesting the right of way. Finding ways to reduce automobile traffic using alternative means of transportation would be beneficial in reducing the number of vehicles on the road. The proposed RiverWalk trail will improve the connectivity between and within these villages.

Parking at Tarrytown Metro-North Railroad Train Station/Commuter Link

Parking for the Tarrytown Train Station is scattered throughout several parcels adjacent to and near the train station. This parking is limited due to the amount of land available, as the location of the train station near the Hudson River makes it more desirable for residential and commercial development rather than being used for parking. Providing a non-motorized link to the station will reduce the demand on station parking and provide a convenient connection for adjacent neighborhoods.

Route 9 traffic

3. CONSISTENCY WITH OTHER PLANNING EFFORTS

Municipal Plans

The municipal plans for Tarrytown and Sleepy Hollow incorporate goals that are consistent with the proposed RiverWalk trail.

Tarrytown Comprehensive Plan

Goals contained in the Tarrytown Comprehensive Plan include the reduction of dependence on personal vehicles. This goal promotes the use of alternative modes such as walking and biking. In addition to encouraging other means of connecting to various destinations in the village, the goal is to provide these connections and enhancements to open space and recreational resources. The strengthening of connections to the Hudson River is one such resource that the plan encourages.

Sleepy Hollow Comprehensive Plan

Connectivity was a key recommendation of the Comprehensive Plan. It recommends the improvement of connections throughout the village to provide safe and welcoming routes for pedestrians and residents. It also recommends coordination with the Village of Tarrytown to improve pedestrian safety to the Tarrytown Train Station. There were also several goals that were identified in the Comprehensive Plan that promote bicycling as a mode of transportation:

1. Expand multi-use on-street and off-street lanes for bikes and other forms of alternative transportation.
2. Install more bike infrastructure at train stations and in the downtown.

Furthermore, the plan recommends providing amenities supporting cyclists including bicycle parking, bicycle maintenance, route information, support facilities, and bike sharing.

The plan recommends that a more diverse transportation infrastructure be provided which will include general improvements to walkability and bikeability throughout the village and vicinities.

Sleepy Hollow-Tarrytown Trails Strategy

This strategic plan completed in 2015 grew out of recognition that Sleepy Hollow and Tarrytown were on the verge of experiencing the impacts of two major construction projects, Edge-on-Hudson and the GMMCB. Community members saw the planned waterfront walkway at Edge-on-Hudson and the shared-use path of the new bridge as opportunities to explore how their projects would relate and connect to both villages and their existing bicycle, park, and train infrastructure.

The study began in late 2014, initiated by Scenic Hudson and in collaboration with the two villages. Representatives from each village, as well as state or regional organizations with a role in parks, trail, and area tourism, participated on the steering committee that guided the process. The report was organized around a list of 10 priorities to organize ideas around how to implement improvements to the trail network for Sleepy Hollow and Tarrytown.

Trails and Recreation Plans

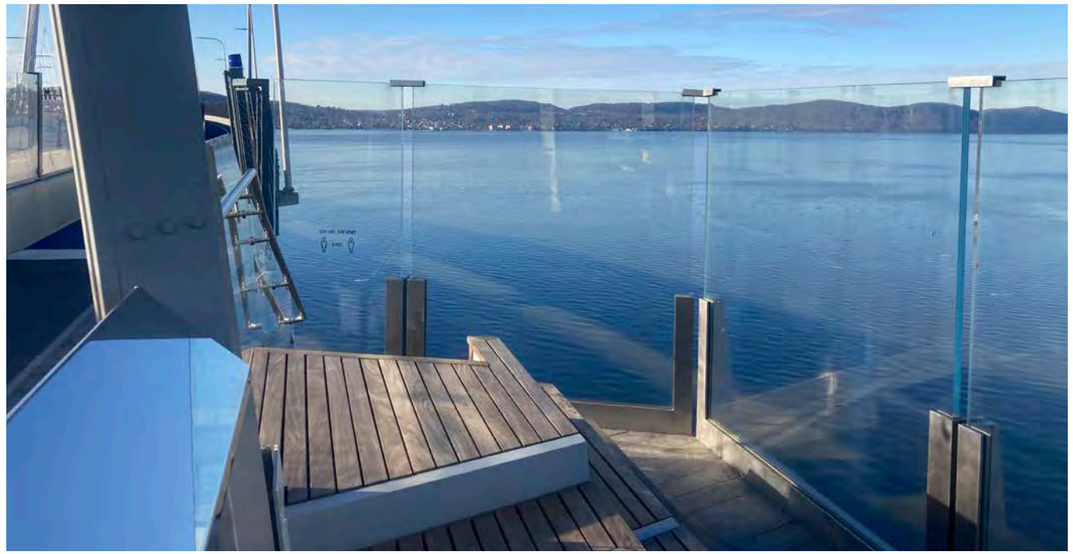
There are several existing trails/paths that are being planned or designed throughout or adjacent to the project area. The proposed trail is at the intersection of several other trails. These include the following:

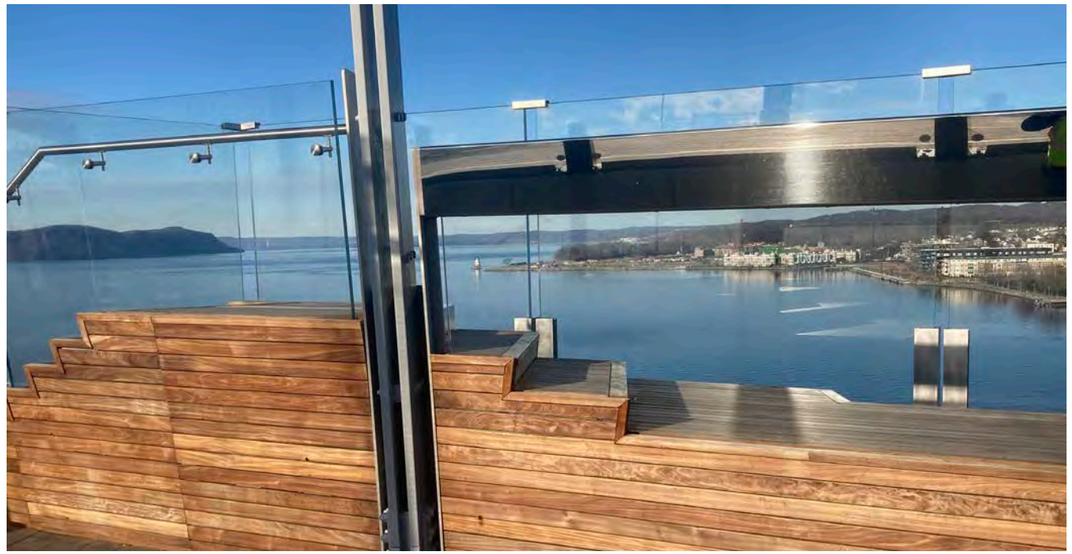
- Governor Mario M. Cuomo Bridge Shared-Use Path (SUP)
- Route 9 Active Transportation Plan
- Route 119 - Complete Streets and SUP Connectivity
- Old Croton Aqueduct Trail
- Empire State Trail

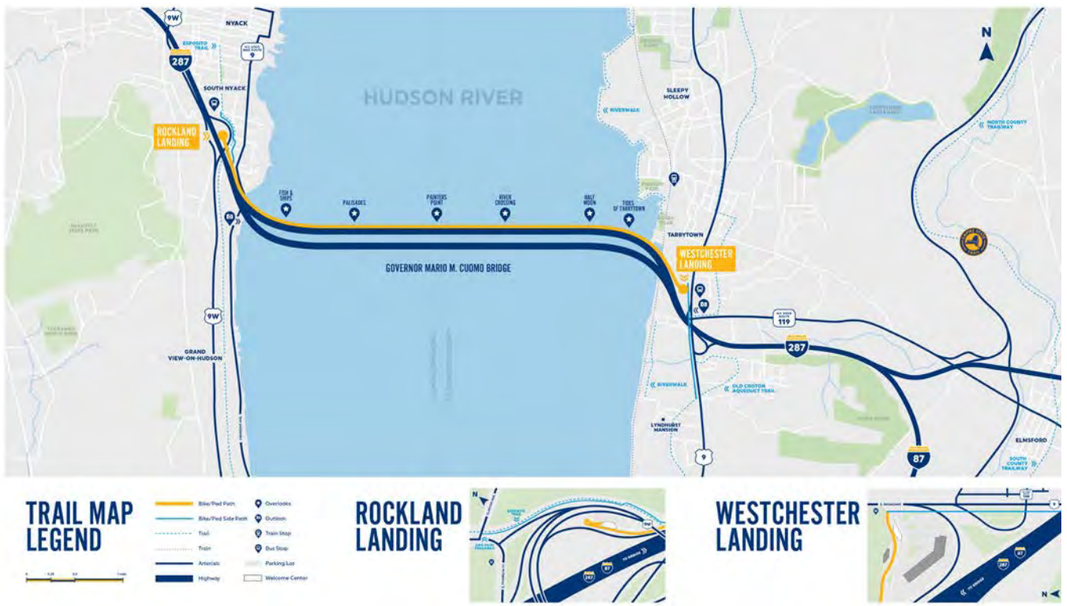
Overviews of these trails are provided on the following pages.

Governor Mario M. Cuomo Bridge Shared-Use Path (SUP)

This new shared-use path was constructed on the north side of the bridge and links Tarrytown to Nyack. The GMMCB offers residents a new 3.1-mile-long shared-use path for pedestrians and bi-cycles along the north side of the bridge with stunning views of the Hudson River Valley. The path can be used for a casual stroll or a more rigorous run or ride. The project created an important link to the Hudson RiverWalk, providing access from the new bridge to various Westchester towns with unique attractions along the waterfront.



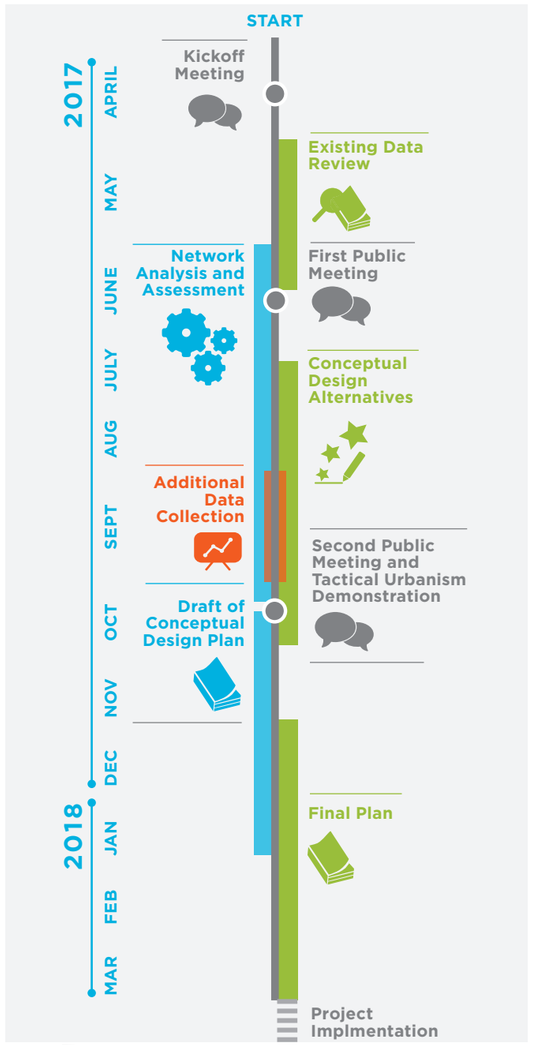




Route 9 Active Transportation Plan

The “Route 9 Active Transportation Conceptual Design Plan” is seeking to determine how to provide a bike lane along Route 9 from the north end of Sleepy Hollow through the south end of Hastings-on-Hudson. A goal of the project will be to promote the historic, cultural, and natural resources of the area while enhancing access to the new GMMCB. The project recognizes the transportation challenges of the future by accommodating a variety of transportation options and improving traffic safety for all modes. The objective of the study is to develop a complete street plan that will provide safe and connected places to walk along and across Route 9. Furthermore, it will offer safe and continuous places for people to bike within and between the villages. The plan will support planned transit to reduce automobile trips and attract visitors using the GMMCB SUP to shops and restaurants. Connecting the SUP to RiverWalk will further meet the goal of the study.

The study is being funded by a reimbursement grant awarded to the Village Consortium by the New NY Bridge Community Benefits Program.

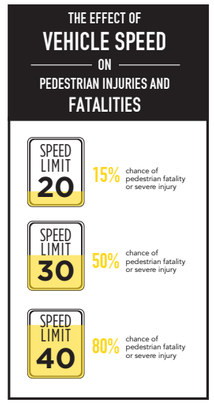


THE VILLAGES OF DOBBS FERRY HASTINGS-ON-HUDSON IRVINGTON SLEEPY HOLLOW TARRYTOWN

The goal of the study is to develop a complete streets plan that will:

- Provide safe and connected places to walk along and across Route 9.
- Offer safe and continuous places for people to bike within and between the villages.
- Improve safety by reducing speeding.
- Support planned transit to reduce automobile trips.
- Attract people using the GMMCB path to shops and restaurants.

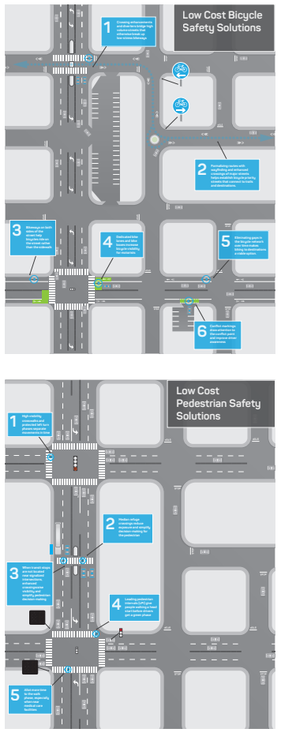
AUTO FOCUS



- Daily traffic along the corridor is under 25,000 vehicles/ day, except at the approach to the New NY Bridge in Tarrytown.
- Over 750 crashes were registered along Route 9 in the past 5 years, causing hundreds of injuries—1 severe, 1 fatal.

FIELD OF VISION

STREET DESIGN

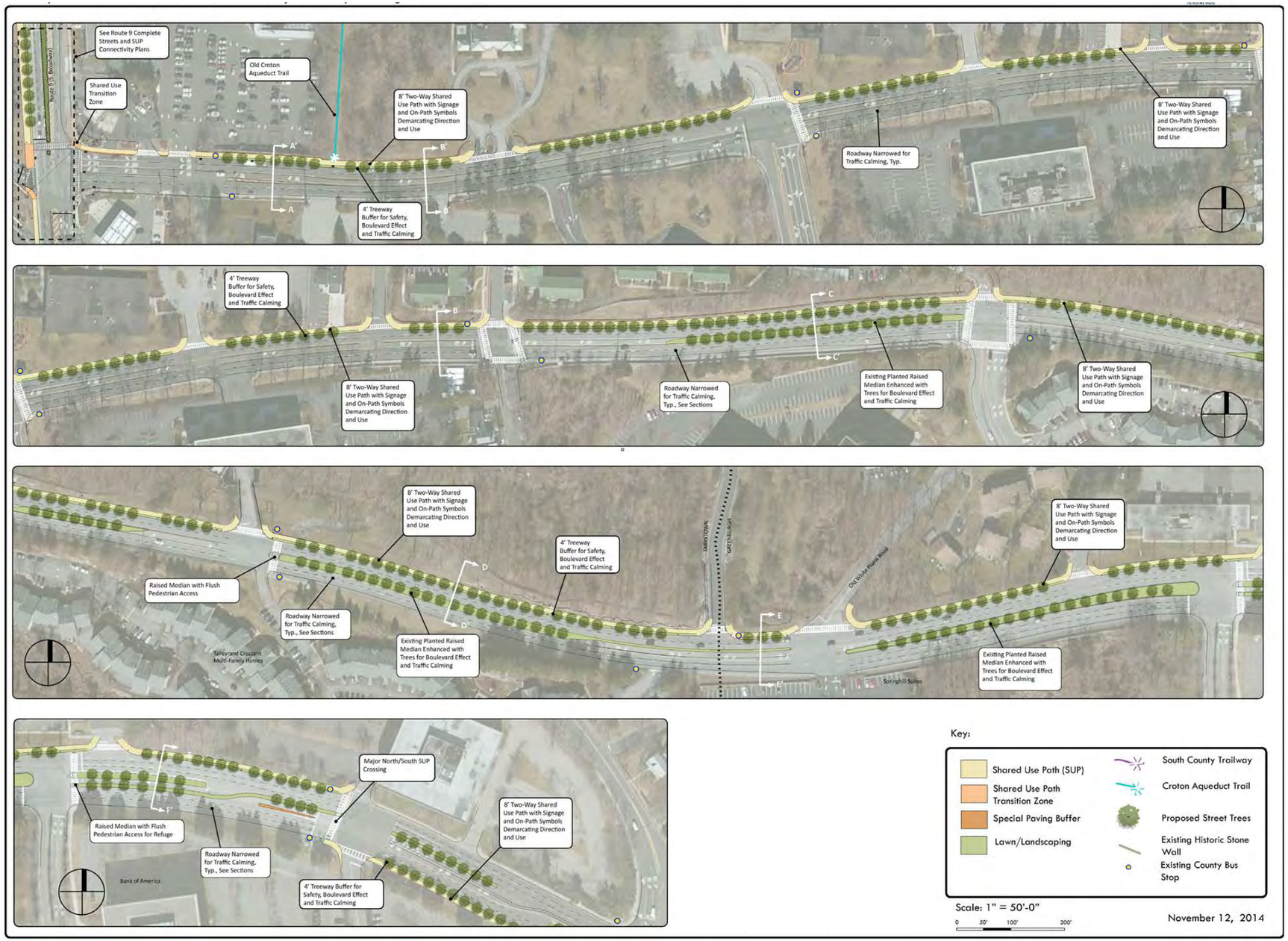


THE VILLAGES OF DOBBS FERRY HASTINGS-ON-HUDSON IRVINGTON SLEEPY HOLLOW TARRYTOWN

Source: Route 9 Active Transportation Conceptual Design Plan Website

Concept Design Route 119 - Complete Streets and SUP Connectivity

A new shared-use path is planned for Route 119, heading to the east. It will be linked up with the Empire State Trail. Many people will be biking over the GMMCB each weekend. People riding loops from NYC plus people living in Westchester and Rockland taking social, commute, and recreational trips will likely use the SUP. Given Route 119's current configuration, the influx of cyclists will lead to conflicts. People driving will be "stuck" behind people biking. Passing maneuvers are unnerving for people in cars and on bikes. The study will cover the entire length of Route 119, from Route 9 (South Broadway) in Tarrytown to Route 22 (South Broadway) in downtown White Plains. It will consider alternatives which can be quickly implemented, have a robust community involvement process, and include demonstration projects. The goal would be finding consensus on how to make Route 119 usable by everyone--trucks, people walking, riding bikes and buses, and in cars. Providing this connection at the intersection of Routes 9 and 119 will provide a link to the RiverWalk extension and access to the SUP on the new bridge.



Source: HNTB and New New York Bridge

Old Croton Aqueduct Trail

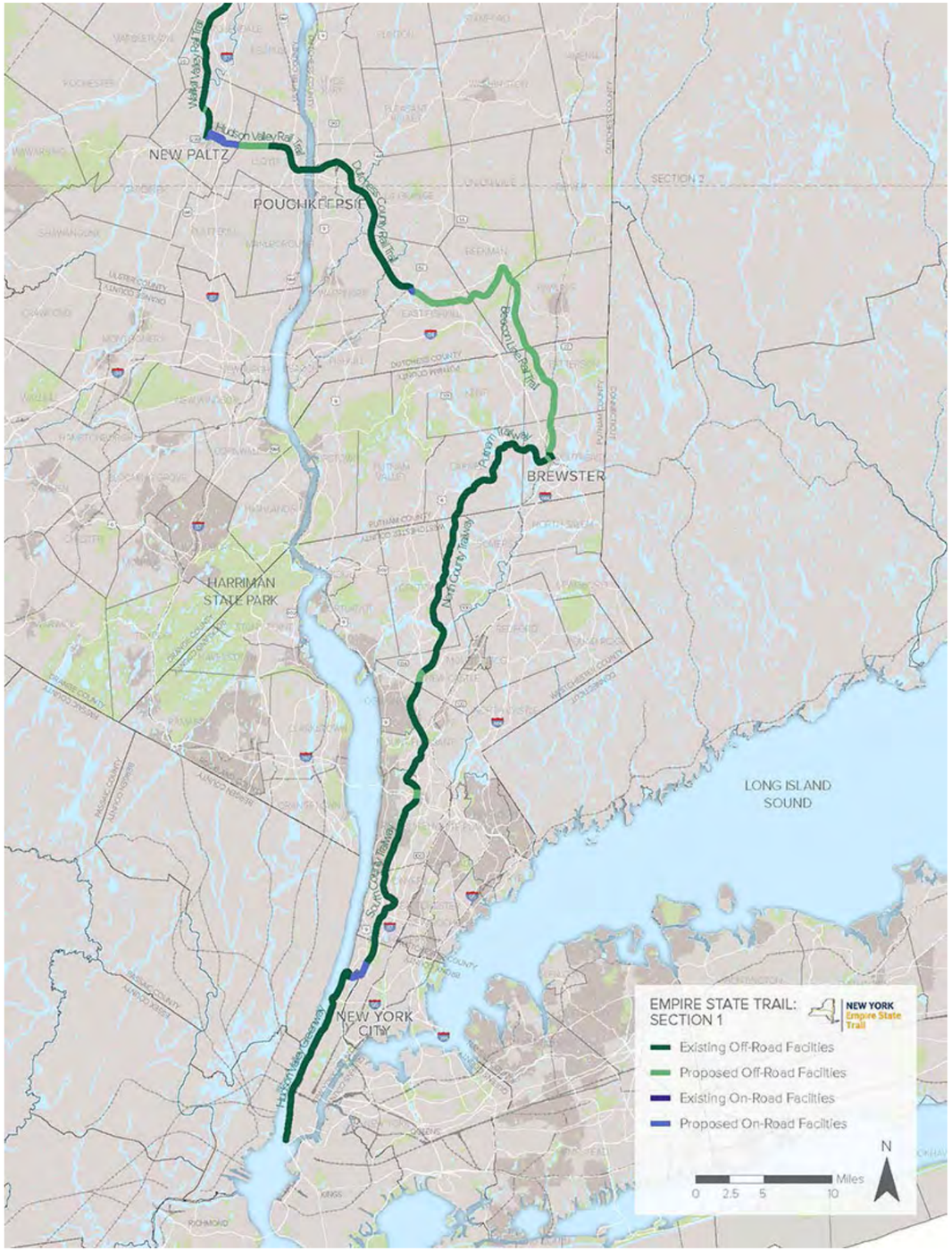
The Old Croton Aqueduct State Historic Park follows the route of the Old Croton Aqueduct, which carried water to New York City from 1842 to 1955. Most of the structure lies beneath the trail and has been designated a National Historic Landmark. The aqueduct itself remains intact; the northern sections continue to supply water to Ossining.

Panoramas of the Hudson River are visible, particularly in Yonkers and Hastings. Many historical homes, two nature preserves, and a museum in Ossining highlighting the construction of the Aqueduct are immediate neighbors. The trail passes through 11 communities and is accessible from Metro-North Hudson Line trains and bus services along Route 9. At its southern end, travelers can connect to the South County Trailway, a paved trail offering nearly 15 more miles of adventure from Yonkers to Mount Pleasant.

Empire State Trail

In 2017, Governor Andrew Cuomo announced the Empire State Trail (EST), a new initiative placing New York State at the forefront of national efforts to enhance outdoor recreation, community vitality, and tourism development. When completed, the trail will be a continuous 750-mile route which will span the state from New York City to Canada and Buffalo to Albany, creating the longest multi-use state trail in the nation.

Within the vicinity of the proposed project, the Empire State Trail follows the South County Trailway. A proposed connection to the Empire State Trail is being considered via Route 119.



Map of Empire State Trail

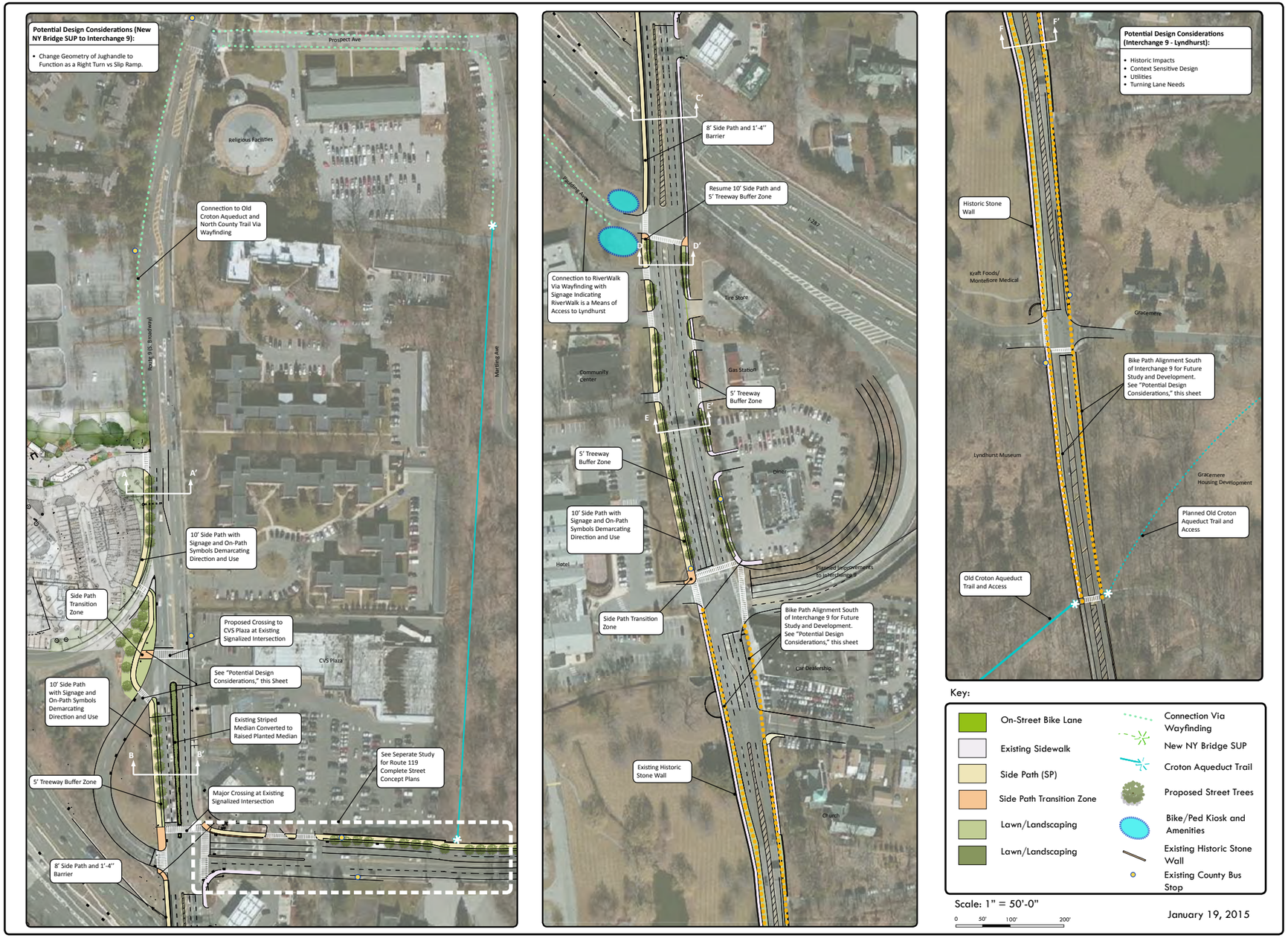
4. LEVERAGING RECENT AND PLANNED INVESTMENTS

NYSTA Route 9 Improvements

The project involves multimodal improvements to existing traffic flow. For vehicle traffic, flow will be improved by adding a second left turn lane from southbound Route 9 onto the Interchange 9 entrance ramp, widening the interchange ramp and installing a new traffic signal at Paulding Avenue. For pedestrians and bicycles, a new side path and bridge will be built to the west of the existing vehicular bridge on Route 9 over the New York State Thruway.

The improvements along the west side of Route 9 have been constructed up to the bridge over the thruway. The new pedestrian bridge and improvements south of the bridge will be constructed in the coming year.

As part of the bridge improvement plan, the NYSTA is proposing to provide a path along the west of Route 9. This path will connect the new parking area at the Thruway Maintenance Yard to a path south of the Doubletree Hotel. This path will include a new pedestrian bridge over the Thruway. The NYSTA is also including a new traffic signal at Paulding Avenue. For pedestrians and bicycles, a new side path and bridge will be built to the west of the existing vehicular bridge on Route 9 over the New York State Thruway. This project will help to provide an accessible route to the new bridge from RiverWalk via the proposed woodland route through the Montefiore and JCC properties.



GM Site Redevelopment – Edge-on-Hudson

This development will be home to more than 1,100 townhomes, condos, and apartments in all, and each compact, walkable neighborhood design reflects the heritage of the Hudson Valley. Edge-on-Hudson Includes walking trails and connection to the outdoors—including over 24 acres of parks with public spaces for sports.

Nearly half of the community's acreage is set aside as dedicated open green space. A 16-acre waterfront park and 3-acre park green are the centerpieces. Public plazas are scattered throughout the site, along with natural ecosystems, pocket parks, and promenades.

Edge-on-Hudson Rendering

Once host to a major General Motors assembly plant, Edge-on-Hudson's 70 acres are being transformed into a transit-oriented destination.

The master plan was designed to celebrate life on the water and give a connection to the Hudson River. A linear park runs through the heart of the community. The waterfront promenade becomes the center of community life, where the future hotel and restaurants come together on the edge.

Edge-on-Hudson will be easily accessible on foot or bike. All trails lead to a 1.5-mile waterfront promenade, linking to the existing RiverWalk to the south and Kingsland Point Park to the north. It will connect to the new shared-use walking and biking path on the GMMCB.

Sleepy Hollow RiverWalk Improvements

As part of any proposed new development within the vicinity of the river, the Village of Sleepy Hollow requires developers to construct portions of the RiverWalk trail adjacent to their projects. These efforts, along with the current project, will eventually help to make a continuous trail along the Hudson River.

Losee Park Riverwalk Extension (Tarrytown)

This portion of Hudson RiverWalk was recently completed in Tarrytown. It is the northern terminus of the proposed project and takes trail users around the perimeter of the park along the water. The park provides active recreational opportunities, picnic areas, and great views of the Hudson River and the new bridge.

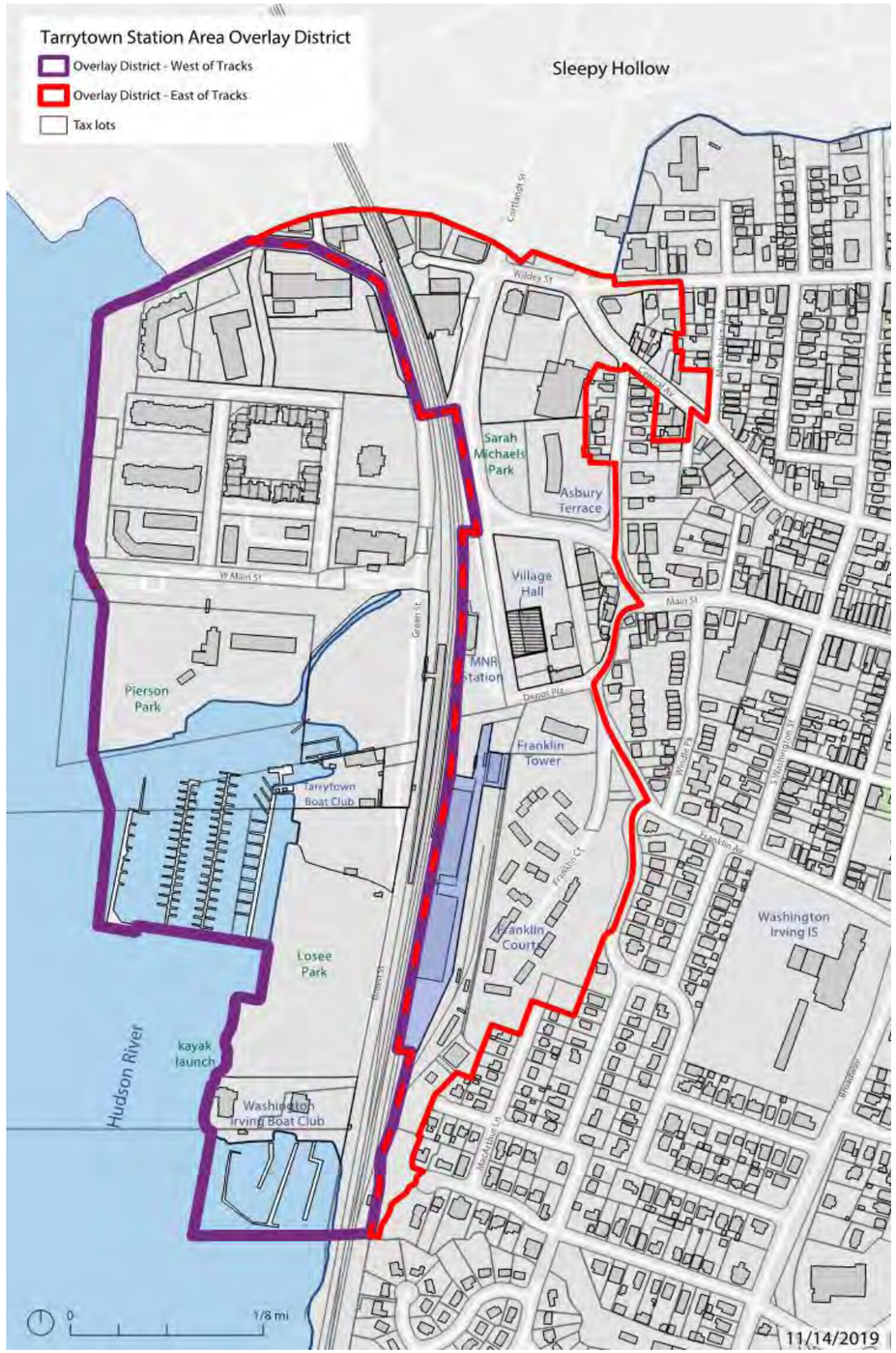
County Link between Lyndhurst and Sunnyside

The first phase of the Historic Commons in the County Park has been completed. This is ultimately intended to connect Lyndhurst with Washington Irving's Sunnyside estate to the south and create a 150-acre open space between Sunnyside, the County Park lands, Lyndhurst, and the Montefiore property including rights of way via the Old Croton Aqueduct State Park and the Westchester RiverWalk. A path connects to the existing South End RiverWalk that runs along the Lyndhurst riverfront as well as to the newly installed lower landscape walkways at Lyndhurst. This RiverWalk pathway follows an existing historic drive that originally connected to South Broadway and provided access to four estates—all burned by an arsonist long ago. The remains of the estates can be seen in the forest, including a stone-lined circular swimming pool, a foundation for a gatehouse, and numerous remnants of estate foundations. A native meadow mix will be seeded into areas around the pathway, making this feel like a walk in the forest. Future plans call for additional walkways to provide river views and direct access between Sunnyside and Lyndhurst.

Tarrytown Station Area Overlay

The Village of Tarrytown has recently adopted a Tarrytown Station Area Overlay (SAO) District at the Tarrytown Metro-North Station. This optional performance-based zoning district provides greater flexibility in development and does not include many traditional zoning measures. On the western side of the tracks, the zone extends southerly to the Irvington Boat Club and northerly to the Village boundary. The intent is to allow exceptional and signature developments that are consistent with the Village's Comprehensive Plan.

The overlay also emphasizes Transit Oriented Development. The mix of land use will prioritize public access and water-based recreational uses that enable the waterfront to become a year round destination within the Village. This approach is consistent with the construction of a waterfront trail to provide the link in the Hudson RiverWalk that is currently missing between the existing southern terminus of the trail and Losee Park.



Map of Tarrytown Station Area Overlay District

5. EXISTING CONDITIONS

Affected Environment

This section summarizes the relevant land use patterns within the project area, as well as land use plans. The project area's neighborhood character can be described as a blend of various elements that give neighborhoods their distinct "feel," including land use patterns, development density, open space, historic and cultural resources, urban design and visual resources, and transportation.

Existing Land Uses and Neighborhood Character

The Village of Tarrytown is located on the eastern shore of the Hudson River in Westchester County approximately 22 miles north of New York City. It is an incorporated village within the Town of Greenburgh and covers 2.93 square miles of land area. According to the 2010 U.S. Census, the overall population density of the village is 3,854 people per square mile, which is high relative to the average density of the County.

A defining element of Tarrytown's neighborhood character is the Hudson River and the GMMCB, which are visible from most locations in the Village. Tarrytown is a historic river town with a mixed-use village center surrounded by an established residential suburban community. The Village is bordered by the Village of Sleepy Hollow to the north, Village of Irvington to the south, and the Hudson River to the west. The GMMCB lands in the Village to the west of where Route 119 intersects Route 9. From this landing, Interstate 87/287 continues east, bisecting the village into a northern portion and a southern portion. The northern portion includes the traditional village core, Main Street, and the Metro-North Railroad train station; and the southern portion includes a variety of uses including corporate, commercial, and residential uses. Interstate 87/287 at the bridge landing accommodates the toll plaza, maintenance operations, and a State Trooper barracks (Troop T). Metro-North Railroad and Amtrak run services on tracks alongside the Hudson River beneath the bridge. To the north of Interstate 87/287 on Route 9 is a five-story office building (303 Broadway). Farther north and west of Route 9 are two multi-family residential developments (The Quay of Tarrytown and Tappan Court), while still farther north and west is a more traditional village area of single-family homes in the Tappan Landing Historic District.

Along the river and west of the Metro-North Railroad tracks are the 10-acre Losee Park, a public village park, and the private Washington Irving Boat Club on land leased from the Village. North of Interstate 87/287 and on the east side of Route 9, land uses are mostly residential; in particular, the Tappan Manor condominiums (three- and six-story structures) are opposite Interstate 87/287 maintenance facility and the 303 Broadway office building. The Church of the Transfiguration and Transfiguration School is located north of Tappan Manor. The northeast corner of the intersection of Routes 9 and 119 features a local shopping center, including a supermarket, bank, and gas station.

Route 119 is an east-west road that generally parallels Interstate 87/287 and extends from the Village of Tarrytown in the west to the Town of Greenburgh in the east. Within the study area, the Route 119 corridor includes several commercial properties including retail, office, and restaurant uses. Just east of the study area, Route 119 includes several large-scale office park developments, hotels, and town house/condominium developments.

South of Interstate 87/287 and west of Route 9 are a variety of land uses, beginning adjacent to Interstate 87/287 with the Irving Historic District residential neighborhood centered on Van Wart Avenue and Paulding Street. While this neighborhood consists of predominantly older homes, there are some newer homes adjacent to thruway. Where Van Wart Avenue intersects Route 9 is the Jewish Community Center (JCC). South of this is the Doubletree Hotel, and the Montefiore Medical billing offices. Farther to the south is a 34-acre undeveloped parcel that separates the Montefiore complex from the historic Lyndhurst estate.

Land uses to the east of Route 9, near the ramps to Interstate 87/287, are the Tarrytown Diner, a gas station, an automobile dealership, and a church. Farther east, along Sheldon Avenue, is the older Pennybridge neighborhood that also includes the Lagana Field Park.

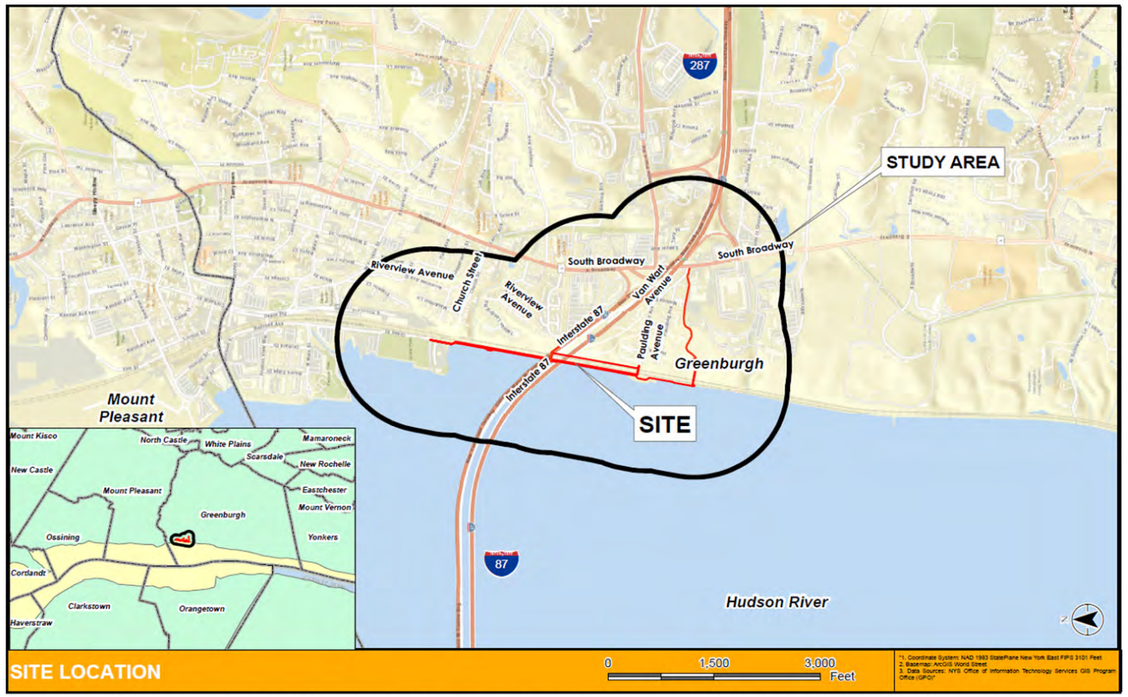
The Old Croton Aqueduct State Trailway, is a linear park that traverses the study area in a north-south direction from Van Cortlandt Park at the Bronx/City of Yonkers, New York, border in the south, to the Croton Dam in the Town of Cortlandt, New York, in the north. The trail enters the study area from the south, near Lyndhurst, and traverses north on the east side of Route 9, crossing beneath Interstate 87/287 near Interchange 9 (Route 9), and exiting the study area near Benedict Avenue. The Village of Tarrytown 2007 Comprehensive Plan, discussed below, notes that the creation of Interstate 87/287 interrupted the trail between Route 119 and Lyndhurst, and recommends that the future replacement of the former Tappan Zee Bridge includes a bridge overpass, reconnecting the northern and southern sections of the Old Croton Aqueduct.

Much of the immediate area around the proposed project is dominated by transportation Rights of Way, including the Metro-North Railroad, Interstate 87/287, and Route 9, a busy four-lane north-south highway. The project site is situated adjacent to Metro-North Railroad and Interchange 9, where Interstate 87/287 and Route 9 intersect, and is adjacent to the Interstate 87/287 toll plaza, which features 12 eastbound/southbound toll lanes as well as four highway lanes in the non-tolled northbound/westbound direction. The north and south ends of the project are located within the public Losee Park and near the JCC and Montefiore properties. In addition, several transit services traverse the study area, including the TZX bus service and Westchester County Bee-Line Bus routes. The Hudson River and the GMMCB are also defining elements of the area.

Areas along Route 9 in the study area are largely characterized by commercial-retail, office and research, and residential land uses. The area along Route 9 in the immediate vicinity of the site of the Proposed Action contains a multi-family residential complex, single-family homes, and general service and retail facilities such as a shopping center, gas and vehicle service stations, banks, and a car dealership. White Plains Road (Route 119) is another major roadway in the area and is lined with commercial uses and office parks.

Site Location and Context

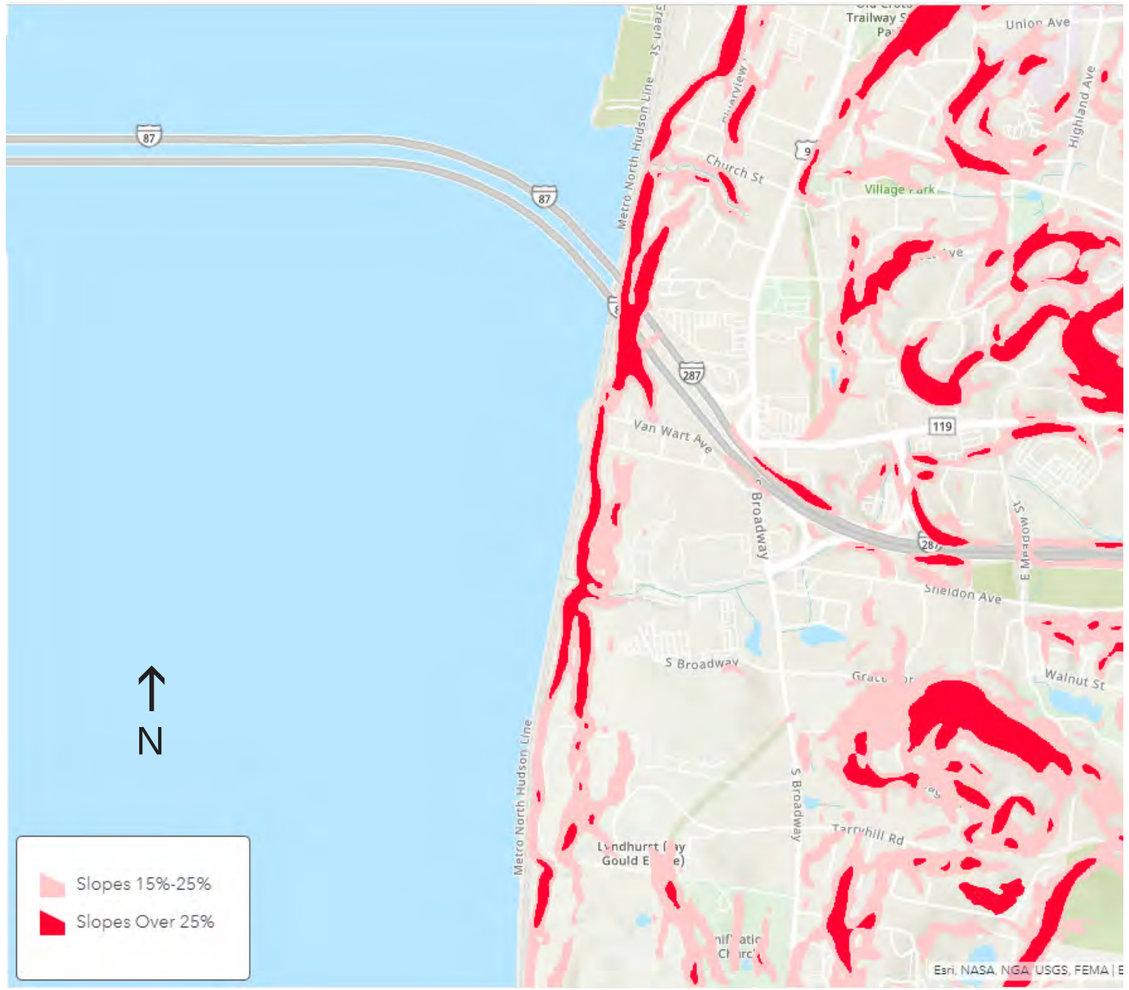
Map of project area (jurisdictions, major roads, bridge, railroad tracks, railroad station). Overview of all the surrounding features (marina, train station, historic estates to south, SUP welcome center, State Police, neighborhoods to be later referenced, JCC, Montefiore property, Route 9 and 119 and highway).



Existing Conditions

There are many challenging existing conditions affecting the design of a new connection for RiverWalk through the site of the GMMCB. The topography is a primary consideration. The bridge is located approximately 110 feet above the railroad bed. To the west of the railroad is the Hudson River with little land between the railroad and the water. The railroad is protected by a riprap slope which may need to be penetrated to support a waterward route. There are minimum separation distances between the railroad and any potential path for safety and operational reasons. On the east side of the tracks, the topography is very steep. At certain points, there is almost a sheer face between the adjacent homes and the railroad below. North of the GMMCB, a significant length of the slope is rock. Residential communities are nestled along the top of the ridge with little space available for a trail. The roads through the residential neighborhoods are steep and not very conducive to shared-use paths.

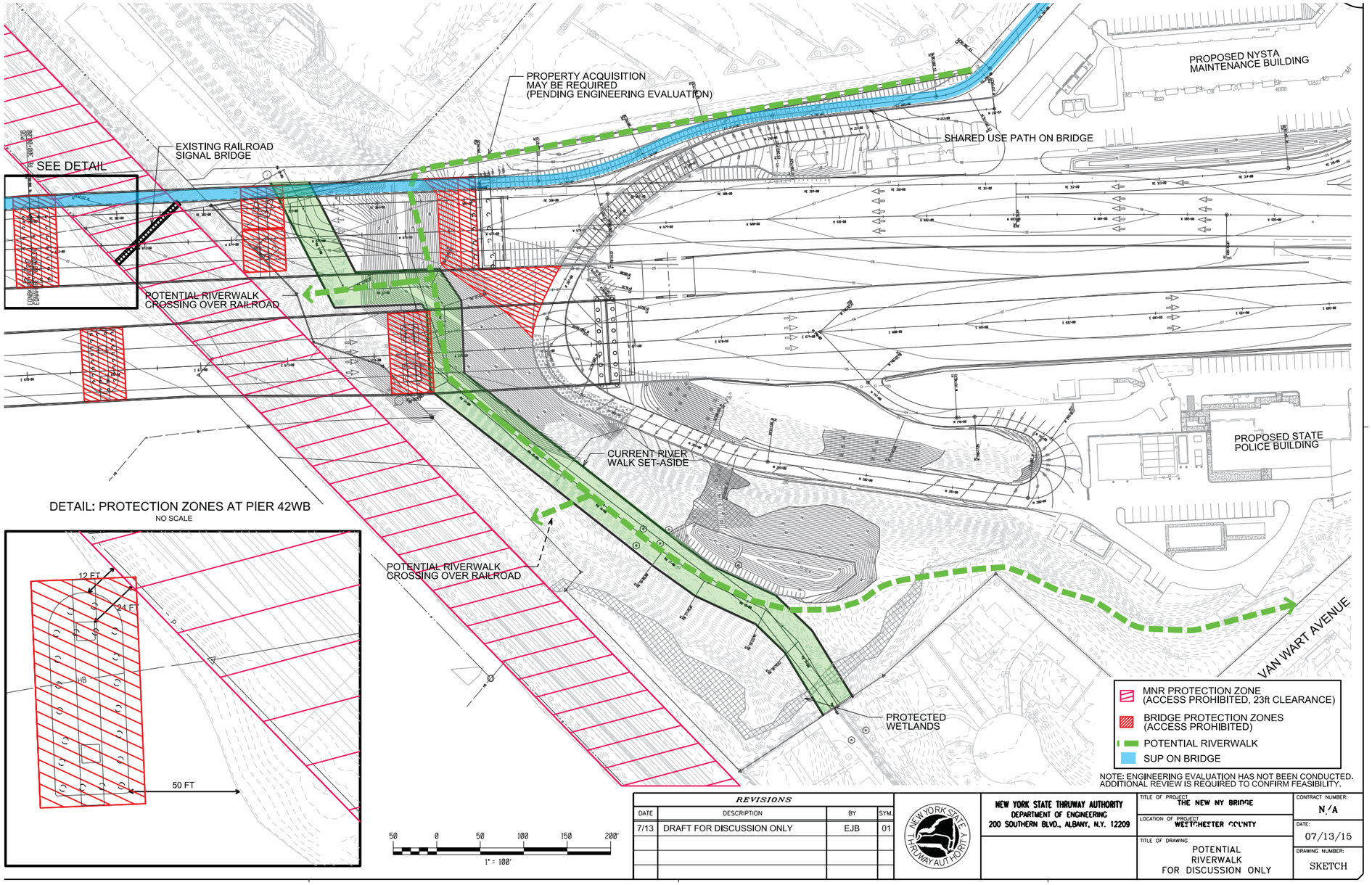
The map below shows the various slopes in the project area. There are significant slopes (over 25%) along the trail route down to the Hudson River.



GIS Map showing slopes in project area

Homeland Security Constraints

The area under the GMMCB is restricted due to Homeland Security reasons as to where the trail could be located. Some of these restrictions are shown on the attached map. These restrictions limit how closely the path can come to the bridge piers. Additionally, the Department of Homeland Security (DHS) will only allow the path to cross once under the bridge. The topography and the restricted amount of available land plays a critical role in trying to develop an accessible trail that can make a connection to the GMMCB Shared-Use Path.



Regional Land Use Plans and Policies

Several regional policy documents guide land use and transportation planning in the area. The FEIS for the TZHRCP and the EA for the SUP determined that the replacement bridge and the SUP would be compatible with these plans, and this EA considers whether the Proposed Action would alter those conclusions. The relevant regional policy documents are summarized below:

- New York Metropolitan Transportation Council (NYMTC), "Plan 2040: A Shared Vision for Sustainable Growth": As the federally designated Metropolitan Planning Organization (MPO) for New York City, Long Island, and the lower Hudson Valley, NYMTC implements a 25-year regional transportation needs and aspirations over the years 2015 to 2040, and covers the major aspects of transportation from a regional perspective, including highways, streets, public transit, ridesharing and demand management, bicycles, pedestrian facilities, goods movement, and special needs transportation.

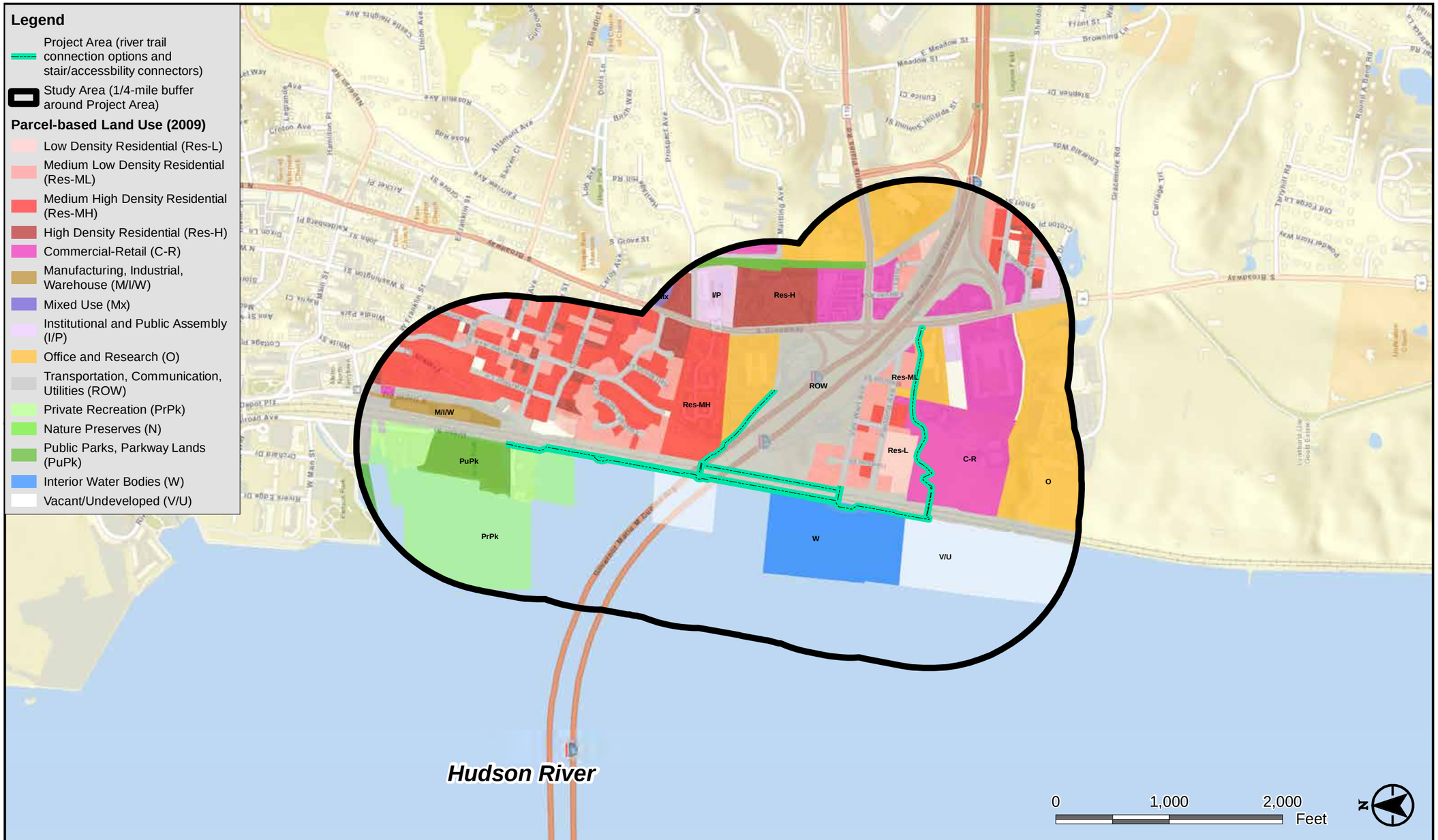
- Hudson River Valley Greenway Act: The Hudson River Valley Greenway Act of 1991 fosters voluntary regional cooperation among the 259 communities and 13 counties of the Hudson River Valley in New York State. The act was created to facilitate the development of a regional planning strategy for preserving important natural and cultural resources, while encouraging compatible economic development. The entire study area is located within the Hudson River Valley Greenway Area. Westchester County and the Village of Tarrytown are all Greenway Communities. In addition, Westchester County, as well as the Village of Tarrytown, have engaged in the Greenway Compact Program, which allows for additional financial and procedural benefits, with adoption of compact plans. The Hudson River Valley Greenway was created in part to establish a network of multi-use trails along both sides of the Hudson River. There are currently several designated Greenway trails and connector trails within the study area, including the RiverWalk and the Old Croton Aqueduct Trail in Westchester County. NYS Bike Route 9 is also part of the Greenway trail system. In addition, the Hudson River Greenway Water Trail extends nearly the full length of the Hudson River.

- Hudson River Valley National Heritage Area (NHA) Management Plan: The Hudson River Valley is an NHA, as established by Congress. The mission of the NHA program is to recognize, preserve, promote, and interpret the natural and cultural resources of the Hudson River Valley for the benefit of the nation. The designation authorizes federal financial and technical assistance to serve these purposes. The Hudson River Valley NHA is managed by the Greenway Conservancy for the Hudson River Valley and the Hudson River Valley Greenway Communities Council.

- Smart Growth Public Infrastructure Policy Act: The New York State Smart Growth Public Infrastructure Policy Act (SGPIPA) was established to ensure that state infrastructure agencies advance projects in a smart growth manner, and that projects are consistent with the Act's 10 smart growth criteria, to the extent practicable and as applicable. NYSDOT and NYSTA have developed policies for complying with the Act, including preparation of a Smart Growth Impact Statement (SGIS). Consistent with these policies, a SGIS has been prepared for the Proposed Action to evaluate compliance with the Act.

Land Use

There is a mix of land uses surrounding the project site. These include residential, commercial retail, and office. The map below shows the extent of these land uses.



RIVERWALK EXTENSION FEASIBILITY STUDY - LAND USE
TARRYTOWN, NY

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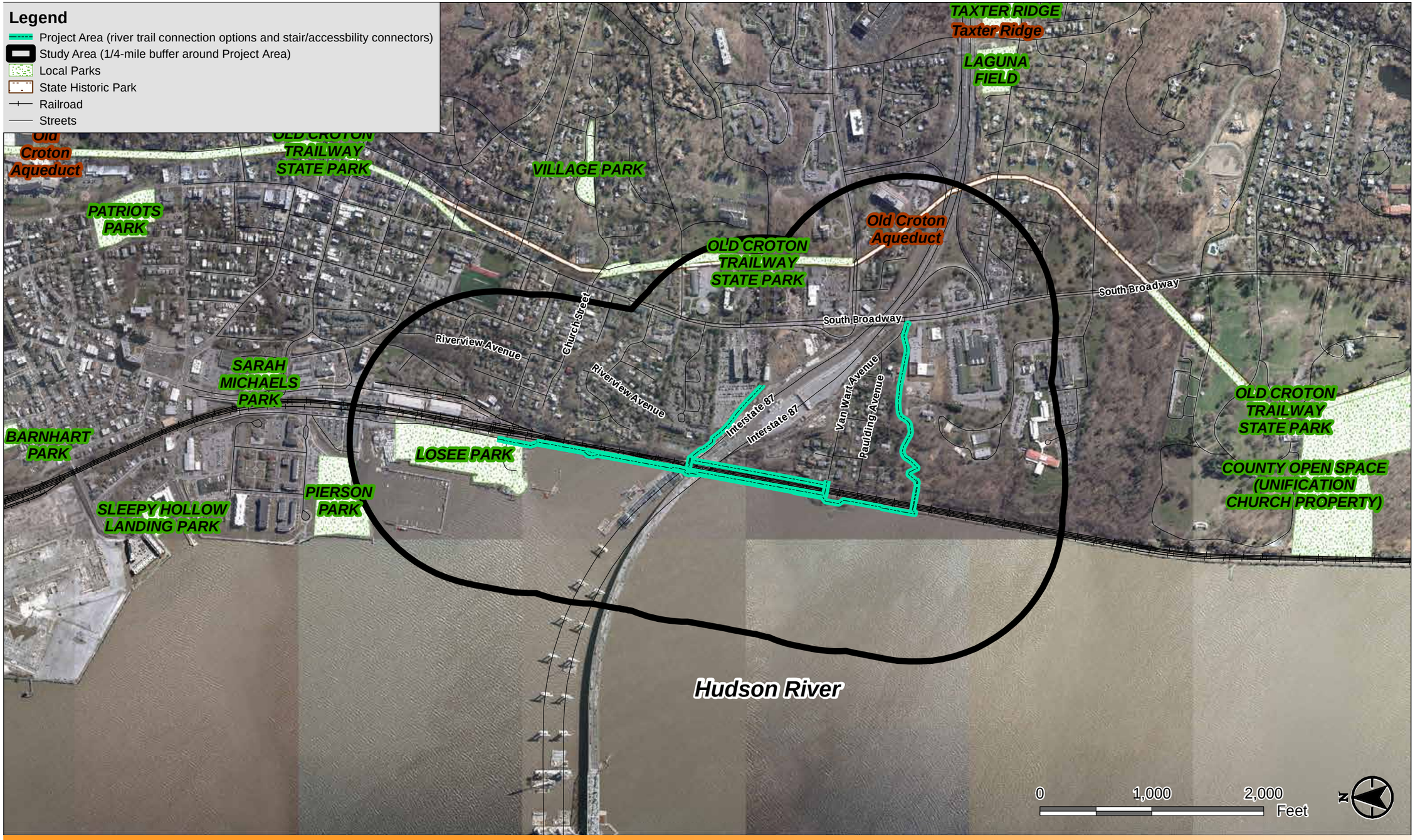


RIVERWALK EXTENSION FEASIBILITY STUDY - MAPPED PARKS

TARRYTOWN, NY

Stantec

Environmental Conditions

The project area and area of impact includes several ecological communities as defined in Ecological Communities of New York State. Different ecological communities are often distinguished based on vegetative or cultural material cover types. Describing a typical west to east transect across the proposed trail corridor, the sequence of ecological zones is as follows:

- Tidal river including shallows which harbor tidal wetlands;
- Riverside sand/gravel bar;
- Riprap artificial shore;
- Railroad right-of-way, terrestrial cultural;
- Rock outcrop/cliff community;
- Upland wooded slope – successional hardwoods;
- Mowed lawn with trees;
- Mowed roadside; and
- Urban structure exterior

The list of ecological communities all involve habitats that have been directly influenced by human activities. There are no ecological communities in the study area that have not been human influenced. The recent completion of the GMMCB and the removal of the former Tappan Zee bridge have contributed to recent disturbances in all of the identified eco-types.

The proposed trail connection, regardless of the alternative route chosen, will involve relatively minor impacts to eco-types given that much of the trail will be elevated on piles with minimal ground disturbance.

Aquatic Resources

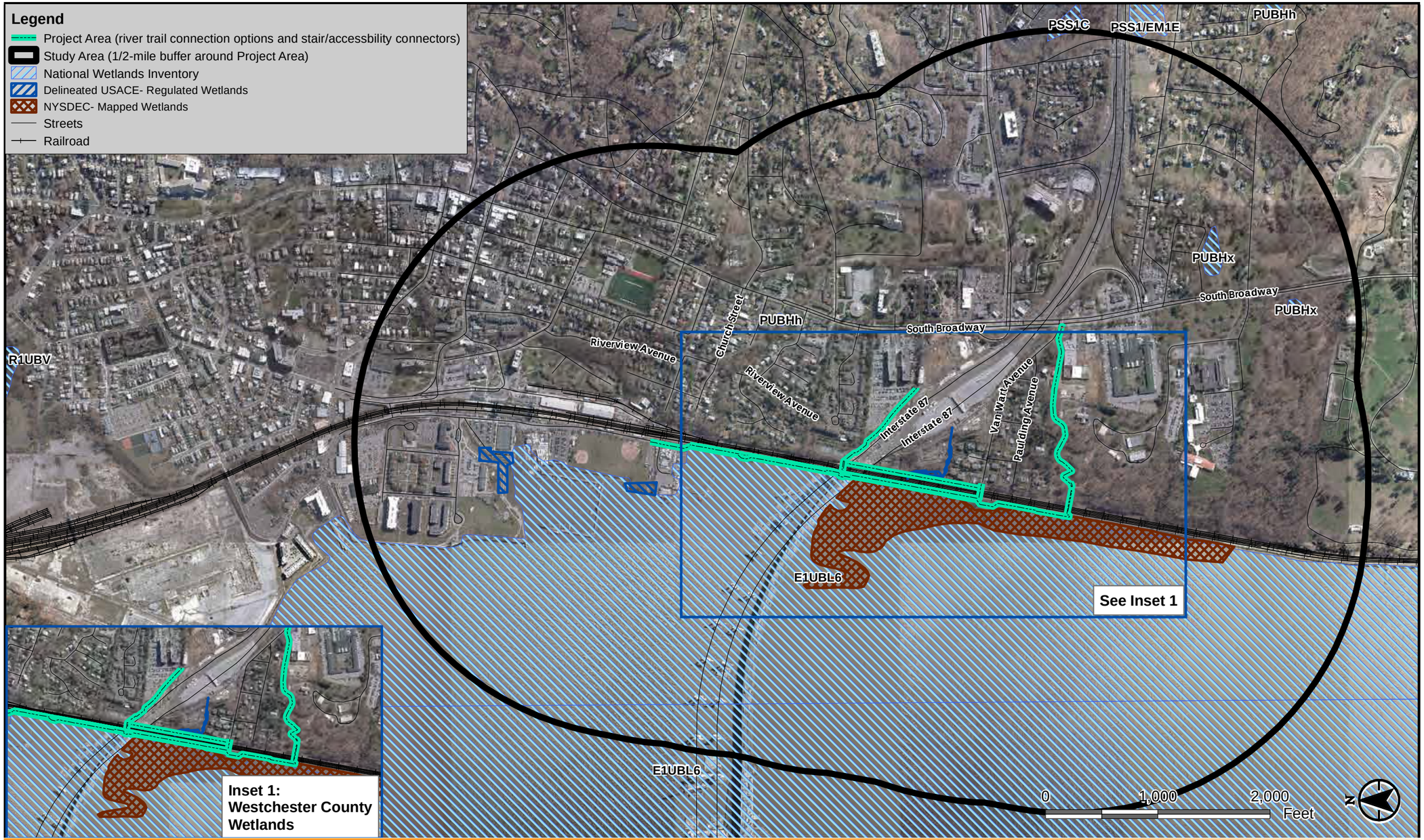
The project area encompasses intertidal and subtidal habitats of varying depths, ranging from shallow intertidal shorelines to shallow subtidal shoals and deeper channel habitats. Along the shorelines, coarse woody and rocky debris provide structural refuge and foraging substrates for fishes. Benthic habitat includes submerged aquatic vegetation and oyster beds as well as unvegetated areas of coarse sandy to fine silty sediments. The navigation channel provides deeper open-water and deep-water benthic habitats. NMFS has identified this region of the Hudson as essential fish habitat (EFH) for 16 federally-managed species, and an attached report provides a comprehensive evaluation of potential project impacts to EFH and EFH fish species (see Appendix F-9). Two federally-endangered fish species occur in this region of the Hudson River--the shortnose sturgeon (Acipenser brevirostrum) and the recently listed Atlantic sturgeon (Acipenser oxyrinchus). The New York Bight Distinct Population Segment (DPS) of the Atlantic sturgeon is known to occur in the Hudson River. Individuals from four other Atlantic sturgeon DPSs in the Atlantic Ocean could also occur in the Hudson River.

Both species forage in this portion of the river as they migrate to and from their upriver spawning grounds far to the north of the former Tappan Zee Bridge. This portion of the river is not used as spawning grounds for either ESA species. Critical habitat has not been designated for shortnose sturgeon and, at this time, no critical habitat has been proposed for any DPS of Atlantic sturgeon. However, NYSDOS has identified several areas in the Hudson River that are essential to shortnose reproduction and survival. These areas are located far north of the project area.

Inputs from freshwater tributaries and tidal exchange create a salinity gradient along the 150 miles of the Hudson River estuary, which is especially dynamic within the former Tappan Zee region. Seasonal variations in temperature and precipitation further influence the salinity regime within this region. At the mouth of the river, salinities approach fullstrength seawater, but with increasing distance upstream from the mouth of the estuary, salinities decrease, with the extent of saline waters usually limited to the Cornwall region (RM 55). The northern portions of the river are fresh, but water levels there remain influenced by tidal fluctuations downstream. The result of tidal exchange in the downstream portion of the estuary and freshwater contribution from upstream and from the surrounding watershed, along with the diversity of aquatic habitats, creates a dynamic ecosystem that provides a range of habitat for marine, estuarine, and freshwater fish species.

Environmental Conditions

New York State Department of Environmental Conservation wetlands are located along a portion of the trail south of the bridge. A U.S. Army Corps of Engineers delineated wetland is located adjacent to the proposed trail. Both of these wetland areas will need to be considered in the design of the trail, making every effort to avoid impact or, if unavoidable, then to mitigate the impact.



RIVERWALK EXTENSION FEASIBILITY STUDY - WETLANDS

TARRYTOWN, NY

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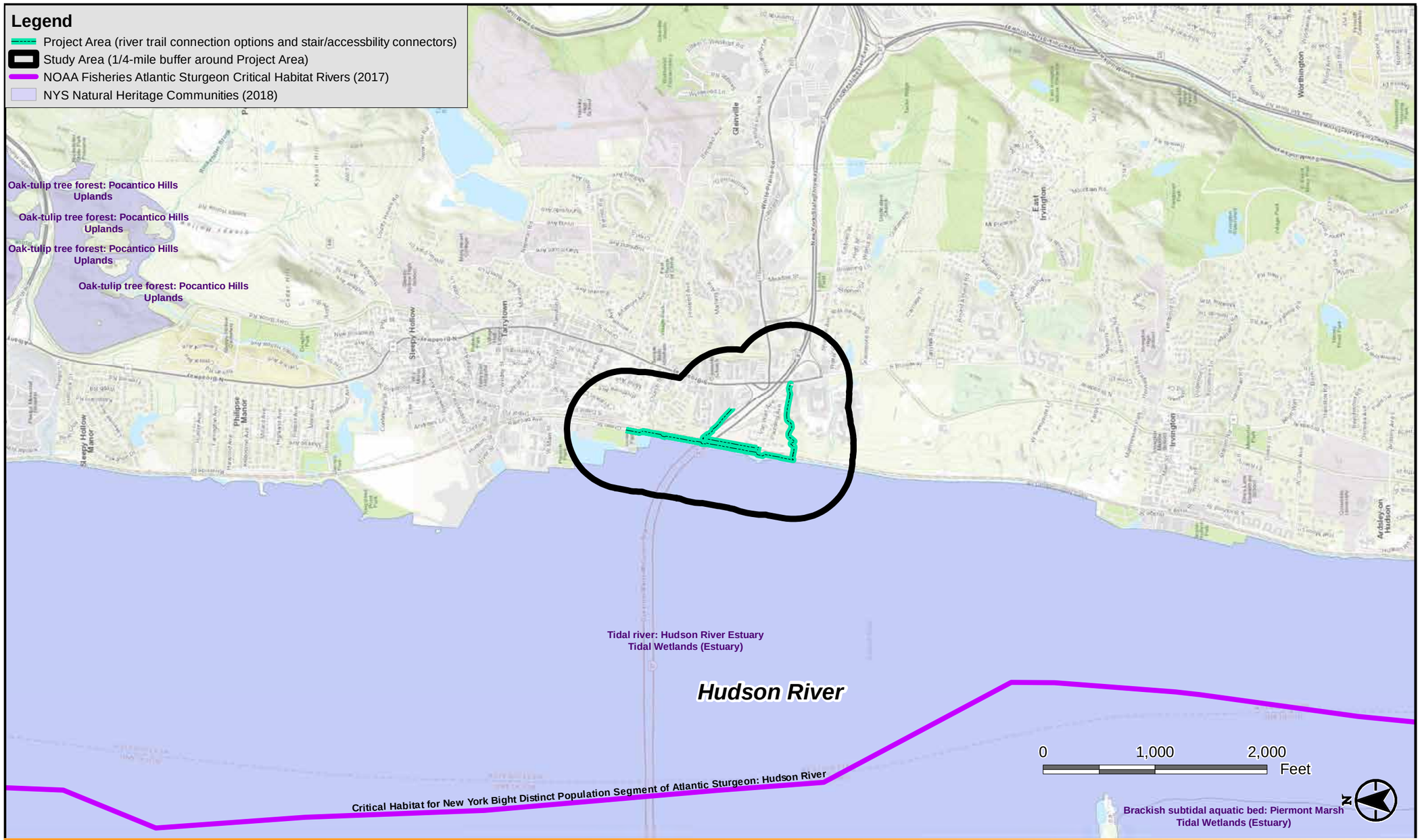
Environmental Conditions

Critical habitats (terrestrial and aquatic)/US Fish and Wildlife Service and New York State Natural Heritage Data Base.



RIVERWALK EXTENSION FEASIBILITY STUDY - FISH/WILDLIFE/NATURAL HERITAGE
TARRYTOWN, NY

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Flooding and Design Implications of Sea Level Rise

The table below indicates the anticipated sea level rise for the New York City Lower Hudson River Region. For the study, it was determined to use the high projection for 2050s, 30 inches, as the bench mark. New bridges over Metro-North were conceptualized with this increase in height.

Time Interval	Low Projection	Low-Medium Projection	Medium Projection	High-Medium Projection	High Projection
2020s	2 inches	4 inches	6 inches	8 inches	10 inches
2050s	8 inches	11 inches	16 inches	21 inches	30 inches
2080s	13 inches	18 inches	29 inches	39 inches	58 inches
2100	15 inches	22 inches	36 inches	50 inches	75 inches

The trail along the river/railroad is within the AC Flood Zone with a base flood elevation of 7.0.

Coastal Area Management

The project area is located within an area covered by a New York Coastal Management Program (CMP) approved by the Department of State. The federal Coastal Zone Management Act (CZMA) of 1972 was established to encourage coastal states to manage development within their designated coastal areas, and to balance conflicts between coastal development and protection of resources within the coastal zone. CZMA requires that federal actions within a state's coastal zone be consistent with that state's CMP. The New York State Department of State (NYSDOS) administers this program in New York. The state's CMP encourages coordination among all levels of government to promote sound waterfront planning and requires consideration of the program's goals in making land use decisions. Thus, the state permits a local government that has any portion of its jurisdiction contiguous to the state's coastal waters to submit a Local Waterfront Revitalization Program (LWRP) to NYSDOS for approval. The Village of Tarrytown has not adopted local waterfront revitalization plans.

Actions within the designated NYS Coastal Zone are assessed for consistency with state and federal coastal policies as enumerated in the NYS Coastal Management Program. The development of the RiverWalk expansion is consistent with the following coastal policies:

Policy 1 - Restore, revitalize, and redevelop deteriorated and underutilized waterfront areas for commercial, industrial, cultural, recreational, and other compatible uses. Specifically, the trail extension will develop recreational activities at the waterfront.

Policy 19 - Protect, maintain, and increase the level and types of access to public water related recreation resources and facilities. The expanded Riverwalk will increase access to the existing shoreline parks, Lossee Park, and Pierson Park as well as providing views and access not currently available to the public due to the Metro-North Railroad which prohibits egress over the tracks. The Riverwalk expansion will provide safe access over the railroad via an elevated trail section.

Policy 20 - Access to the publicly-owned foreshore and to lands immediately adjacent to the foreshore or the water's edge that are publicly-owned shall be provided, and it shall be provided in a manner compatible with adjoining uses. Elements of the proposed RiverWalk will be located immediately along the Hudson River shore. The Riverwalk expansion will also increase the pedestrian and bicycling accessibility of existing shorefront parks.

There are no established coastal policies for which the project is expected to be inconsistent.

Hazardous Materials

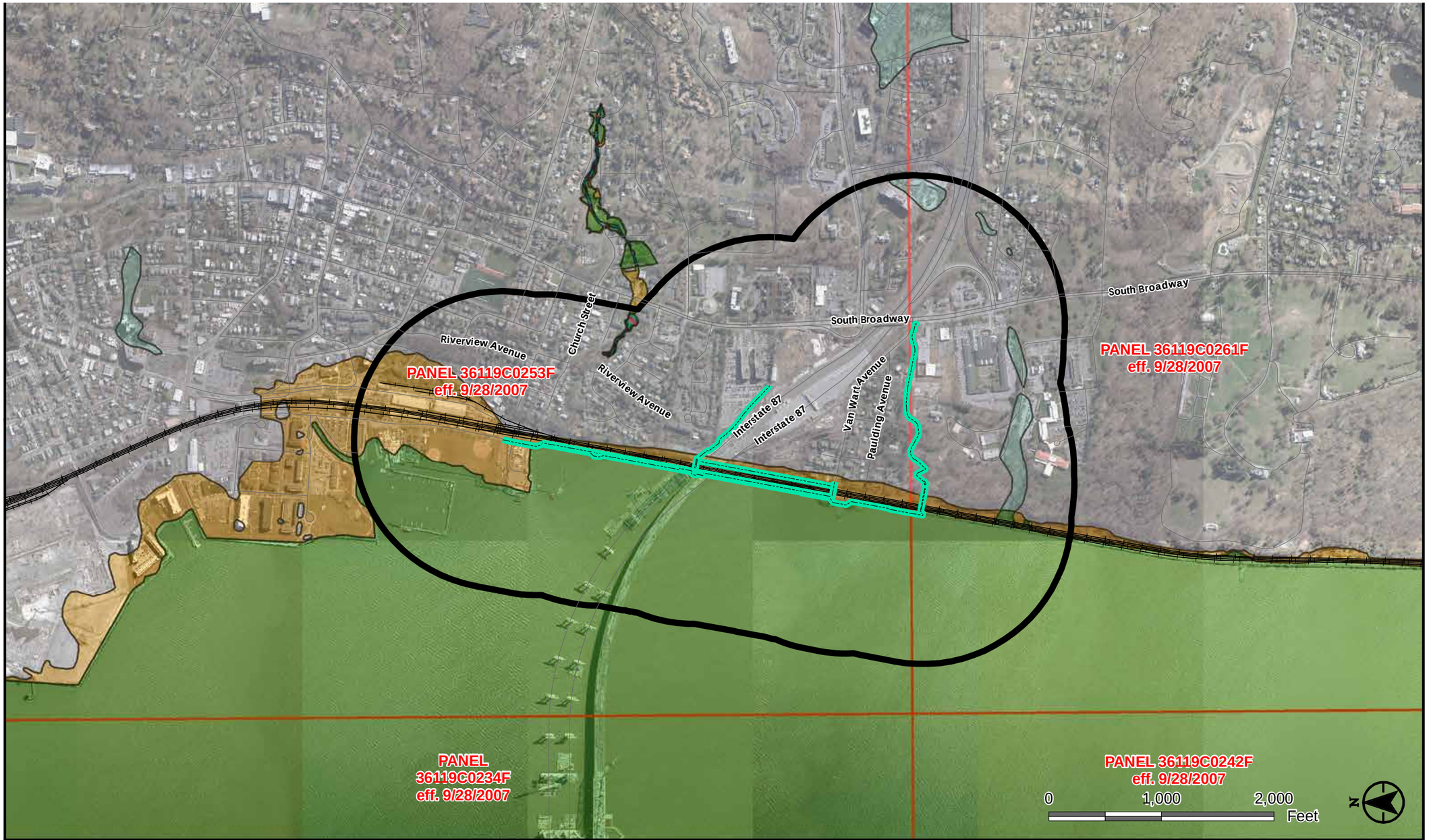
In 2012, a Phase II ESA was conducted as part of the bridge project to investigate potential impacts from petroleum spills and nearby chemical usage identified in the Hazardous Materials Review. The investigation included soil samples and groundwater samples from 36 boring locations in Tarrytown. The investigation identified the following:

- Encountered soils included urban fill consisting of varying amounts of sand, silt, gravel, brick, asphalt, glass, plastic, wood, and ash at depths ranging from 2-5 ft bgs in most areas investigated and down to as deep at 20 ft bgs at locations close to the bridge.
- Soil sample results detected PCE in two soil samples at levels below the NYSDEC UUSCO. SVOCs and metals were detected in 34 samples in Tarrytown, and above the UUSCOs in 6 samples in the Project Area. Only benzo(a)pyrene, a SVOC commonly associated with urban fill exceeded the NYSDEC Part 375 Restricted Use Commercial Soil Cleanup Objectives in 4 samples. Barium exceeded the NYSDEC Part 375 Restricted Use Commercial Soil Cleanup Objectives in 2 samples, and arsenic levels were exceeded at one in the Project Area. PCBs were detected below the UUSCOs in one sample, and pesticides were also detected above UUSCOs in two. Overall, the analytical results were typical of urban fill materials and historic pesticide applications, except the PCE detections which are believed to be related to a nearby dry-cleaner.
- Groundwater samples detected CVOCs in four samples from Tarrytown. Two of the samples collected near the NYSTA maintenance facility and former police barracks exceeded the NYSDEC GA Ambient Water Quality Standards. The concentrations of compounds which exceeded the groundwater standards were higher upgradient of the maintenance facility and barracks, suggesting an off-site source of the contamination. Metals were detected in some Tarrytown wells exceeding the respective AWQS in only unfiltered samples. Pesticides were also detected in Tarrytown two wells. PCBs were not detected in the groundwater samples. The presence of SVOCs, metals, and pesticides were attributed to the presence of urban fill material and suspended sediment in groundwater. Metals were attributed to the potential for brackish water due to proximity to the Hudson Rover, and landscaping activities were identified as a potential source for pesticides.

The Project Area is in the Lower Hudson River section of the Hudson River PCBs site. The Hudson River PCBs site is a Federal National Priorities List (NPL) Site covering over 200 miles of the Hudson River. The Lower Hudson River section runs from the Federal Dam at Troy to the southern tip of Manhattan at the Battery in New York City. River and shoreline sediment in the Lower Hudson River section were evaluated for PCBs by the USEPA. That evaluation led to a 2002 Record of Decision which determined that the sediments did not require remediation. However, although PCB concentrations in the Lower Hudson River sediment were below concentrations requiring remediation, there is the potential for PCB-containing sediment to be encountered during project construction activities. Given the potential for project construction activities to occur within the Hudson River, the potential to encounter sediment containing PCBs at concentrations that exceed NYSDEC regulatory limits for management and reuse or disposal of construction-derived fill material or other potentially applicable regulatory criteria is considered a REC.

Flood Hazard Map

The map below shows the current flood hazard areas within the project area and vicinity of the project.



RIVERWALK EXTENSION FEASIBILITY STUDY - FLOOD HAZARD
TARRYTOWN, NY

Stantec

6. TRAIL DESIGN GUIDELINES AND STANDARDS

Design guidelines and standards for the proposed project include the following:

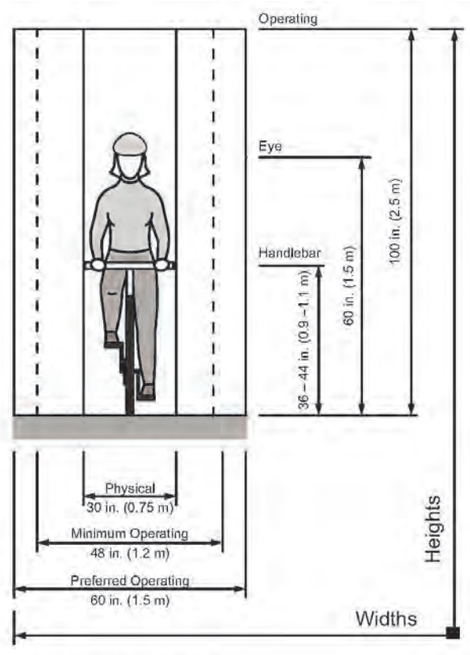
AAASHTO

Federal Standards

The federal standards used in the design includes the following:

- Federal Highway Admin., Manual on Uniform Traffic Control Devices, 2009, R1 and R2 (and any supplemental updates)
- Americans with Disabilities Act of 1990 (and any supplemental updates)
- Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (and any supplemental updates)

The adjacent section shows the typical bicyclist operating space recommended by the AASHTO design manual. The recommended vertical operating height is 8'-4" (100"). The minimum operating clearance (horizontal clearance) for a bicycle is 48" with 60" as the preferred operating width. This operating envelope was used as the criteria in designing the proposed shared-use path. The proposed width of the greenway was established as 10 feet.



ADA Criteria

In order to provide an ADA accessible path, the longitudinal grade cannot exceed 1:20 (5%) to eliminate the need for handrails. The path can be steepened to 1:12 (8.33%) slope provided that for every 30" in rise, there is a 5' minimum landing. This grade would require handrails.

NYSDOT Guidelines for Bicycle/Pedestrian Facilities

According to the NYSDOT Highway Design Manual, "bicycling is a reasonable, legitimate and increasingly significant mode of transportation in New York State". The Department's policy is to consider bicyclists as an integral part of our intermodal transportation systems. By improving the ability to move people and goods in the most efficient means possible, we help to realize the Department's air quality, mobility, safety and cost effectiveness goals.

Chapter 17 of the New York State Department of Transportation Highway Design Manual (HDM) provides guidance for the design of bicycle facilities.

Two-way bicycle paths should be at least 3 meters wide. The edges of narrower paths quickly deteriorate as a result of weathering and wear by maintenance, police and emergency service vehicles.

While bicycle paths are not necessarily designed as shared-use paths, they should desirably be 3.6 meters wide when there is the expectation of unintended use by pedestrians and others. Consideration should also be given to providing additional width where there are steep grades

Bridge railing heights on bicycle paths and shared-use paths should be a minimum of 1.4 meters. Railing heights at other locations along bicycle and shared-use paths where railings are considered necessary or appropriate should also be 1.4 meters (see Fig. 17-7). There are no specific warrants for installing railings other than on bridges. Designers should exercise professional judgment and should consider the steepness and height of drop-offs adjacent to paths, their lateral distance from the path, their surfaces (e.g., rock slopes, etc.), whether they are on the outside of horizontal curves (especially at downgrades), etc. Railing heights on highway bridges that also include bicycle lanes or designated bicycle routes should also be 1.4 meters. Designers should also consider using 1.4 meters high railings on highway bridges that do not have bicycle lanes or designated bicycle routes, but do have more than occasional bicycle traffic, especially if a significant amount of that use comes during concentrated periods of time. (Railings designed to provide protection for bicyclists should not have vertical balusters that could snag bicycle pedals.) Railing designs comprising horizontal rails without (or with setback) balusters may be used in these instances.

Specific accessibility standards for recreational facilities, including recreational walkways, have not been adopted. However, it is established that the ADA affects these kinds of facilities. In general, recreational walkways and shared-use paths must be made as accessible as feasible. The current ADAAG requirements should be considered as minimum requirements for design. Departures from ADAAG's minimum requirements should only be made where it is infeasible or inappropriate to strictly apply them. Considerations include the nature and extent of development surrounding a recreational walkway or shared-use path (i.e. urban, suburban, rural, undeveloped or wilderness), distance between access points, nature of the terrain, etc.

American with Disabilities Act (ADA)

The clear width of a ramp run and, where handrails are provided, the clear width between handails shall be 36 inches minimum.

The rise for any ramp run shall be 30 inches maximum. Ramps shall have landings at the top and the bottom of each ramp run. Circular or curved ramps continually change direction. Curvilinear ramps with small radii also can create compound cross slopes and cannot, by their nature, meet the requirements for accessible routes.

Changes in level are not permitted. EXCEPTION: Slopes not steeper than 1:48 shall be permitted. The landing clear width shall be at least as wide as the widest ramp run leading to the landing. The landing clear length shall be 60 inches long minimum. Ramps that change direction between runs at landings shall have a clear landing 60 inches minimum by 60 inches minimum. Ramp runs with a rise greater than 6 inches shall have handrails complying with 505. EXCEPTION: Within employee work areas, handrails shall not be required where ramps that are part of common use circulation paths are designed to permit the installation of handrails complying with 505. Ramps not subject to the exception to 405.5 shall be designed to maintain a 36-inch minimum clear width when handrails are installed.

NYSDOT Clearance Requirements

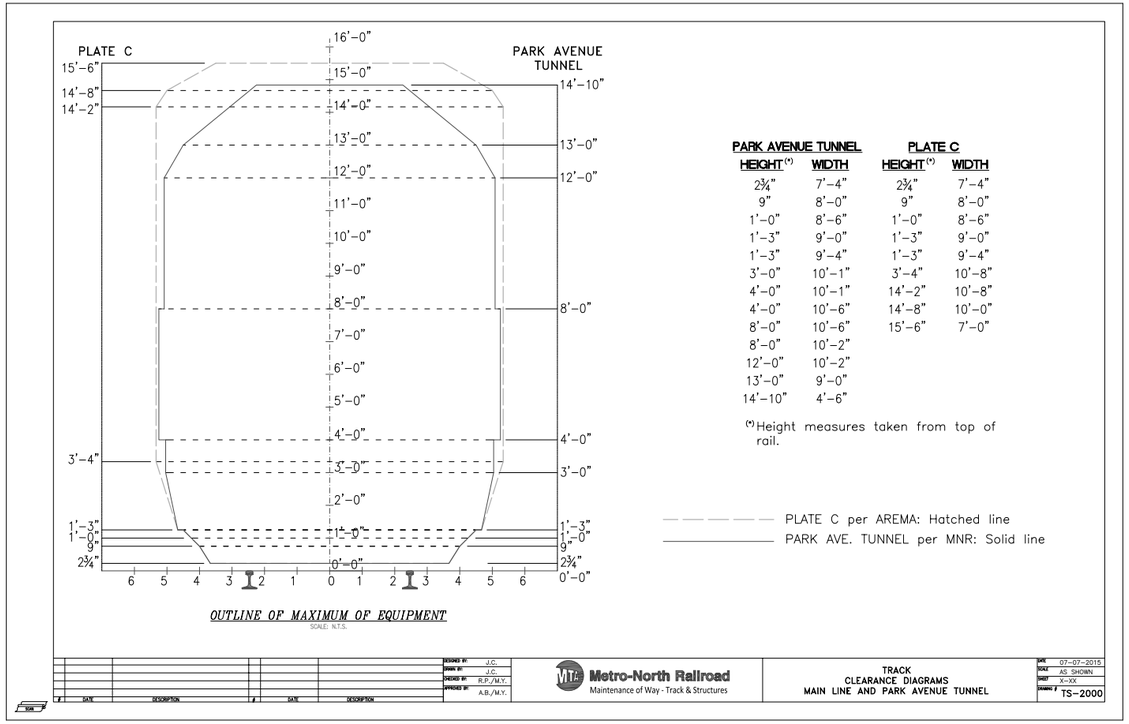
The standard minimum vertical clearance above operating mainline railroad tracks shall be 22 feet. On occasion, a higher clearance may be justified for certain corridors where existing clearances are higher. For track other than mainline and where clearance is restricted by other bridges, a minimum less than 22 feet may be allowed. Vertical clearances over superelevated railroad tracks may need to be increased because of the effect of the superelevation. Because of superelevation, the clearance diagram is rotated so that its base is on a plane passing through both rails. The necessary increase in vertical clearance is small but needs to be accounted for.

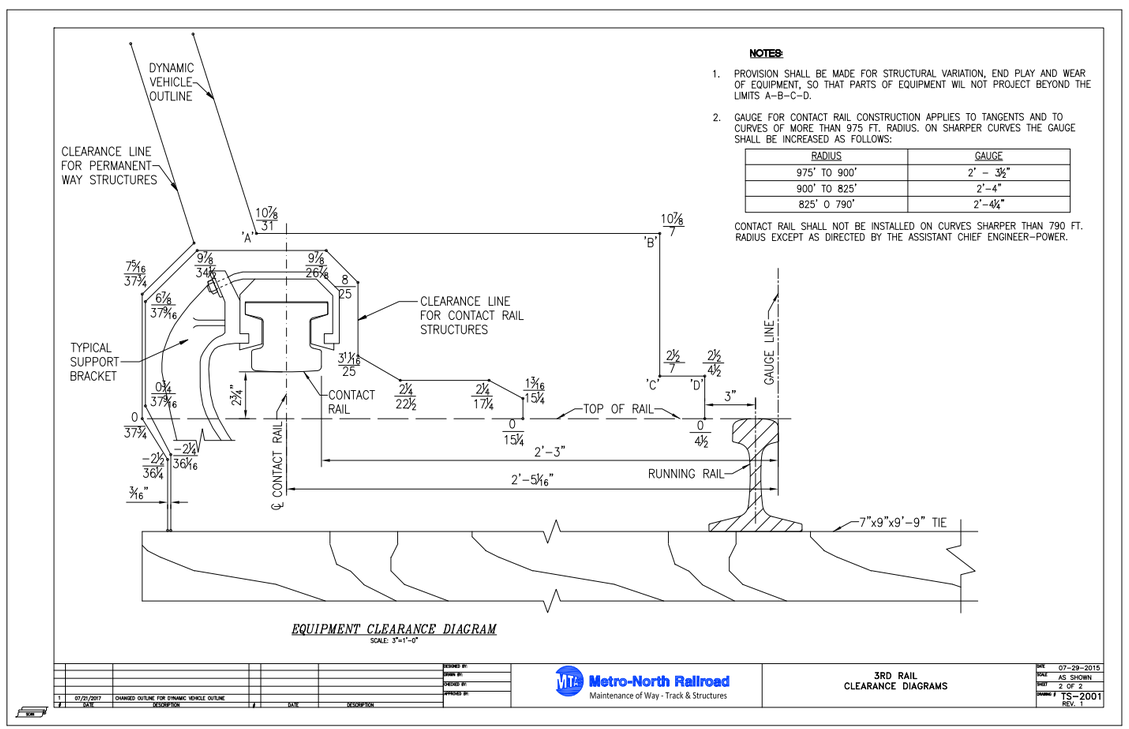
Metro-North Railroad Clearance Requirements

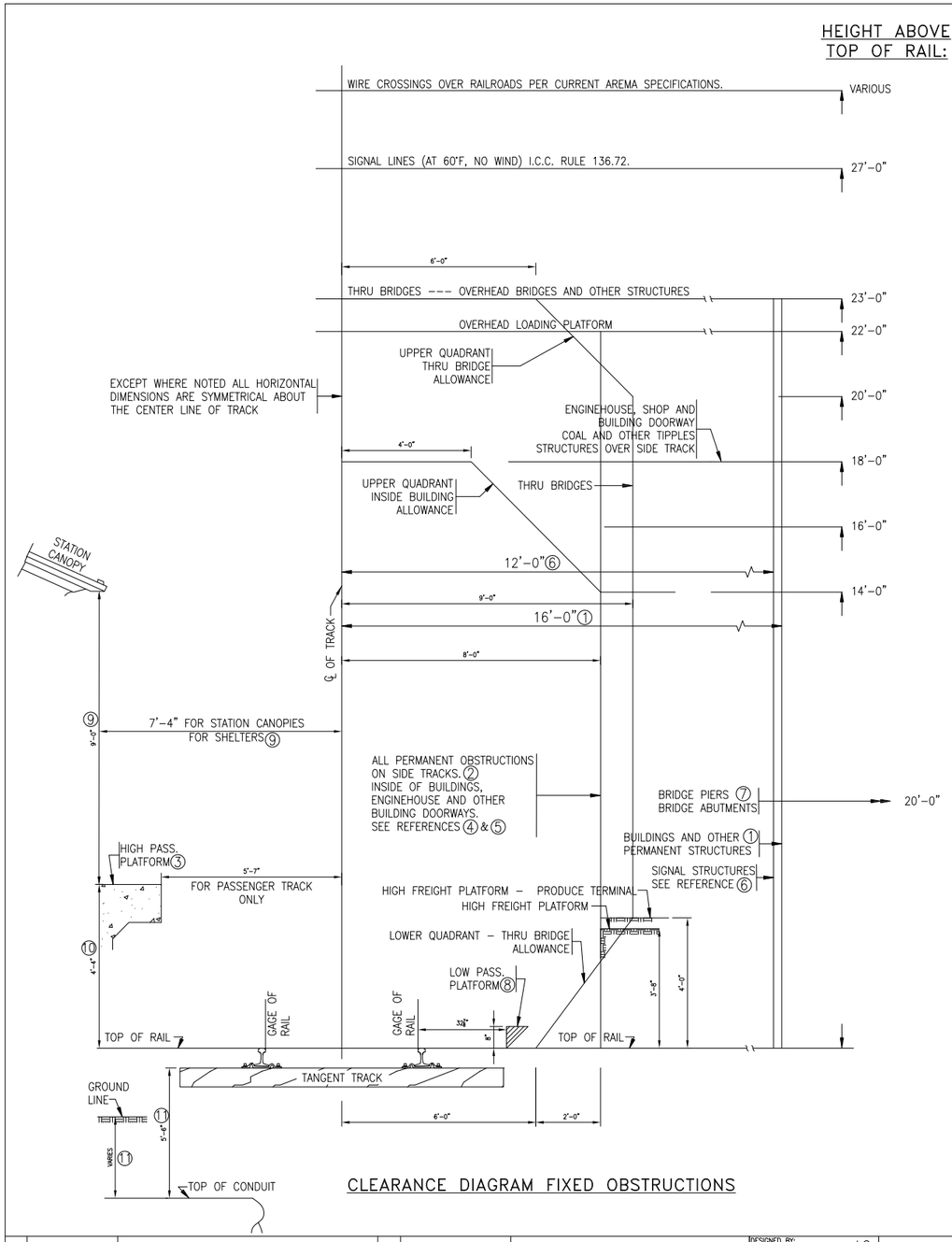
Based on discussions with Metro-North Railroad and the attached figures (Drawings TS-2000 and TS-2001, Rev 1 and TS-2001, Rev 3), the proposed minimum vertical clearance over the railroad is 23'-0". The proposed crossings will provide this minimum clearance. A minimum horizontal clearance of 15'-0" with a minimum 8'-0" non-scalable fence will be provided along the railroad waterfront.

Westchester County RiverWalk Design Guidelines

Following the Metro-North Railroad clearance figures/drawings are the Westchester County RiverWalk Design Guidelines. The design of trails adjacent to the railroad and the design of trails along the waterfront are shown, along with trail construction material recommendations and RiverWalk directional and interpretive signage.







CLEARANCE DIAGRAM FIXED OBSTRUCTIONS

GENERAL NOTES:

1. ON MAIN RUNNING TRACKS, WHERE PRACTICABLE, A LATERAL CLEARANCE OF 18'–0" INSTEAD OF 16'–0" IS DESIRED.
2. ON PRIVATE SIDE TRACKS THE STANDARD CLEARANCE TO PLATFORMS OF 8'–0" TO BE OBTAINED IF POSSIBLE. WHERE THE INDUSTRY DEMANDS A LESS THAN STANDARD CLEARANCE FOR PLATFORMS, A MINIMUM OF 6'–6" FOR CENTER LINE OF TRACK MAY BE USED, SUBJECT TO STATE APPROVAL WHERE REQUIRED, ON ONE SIDE OF SUCH TRACK ONLY, PROVIDED A FULL 8'–6" CLEARANCE IS MAINTAINED ON THE OPPOSITE SIDE OF TRACK, OR TRACK CENTERS TO ADJACENT TRACKS ARE NOT LESS THAN 14'–0".
3. HIGH PASSENGER PLATFORMS
   (i) UNLESS AUTHORIZED BY THE CHIEF ENGINEER–MAINTENANCE OF WAY FOR ANY MODIFICATIONS HIGH PASSENGER PLATFORMS MUST NOT BE CONSTRUCTED ON TRACK HAVING CURVATURE IN EXCESS OF 1°–40' OR WHERE SPEED REQUIRES ELEVATION OF OUTER RAIL IN EXCESS OF 1".
   (ii) HIGH–LEVEL PLATFORMS WILL NOT BE CONSTRUCTED ADJACENT TO ANY FREIGHT ONLY TRACKS OR FREIGHT/PASSENGER JOINT TRACKS WITHOUT APPROVAL FROM CHIEF ENGINEER–MAINTENANCE OF WAY.
4. FOR SIDE CLEARANCE TO HANDRAILS OR BRIDGES, TRESTLES AND TURNTABLES SEE APPROPIATE STANDARD PLANS.
5. STATE CLEARANCE REQUIREMENTS AT VARIANCE WITH DIMENSIONS SHOWN ON THE PLAN ARE PROVIDED BELOW:

STATE	GENERAL CLEARANCES		INSIDE BUILDINGS & LOCATION DOORWAYS	
	HORIZONTAL	VERTICAL	HORIZONTAL	VERTICAL
CONNECTICUT	8'–6"	22'–6"	8'–0"	22'–6"
NEW YORK	8'–6"	22'–0"	8'–0"	22'–0"

6. SIGNAL MASTS WILL BE A MINIMUM OF 12'–0" FROM CENTERLINE OF TRACK.
7. BRIDGE PIERS AND ABUTMENTS TO BE MINIMUM OF 20'–0" FROM CENTERLINE OF TRACK ON TANGENTS AND INSIDE OF CURVES, AND 21'–0" ON OUTSIDE OF CURVES WHERE 10' ROADWAY IS PROVIDED.
8. MINIMUM CLEARANCE NEEDED TO CLEAR THIRD RAIL SHOES ON PASSING EQUIPMENT ARE PROVIDED IN THE DRAWING.
9. FOR HIGH AND LOW LEVEL PASSENGER PLATFORM CANOPY HEIGHT AND SHELTER LOCATION, REFER TO THE LATEST MNR STATION STANDARDS AND GUIDELINES.
10. PLATFORM HEIGHT CAN BE REDUCED TO 4'–2" ON SOME STATIONS WITH THE APPROVAL OF THE CHIEF ENGINEER–MAINTENANCE OF WAY.
11. FOR DEPTH OF CONDUIT BELOW TRACKS OR ALONG THE ROW, REFER TO THE LATEST MNR STANDARD SPECIFICATIONS FOR PIPELINE OCCUPANCY.
12. MINIMUM CLEARANCES ON CURVED TRACK SHALL REFER TO THE LATEST MW–4 MANUAL FOR GUIDANCE.

#	DATE	DESCRIPTION	#	DATE	DESCRIPTION
3	09/10/2020	UPDATE PLATFORM CANOPY, SHELTER AND PLATFORM HT.			
2	01/23/2019	FORMATTING			
1	07/21/2017	CHANGED VERTICAL CLEARANCE FOR STATE OF NY			

DESIGNED BY:	J.C.
DRAWN BY:	J.C.
CHECKED BY:	R.P.
RECOMMENDED BY:	D.S.
APPROVED BY:	M.Y.

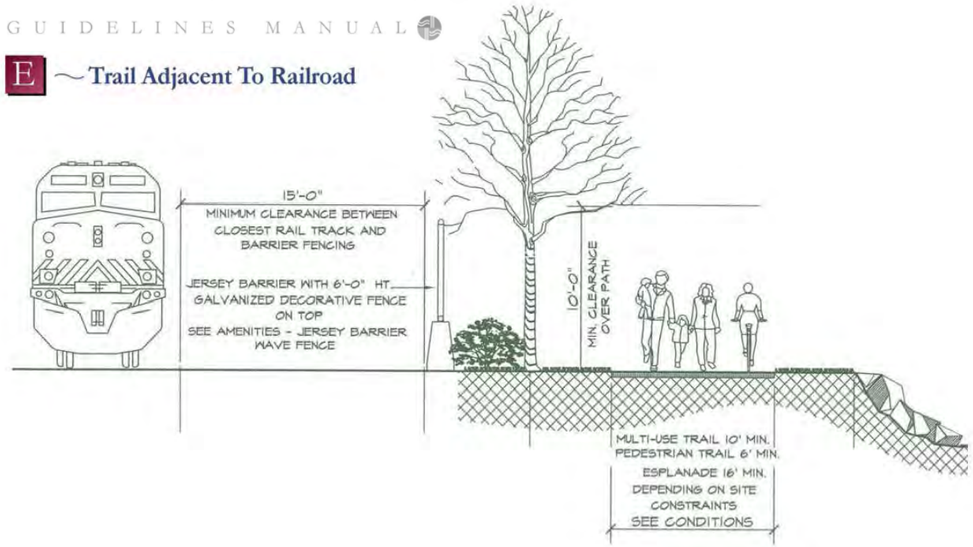
MTA Metro-North Railroad
Maintenance of Way - Track & Structures

MINIMUM ROADWAY CLEARANCE

DATE	08–13–2015
SCALE	N.T.S.
SHEET	1 OF 2
DRAWING #	TS–2001
REV. #	REV. 3

(REF.: CONRAIL 70051–G)

E ~ Trail Adjacent To Railroad



RIVERWALK STANDARDS FOR CATEGORIES OF TRAILS — TABLE E

Trail Adjacent To Railroad

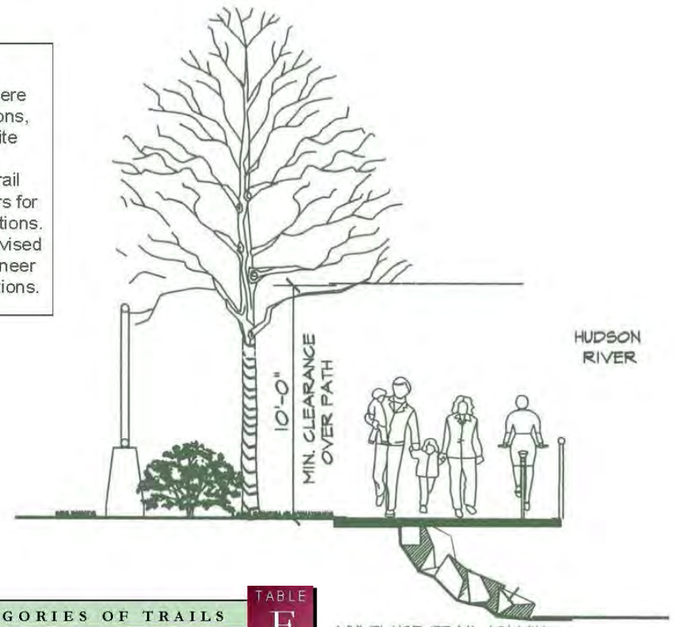
feature	standard	comments
Trail Width	Multi-use Trail: 10' min. Ped. Trail : 6' min. Esplanade: 16' min.	• Use of trail will be determined by available width based on site conditions
Width Clearance	Min. 5'- 0" from outside edge of trail to any object	• Clearance to all fixed objects, such as fences, poles, signs, benches, parked cars & top of slope at water's edge
Special Width Clearances	15' min. clearance between closest rail track and barrier with fencing	• Or, as per rail carrier requirements
Height Clearance	10'-0" Ht. clearance from finished grade	• Clearance to all overhead elements such as tree limbs, signs, lighting, wires, etc.
Cross-slope Pitch	2% Min. & Max. Cross-pitch slope	• If trail is to be crowned for grading and drainage purposes, the max. & min. slope shall be 2% from centerline of trail
Longitudinal Slope	5% Maximum	• If the slope adjacent to the trail is greater than 5%, the trail may be aligned in a curved manner to achieve 5% max. slope
Surface Material	Shall be an impervious material, asphalt, concrete, concrete or asphalt pavers	• See Amenities Section
Barriers	Provide Jersey Barrier with 6'-0" ht. galvanized fence on top	• See Amenities Section for fencing requirements
Curbing	There shall be no curbing along the edge of the trail unless an adjacent slope warrants curbing	• The trail is to be flush with adjacent land. There shall be no trip hazard between the trail and adjacent land. • Curbing shall be used only to stabilize adjacent slopes
Trail Border or Edge		• Edging material may be brick, precast concrete pavers, flagstone or granite. • Passage area must be 10' minimum not including border or edging

Westchester County RiverWalk Design Guidelines

GUIDELINES MANUAL

F ~ Trail With Limited Land Area

NOTE:
For this trail, there are different options, depending on site conditions.
A cantilevered trail or a deck with piers for support are two options. The designer is advised to consult an engineer to evaluate the options.



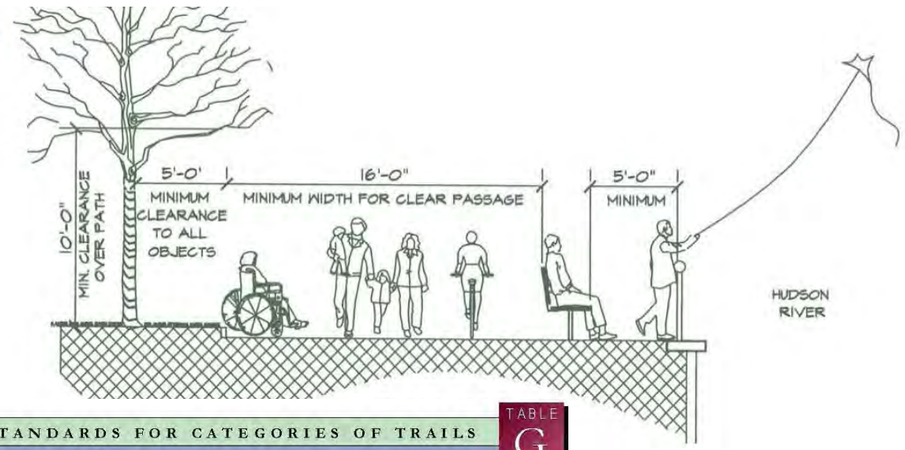
RIVERWALK STANDARDS FOR CATEGORIES OF TRAILS — TABLE F

Trail With Limited Land Area

feature	standard	comments
Trail Width	Ped. Trail: 6' min. Multi-use Trail : 10' min. Esplanade: 16' min.	• Use of trail will be determined by available width based on site conditions, engineering, and cost evaluations
Width Clearance	Varies depending on type of trail, site conditions and adjacent uses	
Height Clearance	10'-0" Ht. clearance from finished grade	• Clearance to all overhead elements such as tree limbs, signs, lighting, wires, etc.
Cross-slope Pitch	2% Min. & Max. Cross-pitch slope for any material	• If trail is to be crowned for grading and drainage purposes, the max. & min. slope shall be 2% from centerline of trail
Longitudinal Slope	5% Maximum	
Surface Material	Shall be an impervious material, or decking of wood, synthetic material or steel grating	• See Amenities Section
Barriers	Railing to be provided if trail is more than 18" above grade	• See Amenities Section
Curbing	Curbing of wood, synthetic material, or steel is to be provided per ADA if railing needed	
Lighting	Height and distance between poles to be established on a case by case basis	
Miscellaneous	Benches, waste containers, planters, etc. to be located on a case by case basis	

GUIDELINES MANUAL

G ~Esplanade



RIVERWALK STANDARDS FOR CATEGORIES OF TRAILS — TABLE G

Esplanade

feature	standard	comments
Trail Width	16' minimum	• Where additional uses and amenities are to be provided, trail width must be increased to allow 16' to remain for passage of users
Width Clearance	Min. 5'- 0" from outside edge of trail to any object	• Clearance to all fixed objects, such as fences, poles, signs, benches, parked cars & top of slope at water's edge
Special Width Clearances	On a case by case basis, based on various site constraints	• Site constraints include steep slopes, distance from railroad, proximity to water's edge & situations where barriers are not feasible or desired
Height Clearance	10'-0" Ht. clearance from finished grade	• Clearance to all overhead elements such as tree limbs, signs, lighting etc.
Cross-slope Pitch	2% Min. & Max. Cross-pitch slope	• If trail is to be crowned for grading and drainage purposes, the max. & min. slope shall be 2% from centerline of trail
Longitudinal Slope	5% Maximum	• If the slope adjacent to the trail is greater than 5%, the trail may be aligned in a curved manner to achieve 5% max. slope
Surface Material	Impervious material: concrete, asphalt or con-crete pavers, flagstone, granite, or decking	• Asphalt is not to be used for Esplanades. • See Amenities Section, page 60
Railing	Railing or other barriers are provided in specific situations of need	• Adjacent slope or water level more than 1:3 slope • Adjacent road and or parking is less than 5' distance • Adjacent railroad • Unattractive or potentially unsafe condition
Curbing	There shall be no curbing along the edge of the trail unless an adjacent slope warrants curbing	• The trail is to be flush with adjacent land. • There shall be no trip hazard between the trail and adjacent land. • Curbing shall be used only to stabilize adjacent slopes
Trail Border or Edge	Border may be provided to add visual interest; all pavement must be flush	• See Amenities Section
Lighting	Height and distance between poles to be established on a case by case basis	• See Amenities Section
Miscellaneous	Benches, waste containers, planters, etc. to be located on a case by case basis	• See Amenities Section

GUIDELINES MANUAL

STANDARD AMENITIES

SURFACE MATERIALS

Asphalt Pavement

Asphalt top course shall be 1 1/2" depth and type 6 (F) Item 403.7-1 as specified in Table 401-1 "Composition of Bituminous Plant Mixtures" of the NYSDOT Standard Specifications dated January 1990 and any subsequent addenda.

The base course material used shall be 3" depth Base Course Type 3 Item no. 403.13 as specified in table 401-1 "Composition of Bituminous Plant Mixtures" of the NYSDOT Specifications and any subsequent addenda.

Tack coat shall be NYSDOT Item 702.30, material designation RS-1.

The crushed stone subbase shall be 6" depth and conform in every respect to the requirements contained in these specifications and those set forth for "Bases and Subbase", Section 300 of the NYSDOT Standard Specifications of January 2, 1990, and any subsequent addenda.

Use of geo-textile may be required in areas of poor subgrade.

Westchester County RiverWalk Design Guidelines - Surface Materials

GUIDELINES MANUAL

Surface Materials continued...

Ipe Wood or Mahogany Decking

Pressure treated lumber is unacceptable for decking and railings. Mahogany and Ipe wood are to be used for decking materials.

Composite Decking

An acceptable alternative to Mahogany or Ipe wood is composite material, such as Trex™.

Steel Grating

Steel grating shall be galvanized heavy-duty bar grating welded steel with series grating in accordance with NAAMM Heavy-Duty Bar Grating Manual. Grating size to be calculated by an engineer.

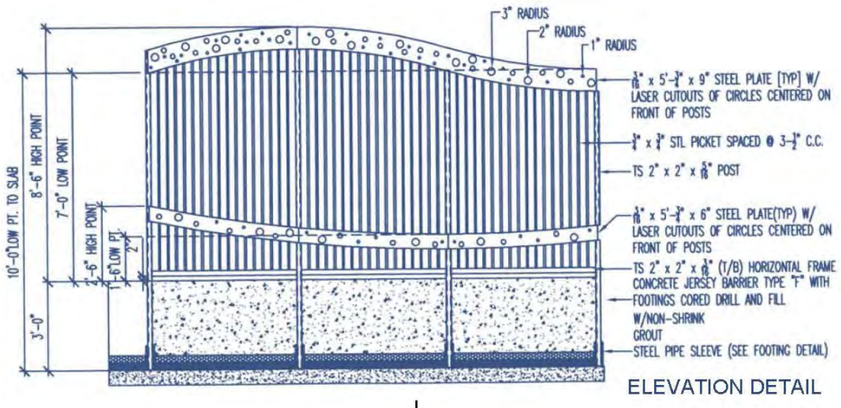
Stabilized Gravel

Native stone shall be used for gravel. Stabilizer shall be a natural, non-toxic, non-staining, odorless, environmentally safe Powder consisting of 95% psylllurn with a 70% mucilliod contact. The powder shall be "Stabilizer™" as manufactured by Stabilizer, Inc. or an approved equal. Contact rep. Ralph Crosby: (914) 476-8773

GUIDELINES MANUAL

STANDARD AMENITIES

RAILINGS / FENCING



ELEVATION DETAIL

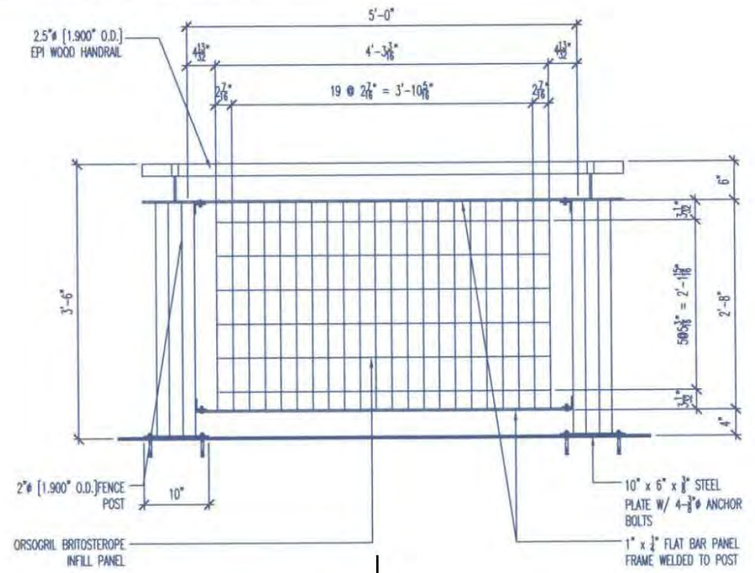
Jersey Barrier Wave Fence

Adjacent to the Railroad, Jersey Barriers shall be provided, with fencing on top. See Table E (page 23) for layout requirements. This protection is required by Metro-North Railroad. The fencing has been designed for visual interest as well as to serve as barrier protection from railroad property. The fencing is required to be **galvanized** (not powder-coated) due to grounding issues associated with metal fencing adjacent to the railroad tracks. The fence shall be Wave Fence as manufactured by A&T Iron Works of New Rochelle or approved equal. (914) 632-8992

Westchester County RiverWalk Design Guidelines - Railings / Fencing

GUIDELINES MANUAL

Railings/Fencing continued...

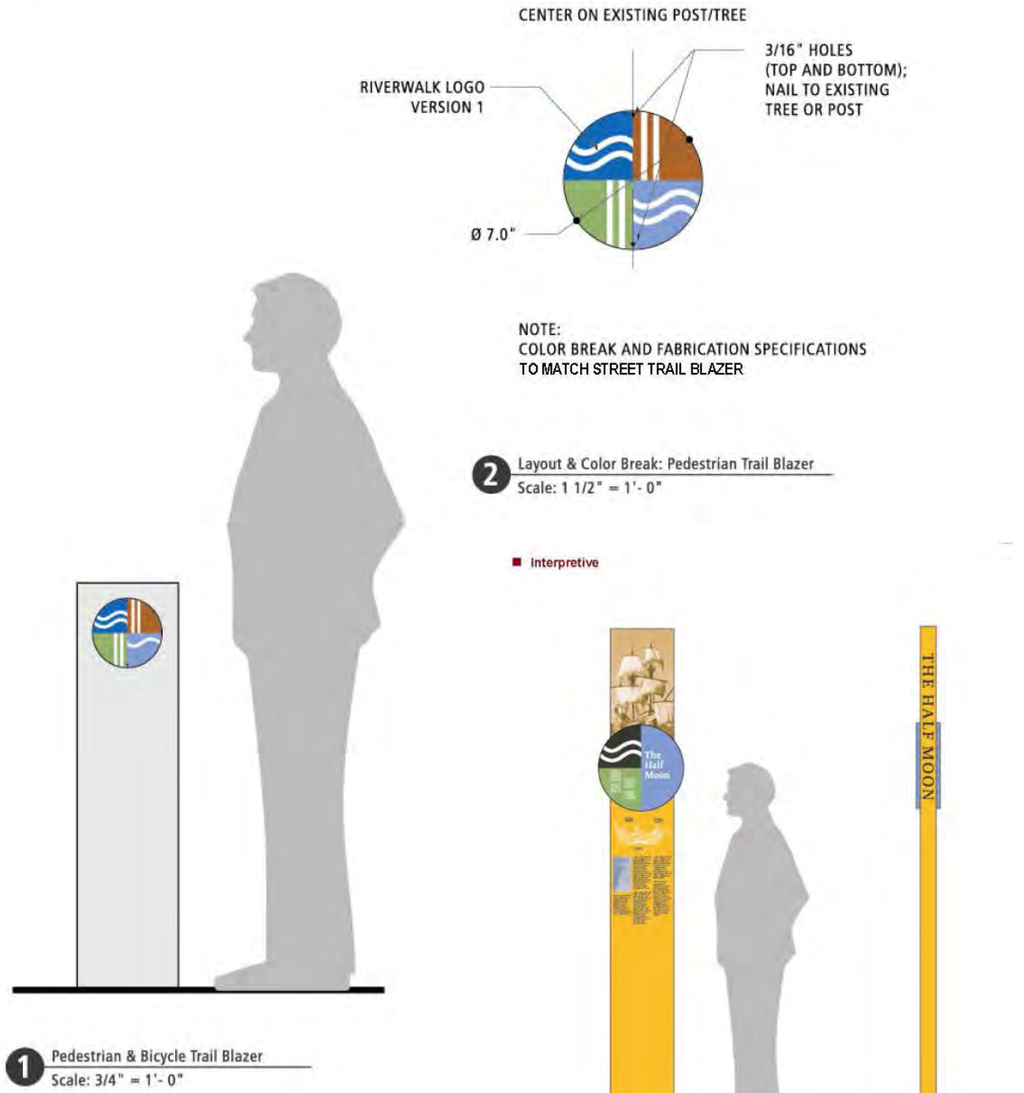


Railing Along the Waterfront

In order to encourage and maintain visual and physical contact with the Hudson River, railing along the waterfront shall be used in situations only where absolutely necessary. Railing is to be provided at edge of trail where there is a vertical drop to the water more than 18". Refer to New York State Building Code. Railings may also be provided on a case by case basis, such as where large numbers of people are expected to gather, such as at an Esplanade. The railing has been designed to allow views to the river with minimal obstruction, and to provide comfort by using wood for the handrail. The rail shall be Orsogril Fence as manufactured by A&T Iron Works of New Rochelle. (914) 632-8992

GUIDELINES MANUAL

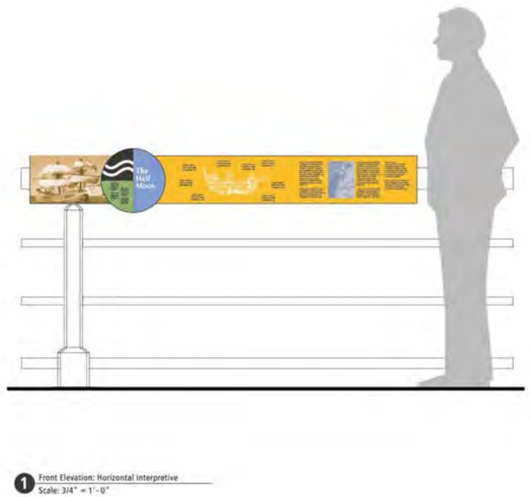
■ Pedestrian Trailblazer



■ Interpretive

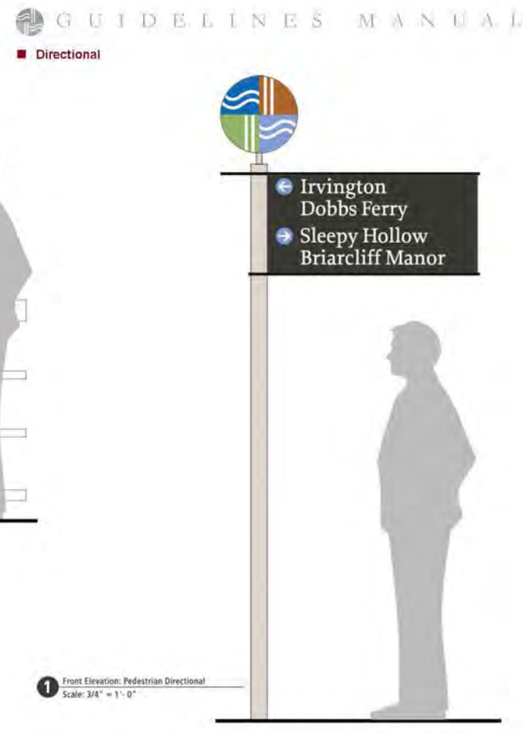
GUIDELINES MANUAL

■ Major Identification and Maps



GUIDELINES MANUAL

■ Directional



7. ALTERNATIVES CONSIDERED

The proposed project has two primary objectives:

I. **Close gap in RiverWalk Trail (N-S)**
II. **Provide a connection to the new SUP on the GMMBC (E-W)**

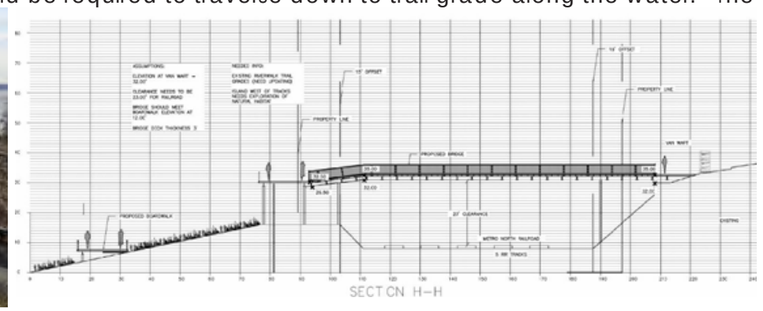
Several alternatives were considered for each objective.

Objective I: Close Gap in RiverWalk Trail

In order to make the connection between the southern terminus near Van Wart Avenue and the northern terminus in Losee Park, a bridge crossing Metro-North Railroad will be required. Detailed drawings of the various alternatives are contained in Appendices A - D.

Ia. Waterfront – Crossing Van Wart Avenue

This alternate provides a bridge crossing at the existing trail terminus at Van Wart Avenue (see image below). The bridge would span over Metro-North Railroad and land on the water side of the tracks. An accessible ramp would be required to traverse down to trail grade along the water. The



trail would then proceed northward along the western edge of the tracks and along the Hudson River. It would connect to Losee Park just beyond the Irvington Yacht Club.

Ib. Waterfront – Crossing at GMMCB below Retaining Wall at Van Wart Avenue

This alternate would begin south of the existing RiverWalk terminus in order to have a lower starting grade for the trail project. Beginning at Van Wart Avenue would create too steep a grade for the trail. The trail would then traverse down to the railroad grade and run parallel to the railroad. It would be located between the retaining wall and the railroad. Once past the end of the retaining wall, the trail would shift easterly, farther away from the railroad but still running roughly parallel. Five switchbacks would be needed to elevate the trail to the bridge crossing elevation. The trail would cross the railroad via a new bridge and land on the west side of the railroad via a ramp to provide ADA accessibility for the trail. Once on the waterward side of the railroad, the trail would run parallel to the railroad until it makes the connection to Losee Park.

Ic. Waterfront – Crossing Montefiore Property

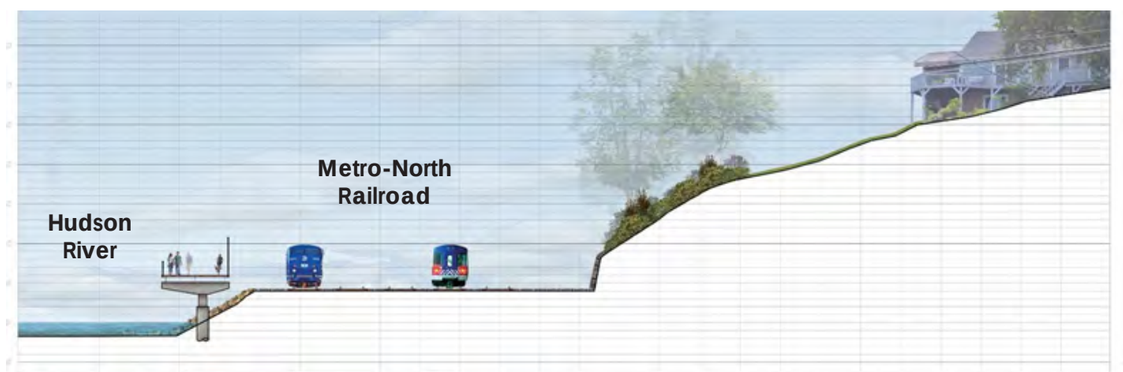
This alternate is similar to "Ia" except that the crossing of the railroad is moved further to the south where it would connect to an existing RiverWalk node on the Montefiore property. The bridge would span over Metro-North Railroad and land on the water side of the tracks. An accessible ramp would be required to traverse down to trail grade along the water. The trail would then proceed northward along the edge of the tracks and Hudson River. It would connect to Losee Park just beyond the Irvington Yacht Club.

Id. Waterfront – Crossing at GMMCB above Retaining Wall

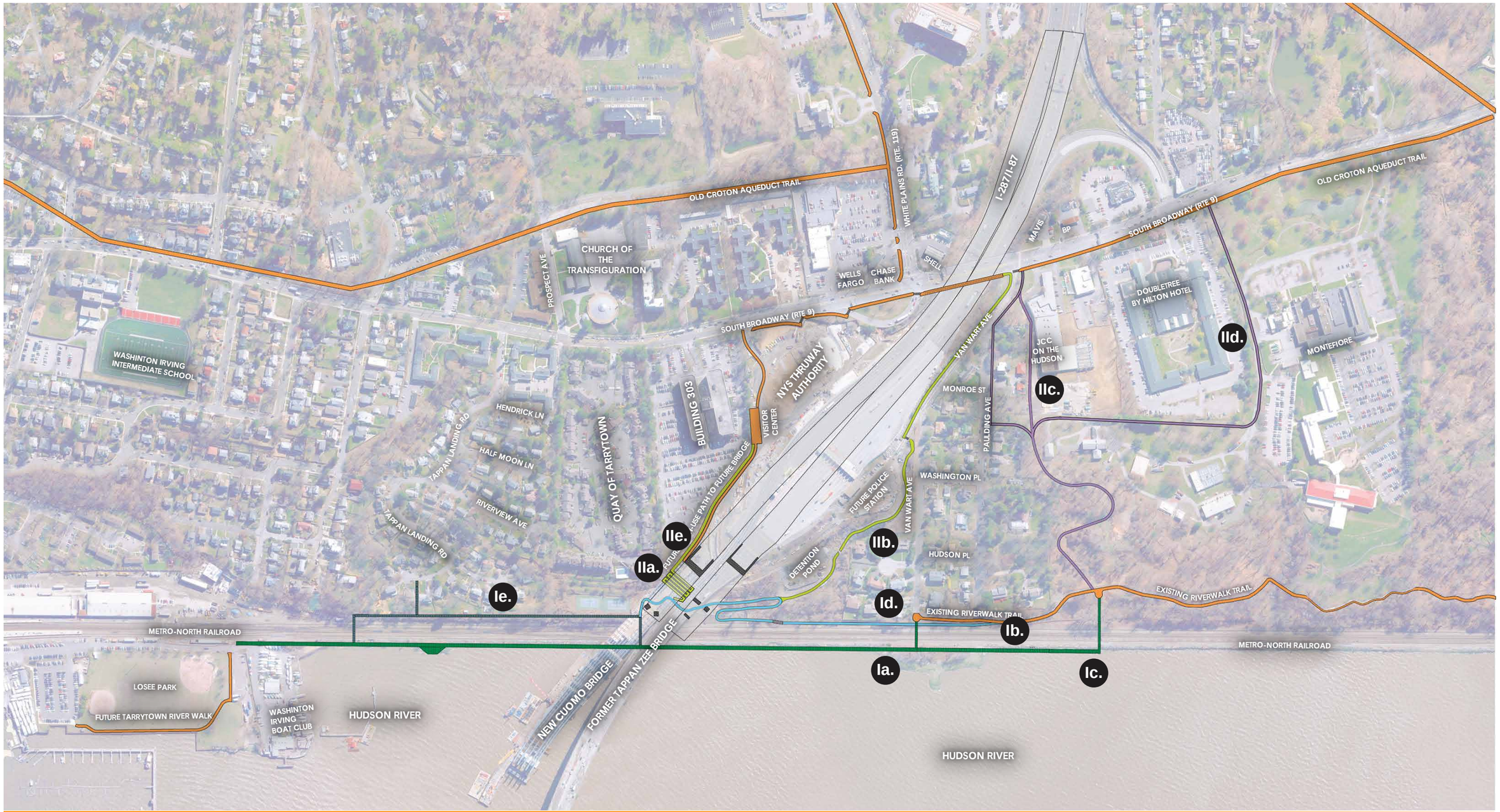
This alternate is similar to "Ic" except that the connection to the existing trail terminus at Van Wart Avenue would be above the retaining wall. It would begin at the elevation of the Van Wart Avenue terminus and then follow the top of wall grade down to the surrounding grade north of the wall. The trail would be located within a narrow strip adjacent to residents. It would need to cross an inland wetland and then climb to the elevation of the construction road under the GMMCB as described in Alternate "Ic.".

Ie. Landward – East Side of RR

Under this alternate, a spur would come off the existing RiverWalk trail, south of the existing terminus. This was chosen because this is the lowest spot on the trail, being much lower than the connection at Van Wart Avenue. The trail would then proceed northward between the existing retaining wall and the railroad. The trail would continue northward on the east side of the tracks and would require a switchback in the trail to elevate to the existing grade under the GMMCB. Once past the bridge, the trail would traverse along the western ridge abutting the Tappan Landing neighborhood and then cross the track just south of the Tarrytown Station. A ramp would slope down to grade once across the bridge, and then a connection is made to Losse Park.



Cross Section at Tappan Neighborhood



RIVERWALK EXTENSION FEASIBILITY STUDY - COMBINED ROUTING OPTIONS

TARRYTOWN, NY

Stantec

Objective II: GMMCB SUP Connection

IIa. Switchbacks under the GMMCB

This alternate would provide switchbacks in the trail below the GMMCB in order to elevate it tp meet the landing elevation of the SUP access at the visitor's center. It would take five switch backs in order to provide an ADA accessible ramp.

IIb. South Side of Thruway

This alternate would take trail users around the south side of the Thruway along the construction driveway built for the bridge project. It would then cross to the north side of Van Wart Avenue, where it would be built on the grass area adjacent to the road and then connect to the Route 9 trail at Paulding Avenue.

IIc. Montefiore Property/Jewish Community Center Property

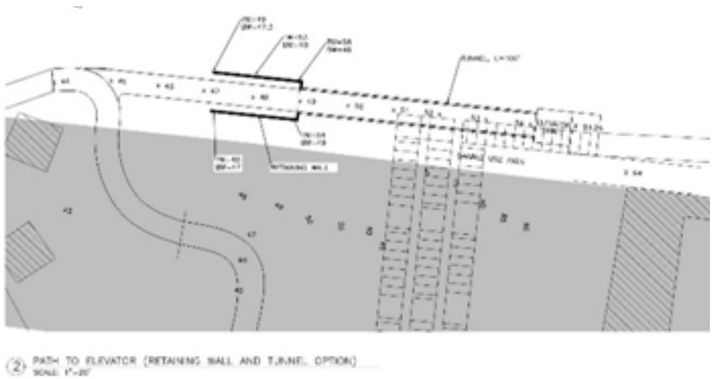
This alternate would connect to the existing RiverWalk trail at the node on the Montefiore property. The trail would meander to the east through the Montefiore property in order to provide an ADA-accessible grade. It would then proceed through the JCC property on the Hudson and then connect to the proposed Route 9 trail being constructed by the NYSTA.

IId. Montefiore Property and Double Tree Hotel

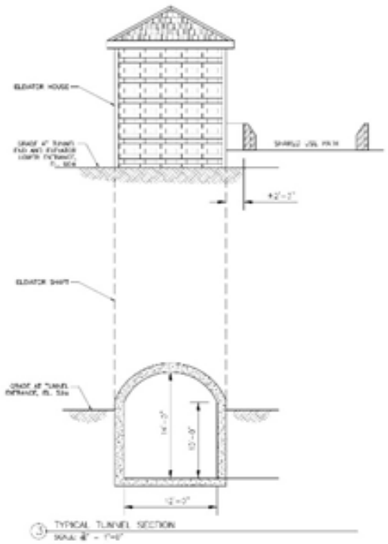
This alternate is similar to" IIc" but instead of proceeding through the JCC property, this alternate would travel further south into the Montefirore property and then head toward Route 9 on the south side of the Double Tree Hotel. It would then connect to the Route 9 trail by NYSTA.

IIe. Elevator

To provide an alternate means of moving vertically from the grade below the GMMCB to the elevation of the SUP, an elevator was considered. This would provide ADA accessibility at the point of connection between the SUP and trail below the bridge.



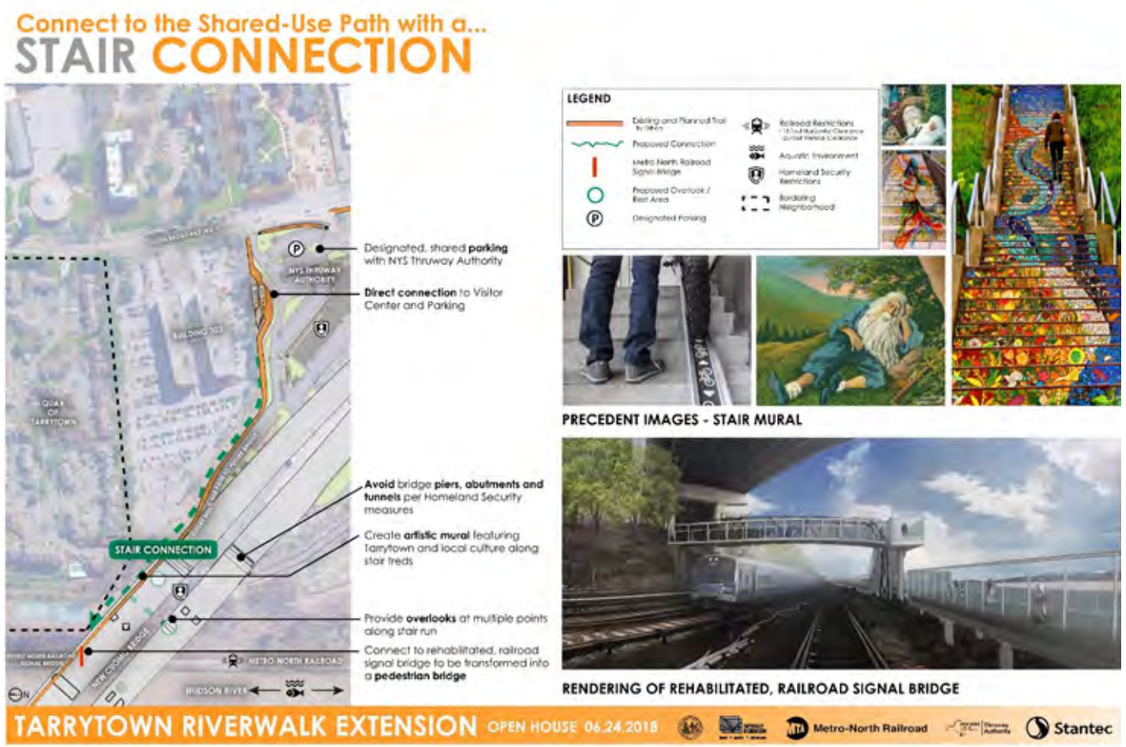
② PATH TO ELEVATOR (RETAINING WALL AND TUNNEL OPTION)



③ TYPICAL TUNNEL SECTION

IIf. Stairs

A stair was considered as an alternate means of elevating from the lower grade below the bridge to the upper level of the SUP. This would provide a more direct route to RiverWalk, but it would not be ADA-accessible. The stairs could be designed to create a feature for the trail instead of just being a utilitarian means of ascent. From the stairs, the trail would lead to the existing railroad signal bridge which could be rehabilitated to carry pedestrians across the railroad to the west side where it will connect with the waterside trail.



Evaluation of the Alternatives

In order to evaluate the various alternatives, the following criteria was used:

- Constructabiity
- Environmental Consideration
- Visual Impacts (from water, from train, etc.)
- Neighborhood Impacts
- Visual Connectivity
- Traffic
- Permitting
- Construction Cost

Part I – RiverWalk Connection

Ia. Waterfront – Crossing Van Wart Avenue

Providing a crossing of the railroad at Van Wart Avenue creates an unintentional, desirable access point for trail users. This location may encourage users of the trail to access the trail at this location and park their vehicles on Van Wart Avenue or other roads in the Irvington neighborhood. This issue had been raised by several residents in the neighborhood at the Public Meeting. The existing RiverWalk is elevated above the tracks at this location, so the proposed bridge would not have to elevate much to get over the tracks. On the water side of the railroad, there is a small peninsula of land that extends out into the water. Anecdotally, this has been a desired fishing location over the years and would provide an interesting node for the landing of the bridge and a feature along the trail to experience the waterfront in a more meaningful way.

Traversing along the waterfront will create permitting issues from the Department of Environmental Conservation (DEC) and the Department of State (DOS). In addition, the US Army Corps of Engineers (USACOE) will have some permitting concerns. DEC and USACOE are primarily concerned about potential impact to the environment. DOS's concern is with promoting water-dependent uses along the river.

The waterfront route will provide a significant benefit to the community by providing direct access to the river which has been denied them for over 100 years since the railroad was constructed along the river. With the trail, which will create an esplanade along the river, the public can come down to enjoy waterfront views and experience the river in a more meaningful way. In addition to enjoying a stroll or bike ride along the river, a boat launch can be created along the length for patrons to launch canoes and kayaks.

Ib. Waterfront – Crossing at the GMMCB Below Retaining Wall

Another alternative that was considered was to move the crossing of the railroad as close to the GMMCB as possible. North of the bridge up to the Tarrytown Station was restricted by Metro-North as this is the location of the interlocking, and they did not want any new crossings in this area.

Under this alternative, the trail would remain on the east side of the tracks and consist of an extension of the northern terminus at Van Wart Avenue. It was envisioned that the trail would be able to be located between the retaining wall that supports the Irvington neighborhood and the railroad tracks. Upon closer examination during a sitewalk on railroad property, it was determined that there

is insufficient room at track level and this area contains drainage swales for the railroad. Therefore, this alternative was eliminated from further consideration.

Ic. Waterfront – Crossing Montefiore Property

Moving the crossing location from Van Wart Avenue to the Montefiore node will shift the activity from Van Wart Avenue to the south at the node, thereby eliminating the attractiveness of the location as a parking trail head. It will require a longer bridge across the railroad as the node is set back further from the edge of the tracks.

This route brings with it the same concerns and benefits as the "Ia." alternative but in a more significant way. The length of the waterfront route increases by 1,400 feet. This brings added benefit to the community with more waterfront access. On the negative side, it increases the potential impact to important water resources, making the permitting process more difficult.

Id. Waterfront – Crossing at Van Wart Avenue Above Retaining Wall

This alternative was investigated once it was determined that there is insufficient room between the retaining wall at Van Wart Avenue and the track to construct the trail. The feasibility of constructing the trail extension above the retaining wall was reviewed. This alternative would put the trail in close proximity to the residences at the west end of the Irvington neighborhood near Van Wart Avenue. This neighborhood is well organized and has expressed resistance to putting the trail at this location. Furthermore, some of the neighbors said that a commitment had been made during the design of RiverWalk that the trail would not traverse farther north of its existing terminus.

A new railroad crossing bridge to replace the signal bridge at the same location would need to be constructed and would serve the accessible route along the trail and also the stair route down from the bridge. Building within the vicinity of the GMMCB may present some challenges for construction.

The amount of waterfront trail in this alternate would be significantly reduced from the other two routes. This would reduce the environmental impacts and therefore some of the permitting concerns. It would also reduce the waterfront experience for the patrons using the trail.

Ie. Landward – East Side of RR

An alternate that was entirely landward was also considered. This route would pick up at the existing terminus for the trail at Van Wart Avenue and run parallel to the tracks on the east side. It would need to cross a wetlands pocket and then need to use a switch back to elevate it up to the level of the construction road under the GMMCB. Once at the bridge, it would continue northward along the top of the ridge west of the Quay and Tappan Landing neighborhoods. As it approaches the Tarrytown Station, it would cross the tracks just south of the station.

There were several issues with this alternate. North of the GMMCB, particularly adjacent to Tappan Landing, there is a shear rock face. Upon field investigation during a site walk on the railroad, this rock is not in good condition as evidenced by the number of concrete repairs that have been done over the years. This alternate also brings the trail close to the residences of Tappan Landing which is undesirable. Therefore, this alternate was eliminated from further consideration.

Part II - Connection to New SUP

IIa. Switchbacks under the GMMCB

To provide an accessible route from the SUP to the plateau below the GMMCB, five (5) switchbacks were required. The grade at the SUP where it meets the visitor's center is about 110 and the grade under the bridge is 40. This drop of 70 feet required an extensive length of trail to meet the 5% maximum grade. The number of switchbacks made it very undesirable from a practical basis. Trail users would not want to travel on so many turns back and forth. Furthermore, and more importantly, Homeland Security put a restriction on the trail under the bridge. It would only be allowed to cross once under the bridge; and therefore, the number of switchbacks violates that requirement. This was no longer considered as a viable alternative.

IIb. South Side of Thruway

Using the existing construction access road which connects Van Wart AVenue to the underside of the bridge appeared to be a feasible route that already had the alignment and profile for the trail laid out. However, when this option was presented to the Thruway Authority and the Police Department, they said that it was not acceptable to use this route due to its proximity to the new Police Station and potential conflict with vehicles accessing the station. For this reason, it was eliminated from further consideration.

IIc. Montefiore Property/Jewish Community Center Property

To create an accessible route, an extensive length of trail was required to elevate from the existing RiverWalk trail to the SUP landing on the Westchester side. As discussed in the switchback option, nearly 70 feet of grade needs to be traversed. In examining the northern portion of the Montefiore property, which is primarily woods, there appears to be a feasible route to connect to the rear of the Jewish Community Center (JCC) and then out to Route 9. Based on review of the GIS topography, by winding the trail through the woods, an accessible connection could be made. This trail could be relatively simple to build compared to the waterfront route and could be simply a trail on grade. Preliminary discussions took place with Montefiore and the JCC, and they seemed amenable to provide the necessary space on their property to accommodate the trail if certain conditions were met. Montefiore wanted to assure that the trail would be as north as possible so as not to compromise future development of the parcel. JCC wanted assurances that trail users would not be using their parking at the center and that the trail would be open dawn to dusk.

IId. Montefiore Property and Double Tree Hotel

This option is like IIc except that it uses a route around the Double Tree Hotel instead of traversing through the JCC. There are some potential wet areas and drainage ditches that would need to be crossed. In addition, this trail increases the length of the trail to connect back to the SUP. Therefore, it was eliminated as feasible option.

IIe. Elevator

To eliminate the multiple crossings under the bridge to which Homeland Security objected, an elevator was proposed to bring users from the plateau below the GMMCB to the SUP on the bridge. It appeared that the elevator would work within the topographic constraints, however, NYSTA had several concerns with the elevator. Foremost, there was a security concern with having an elevator

both from Homeland Security and for the safety of persons using the elevator. The elevator would have a limited capacity, especially when one considers the needs of bicycle travelers. It may take a long time if there were many users that wanted to use the elevator. Finally, the construction cost and the long-term maintenance eliminated the elevator as a feasible alternative.

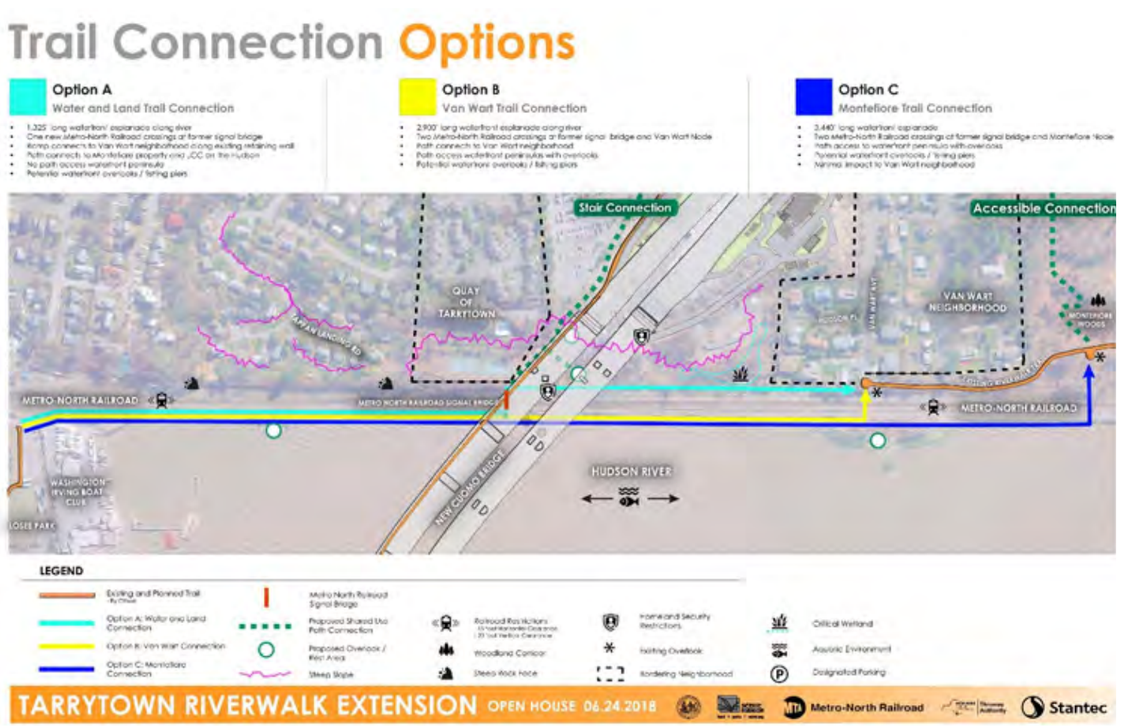
IIf. Stairs

The stair option came about as an alternative to some trail users down to the lower level quickly and less costly than an elevator. Granted, it would not serve as an accessible path but would allow some users to access the lower level in a short amount of time. The stairs would be less expensive than an elevator and could be made into a feature with appropriate landing to reduce the difficulty in climbing all the stairs and reduce the drudgery of using them. A bicycle track should be provided to aid bicyclists in bringing their bikes up or down the stairs.

Summary of Feasible Alternate Routes

From the alternatives that were considered and discussed above, there were three that were selected as the most feasiible alternates. The alternatives are: Option A - Land and Water Trail Connection; Option B - Van Wart Trail Connection; Option C - Montefiore Trail Connection.

These options were brought forward for public review and more detailed evaluation. Options A, B, and C are shown in the following graphic and described in greater detail on the following pages. All three options include a stair connection to the NYSTA through the 333 South Broadway property and an accessible connection through the wooded land of Montefiore and through JCC to connect to Route 9 improvements.



Option A - Water and Land Trail Connection

This Option was designed with a 1,325 ft. waterfront esplanade along the river. A ramp connection would lead to the Irving Neighborhood along the existing retaining wall at the Van Wart node. The plan included one new Metro-North Railroad crossing at the former signal bridge leading to the SUP Stair Connection, and path connections to the Montefiore and JCC properties via the Accessible Connection at the existing Montefiore node. This Option's design included potential waterfront overlooks and fishing piers but did not include access to the waterfront peninsula.

Option B - Van Wart Trail Connection

The Van Wart Connection was designed with a 2,300 ft. waterfront esplanade along the river. Access to the Irving Neighborhood would be via one of two Metro-North Railroad crossings at the existing Van Wart node, with the other crossing located at the former signal bridge leading to the SUP Stair Connection. Access to the Montefiore and JCC properties would be available via the Accessible Connection located at the existing Montefiore node. This Option design included potential waterfront overlooks, fishing piers, and access to the waterfront peninsula.

Option C - Montefiore Trail Connection

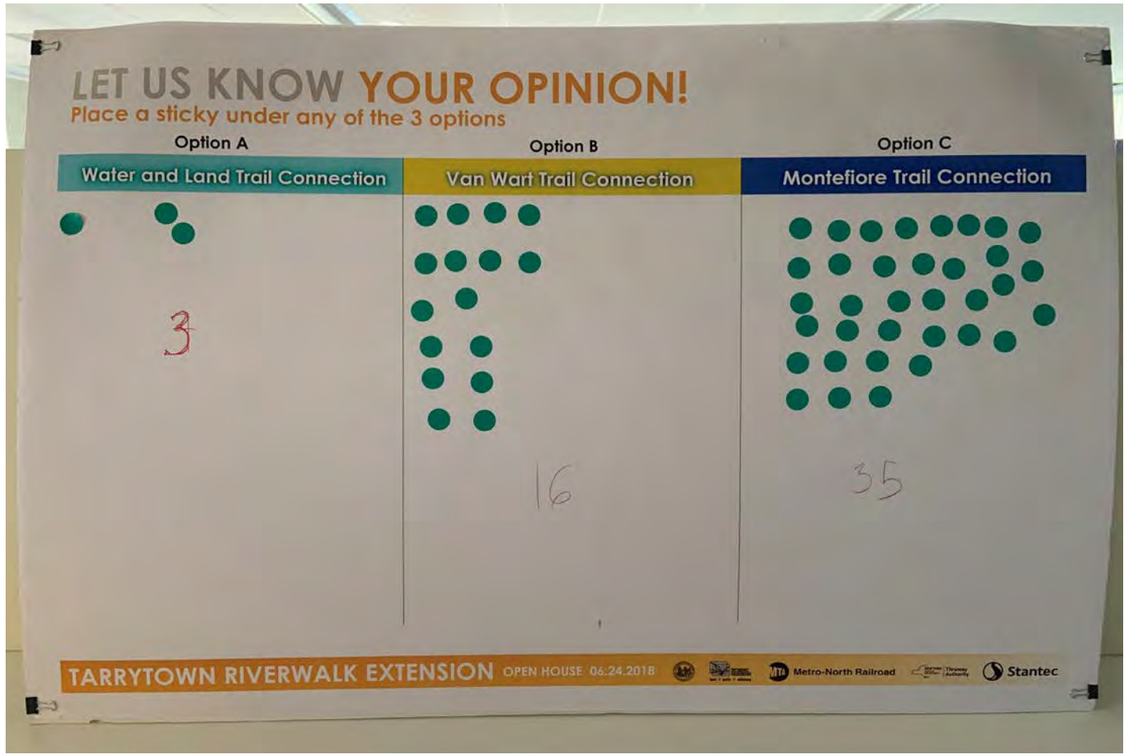
The Montefiore Connection was designed with a 3,440 ft. waterfront esplanade along the entire length of river. Access to the Montefiore and JCC properties would be via one of two Metro-North Railroad crossings at the existing Montefiore node, with the other crossing at the former signal bridge leading to the stairs.

Boardwalk Studies

It was requested that additional engineering studies be conducted at the various railroad crossings to better understand the feasibility of the design. These drawings include elevations to confirm boardwalk slopes and accessibility. The connections under the GMMCB, Van Wart Avenue, and the Montefiore property were examined. The detailed plans of this effort can be found in Appendix G.

Public Outreach

A public meeting was held on June 24, 2018 to review the short list of alternatives. A presentation was given, the contents of which are contained in Appendox E. The public was asked to vote on which alternative they felt was the most appropriate. They voted overwhelmingly for Option C. See photo of voting board that follows.



Other comments posted on the board are as follows:

1. No proposed overlooks, horrible invasion of privacy to homeowners.
2. Do not build the wall. It is a huge eyesore and will hurt our property value.
3. Connect for walkers differently than bikers. Also connect after Tarrytown thru Irvington.
4. Vote No.
5. Vote No. Taxes will go up because village polices the trail. No benefit to town. Ruins neighborhoods.
6. Vote No. Waste of money, time and environmental issues.
7. Irving neighborhood has had too much bridge-oriented traffic. The Montefiore connection offers tree-lined beauty and keeps less bikes and parking traffic out of neighborhood.
8. Nicest bike route, easiest connection to Irvington, most scenic, least impact to neighboring residences.
9. I think the path connection of the river walks is great. The trail connection up to Route 9 is great too.
10. I like the Montefiore Path a lot.
11. Keep walkers on the river.
12. Neighbors never like a trail coming in but once it's in, they love it.
13. Avoid double fences on trail. More connections are better.

Other comments from discussions:

1. I don't agree with a new pedestrian bridge over the thruway by NYSTA.
2. Opposed to any connection between the Tappan Landing neighborhood and the railroad station. Already too many people using the neighborhood for parking.
3. Want dawn to dusk use of the trail, no lights.
4. Parking is already a problem in the Tappan Landing neighborhood, this will make it worse.
5. The horns from the trains are very loud and occur at night.
6. Loved the idea of a waterfront path, that's where the people should be.
7. There is no need to connect the two ends of Riverwalk. It is a waste of money.
8. Isn't there a tunnel under the Tarrytown Station that could be used as a connection to get across the tracks?
9. There is no increase in value of having the trail, just add to the taxes.
10. Tappan Landing residents say they can see the tops of the trains from their backyard.
11. There are privacy concerns from Tappan Landing residents along the Railroad.
12. There has been too much construction in the vicinity of Tappan Landing lately.
13. The glass barrier on the train side of the walkway will bounce train noise back into the neighborhood.
14. There is concern that the barrier on the water side of the trail may be too low. People may jump in and the water is very shallow and there are a lot of rocks.
15. A biker felt that he would not need the stairs to connect to the trail along the water. He was content to either use the Montefiore path or go down to the train station and cross, like a giant cloverleaf on the highway.
16. Who pays to patrol the trail? The local police? This will increase taxes.
17. There is no need to have stairs at the bridge.
18. Move overlooks away from houses.
19. There has been too much construction in the area.
20. There is no enhanced value to residences.

Meeting with Metro-North Railroad

A meeting was held with Metro-North Railroad at their offices in New York City on July 17, 2018. The intent of the meeting was to share the various alternatives that are being considered and obtain their preliminary comments and concerns. The maps, plans, and graphics that were shared with them are containied iin Appendix F.

The railroad provided the following comments:

- Their interlocking is located north of the Cuomo Bridge. No crossing of the tracks will be allowed in this area.
- The distance between the trail and the railroad will need to be reviewed for final approval.
- They had no objection to rehabilitating the signal bridge for pedestrian use.

Evaluation Summary of Alternatives

The following matrices were used to highlight the advantages and disadvantages of each trail option. The first table addresses the connecting RiverWalk. Factors used to evaluate the alternative routes were:

- Waterfront Experience
- Waterfront Access
- Waterfront Impacts
- Neighborhood Impacts
- Metro-North Railroad Impacts
- Visual Impacts
- Topography
- ADA Accessibility
- Homeland Security Requirements
- Permitting Requirements
- Construction Cost
- Constructibility
- Maintenance

ALTERNATIVES MATRIX FOR RIVERWALK CONNECTION

ALT	DESCRIPTION	ADVANTAGES	DISADVANTAGES
Ia	Waterfront – Crossing Van Wart	• Provides waterfront experience • Provides an alternate connection to the Tarrytown Station • Allows public access to the waterfront	• Permitting requirements • More costly than land route • Creates potential trail head in Irvington neighborhood •
Ib	Waterfront – Crossing Montefiore	• Greater waterfront experience • Moves the trail node away from Irvington neighborhood	• Greatest permitting concern • Most costly alternative • Greatest visual impact due to bridge length • Potential impacts to river environment
Ic	Waterfront – Crossing at Cuomo Below Retaining Wall at Van Wart	• Reduces permitting concerns • Least costly • Only requires one bridge to cross the railroad	• Trail will need to cross a wetland • Tight distance between retaining wall and railroad • Reduced waterfront experience • Potential impacts to river environment
Id	Waterfront – Crossing at Cuomo Above Retaining Wall at Van Wart	• Reduced permitting concerns • Least costly • Only requires one bridge to cross the railroad	• Trail will need to cross a wetland • Likely significant opposition to Irvington neighborhood due to proximity • Reduced waterfront experience • Requires the replacement of the signal bridge and not a rehabilitation
Ie	Landward – East Side of RR	• Minimal waterfront impact • Minimal permitting requirements • Provides connection from Tappan Landing and Quay neighborhood to the Tarrytown Station	• Close proximity to Tappan Landing neighborhood • Difficult to construct on ridge, requires construction access from Metro North • Poor rock condition makes construction less feasible • Railroad crossing within RR interlocking

The matrix below evaluates the various connections to the GMMCB SUP. None of these options has a significant environmental permit concern.

ALTERNATIVES MATRIX FOR CUOMO BRIDGE SUP CONNECTION

ALT	DESCRIPTION	ADVANTAGES	DISADVANTAGES
IIa	Switchbacks under Cuomo Bridge	• Provides direct ADA access between SUP and trail extension at the Cuomo Bridge	• Long, undesirable switchbacks • Too many crossings under bridge for DHS makes this alternative infeasible
IIb	South Side of Thruway	• Least costly alternative • Using existing roads and drives in place	• Long route between bridge and RiverWalk • Security issues with Police makes this alternative infeasible. • Traffic thru Irvington neighborhood
IIc	Montefiore/JCC	• Meandering trail through woods • Provides connection to fitness facility • Provides accessible route	• Long route between SUP and RiverWalk • Requires easements with private property owners.
IId	Montefiore and Double Tree Hotel	• Connects to the proposed Route 9 improvements to create loop • Provides accessible route	• Longest route between SUP and RiverWalk • Requires the most property easements
IIe	Elevator	• Requires minimal footprint to install • Provides close, accessible route between SUP and RiverWalk	• Maintenance of elevator • Security concerns from DHS and users • Limited capacity • High construction cost
IIf	Stairs	• Provides close, direct link between SUP and RiverWalk • Opportunity to create feature	• Not ADA accessible • May be physically challenging for some • Requires easement from 303 Broadway

8. IMPLEMENTATION

PROCESS, AGENCY COORDINATION, AND PUBLIC PARTICIPATION

PROCESS

National Environmental Policy Act (NEPA)

The federal NEPA process provides for the consideration of environmental issues in agency decision-making. The EA prepared by Stantec provides the information that is necessary for decision makers to make informed decisions about the potential environmental effects. The NEPA evaluation is coordinated at the state level with the New York State Environmental Quality Review Act (SEQRA) review, discussed below.

After public review and comment, the lead agency will review the public and agency comments and respond to comments as necessary. To complete the NEPA process, the lead agency will determine whether a Finding of Significant Impact (FONSI) is appropriate and if mitigation is needed for any of the impacts. The FONSI decision is based upon a determination that all potential impacts are either insignificant or can be reduced to insignificant levels through the implementation of disclosed avoidance, minimization or mitigation measures. If all impacts are determined to be less than significant, then a FONSI can be prepared. If not, then an Environmental Impact Statement must be prepared. Completion of the SEQRA process will proceed in parallel with the NEPA process. Following incorporation of responses to public comments, A concise public Record of Decision (ROD) summarizing the findings of the EIS stating the decision on whether to go forward with the Project will be prepared.

State Environmental Quality Act (SEQRA)

An action is subject to review under the State Environmental Quality Review Act (SEQRA) regulations at 6 NYCRR Part 617 if a State agency funds or directly undertakes a project affecting the environment or any State or local agency has the authority to issue a discretionary permit, license or other type of approval for that action. If the Project will be funded and undertaken by a state agency and is also subject to State and local permitting, review under SEQRA is required. The lead agency will progress the Project through the SEQRA review process, during which involved and interested agencies are identified.

It may be determined that this Project is an unlisted SEQRA action. An unlisted SEQRA action is one that is not a listed Type II action (those predetermined to not have potentially significant environmental impacts) and also does not meet or exceed a threshold for Type I actions (i.e. those predetermined to have potentially significant environmental impacts). The thresholds are those listed in Part 617.4 or on an agency's locally adopted Type I list.

Unlisted actions require the completion of an Environmental Assessment Form to determine whether preparation of an Environmental Impact Statement is necessary for complete environmental review of the project. If, based on review of the impacts and proposed mitigation measures analyzed in the EAF, the Project will have no significant environmental impacts, then the SEQRA review is complete and a Negative Declaration pursuant to SEQRA can be issued.

Conversely, if it is determined that the project will have significant environmental impacts, then a positive declaration is issued and an Environmental Impact Statement will need to be prepared.

Other Federal/State/Local Permits and Approvals

The development of the Project would require Federal, State and local permits. Information regarding required permits from the Bridge FEIS was reviewed and considered for applicability to this project. A summary of the regulatory context of each approval is presented in the associated sections of this document.

With the exception of the No-Build Alternative, Options A, B, and C require construction activity at the edge of the Hudson River, with trail support piles extending below ordinary high water. The proposed project work at the waterfront requires several of the following required permit processes. The following permits and agency involvement are anticipated for the development alternatives:

AGENCY COORDINATION

Table 8.1 identifies the "Involved" Federal, State, County and Local Agencies/Entities that have jurisdiction and approval authority over the project and those agencies/entities that are "Interested" parties only. The definitions of "Involved" verses "Interested" are located above the table. The project role and involvement that each agency or entity has is identified within the table.

Following Table 8.1 is a flowchart with timelines for completing an Environmental Impact Statement (EIS). The timeframe for the EIS, as indicated in the flowchart, is approximately 18 months from the order to begin work (Order to Work [OTW]).

If a full Environmental Impact Statement (EIS) is required, then additional studies may be required by NEPA, plus anything else that may be required from the Public Scoping process. The anticipated additional studies are:

- Soil and Groundwater Testing for potential contaminants per the recommendations contained in the Hazardous Waste Screening that we just completed;
- Soil Characterization of the spoil material generated during construction. Note: this can be conducted concurrently with the soil testing above;
- River Sediment and Scouring Analysis;
- NYS Office of Parks, Recreation and Historic Preservation historic and archaeological investigations;
- Work on the additional studies is anticipated to commence and be completed in the Spring/Summer of 2021.

The mandated NEPA steps and timeframes for that work easily adds one year to the NEPA Compliance timeframe, which brings the total to 28 - 30 months, or 2.5 years from the OTW. Preparing an EIS for the project includes additional NEPA steps, public hearing, preparation of a Final EIS and Record of Decision.

Meetings with the regulatory agencies identified will be required for a series of "Pre-Application Meetings" to determine their respective agency requirements and scope of the additional studies that are proposed. The list of permits and agencies that will need to coordinated are provided in Table 8.1.

PUBLIC OUTREACH PROGRAM

Continuing the commitment to an open, participatory process, the Hudson RiverWalk Trail Extension Project team has solicited early and continued feedback from the public and from agencies; encouraged open discussion of project details and issues; and has provided opportunities for comments and questions.

One of the critical elements of the study was engaging the community and soliciting public input during the development process. The public was invited to comment on the proposed trail Options at an open house held at the JCC on June 24, 2018. Attendees were requested to provide input on the three proposed Options and community concerns and/or priorities. Overall many attendees supported the project and favored Option C along the riverfront and connecting at the Accessible Connection.

A second public outreach session would be held to further provide the community with updates on routing, details, and typical sections and to solicit response to the alternatives Tools that have been and would continue to be used in the public involvement program are described below.

Public meetings have been advertised in local newspapers, the project website, and by e-mail to facilitate public participation in the environmental review process. The public meetings were accessible by public transportation.

Table 8.1: Permitting and Consulting Agencies

Involved Agency: Agency that either funds and/or has approval authority over the project.
Interested Agency: Agency that has interest in the project but has no discretionary approval authority.

Agency / Entity	Project Role / Involvement (Regulatory Approval / Review and/or Land Acquisition / Easement)	Involved / Interested Agency (SEQRA)
US Army Corps of Engineers, New York District	Section 10, River and Harbors Act for construction activities within navigable waters;	Involved
US Coast Guard	Section 9, Rivers and Harbors Act for work with navigable waters;	Involved
NYS Department of Environmental Conservation	Article 15 Protection of Waters permit; Section 401 Water Quality Certification; State Pollution Discharge Elimination Systems (SPDES) permit for construction activity involving more than 1 acre of land disturbance.	Involved
NYS Department of State	Coastal consistency assessment for a project occurring within the NYS Coastal Zone.	Involved
NYS Thruway Authority	Review of project connection with Shared Use Path	Involved
NOAA Marine Fisheries	Review and consultation	Interested
Westchester County Planning Department	Review	Involved
Village of Tarrytown	Review Project compatibility with Comprehensive Plan	Involved
Metro North Railroad	Review and determination of aerial railroad crossing(s)	Involved
Montefiore Medical Center	Potential Land Acquisition / Easement	Involved
Jewish Community Center	Potential Land Acquisition / Easement	Involved
303 South Broadway	Potential Land Acquisition / Easement	Involved

Tarrytown Riverwalk
Summary of National Environmental Policy Act (NEPA) and NY State Environmental Quality Review (SEQR) Review Process

NEPA EIS

The Lead Agency and "Responsible Entity" (RE) will be determined.
Discuss NEPA processes and information to date with Interested and Involved Agencies.
Hold a formal Public Scoping Process. (2 months)
Confirm scope for additional studies and analyses to be completed

Draft Environmental Assessment Statement prepared with supporting studies completed, reviewed and approved by RE. (16 months)

DEIS released for public review.
Place a notice of the DEIS and public comments in local newspapers.
Any comments must be submitted in writing to the applicant/RE during the 60-day availability period of the DEIS. (2 months)

Respond to substantive comments and prepare the Final Environmental Impacts Statement (FEIS). (4 months)
RE reviews and comments on the FEIS. Revise and finalize the FEIS accordingly. (2 months)

RE makes revised FEIS available to the public for a minimum of 30 days before the RE makes its final decision and issues their Record of Decision (ROD) . (2 months)
The ROD is published in the local newspaper.

SEQR

Develop a Full Environmental Assessment Form (EAF) for the proposed Type I Action.

The EAF is circulated to all involved agencies and the lead agency must be determined within 30 calendar days.

The SEQRA Lead Agency will be determined.
Consult with interested agencies and other parties.
Discuss processes with interested agencies.

The Lead Agency has 20 calendar days to determine the significance of a Proposed Action or request additional information (extend as needed to coordinate with NEPA).
Lead Agency presumably issues a Positive Declaration, hence a DEIS needs to be prepared.
Follow the same DEIS and FEIS process pursuant to NEPA.

SECURING NECESSARY LAND ACQUISITION/EASEMENTS

There are several land acquisition/easements that need to be secured in order to implement the proposed plan. The following property owners would be affected. See Table 8.2 for the affected agency/entity (owner) and the area needed in square footage for each option. Short descriptions follow below.

New York State Thruway Authority

Only a small portion of the trail would be located on lands that are owned by the New York State Thruway Authority. In addition, Homeland Security would need to approve the crossing underneath the new bridge.

Access to the site during additional studies and construction needs to be coordinated and approved through the NYSTA.

Metro-North Railroad (Metropolitan Transportation Authority)

New bridge crossings of the railroad tracks along the Hudson River are proposed, along with property needed running parallel to the tracks and the Hudson River. These crossings would need to be approved by Metro-North for proper clearances over, horizontal clearances to tracks, and appropriate construction techniques and materials.

For any testing being performed on Metro-North property, all participants will need to go through Metro-North training. Railroad protective liability insurance will need to be purchased and an entry permit is required. Once all the paperwork is processed, a Force Account Agreement is needed with the railroad which needs to be paid in advance. The cost per day for flagmen is approximately $1500 per day. Railroad Protective Liability Insurance is approximately $2500 and the permit cost is $2500. During construction, entry permits and Force Account Agreements are also required for work on Metro-North property.

303 South Broadway

A sliver of land would be required in order to construct the path from the SUP down to the greenway under the bridge. The trail will need to be routed around the supporting columns and walls for the bridge.

Montefiore Medical Center (MMC Corporation, 555 Broadway Avenue)

In order to build an accessible portion of the trail from the existing terminus near Van Wart Avenue, an easement would be required through the property owned by Montefiore Medical. Preliminary meetings with Montefiore have indicated positive support for the trail.

Obtaining access to the Montefiore Property to complete additional field work has been coordinated with the property manager. The details of how construction activities will be accommodated by them has yet to be determined.

Jewish Community Center

From the end of the Montefiore portion of the trail, an easement is needed through the Jewish Community Center up to Route 9. Preliminary discussions with the Center have been positive in providing needed access through their site.

Obtaining access to the JCC Property to complete additional field work has been coordinated with on site personnel. The details of how construction activities will be accommodated by them has yet to be determined. When discussing the project with them previously, the most important consideration for them was that no additional parking could be provided on their site.

Table 8.2: Land Acquisition / Easements

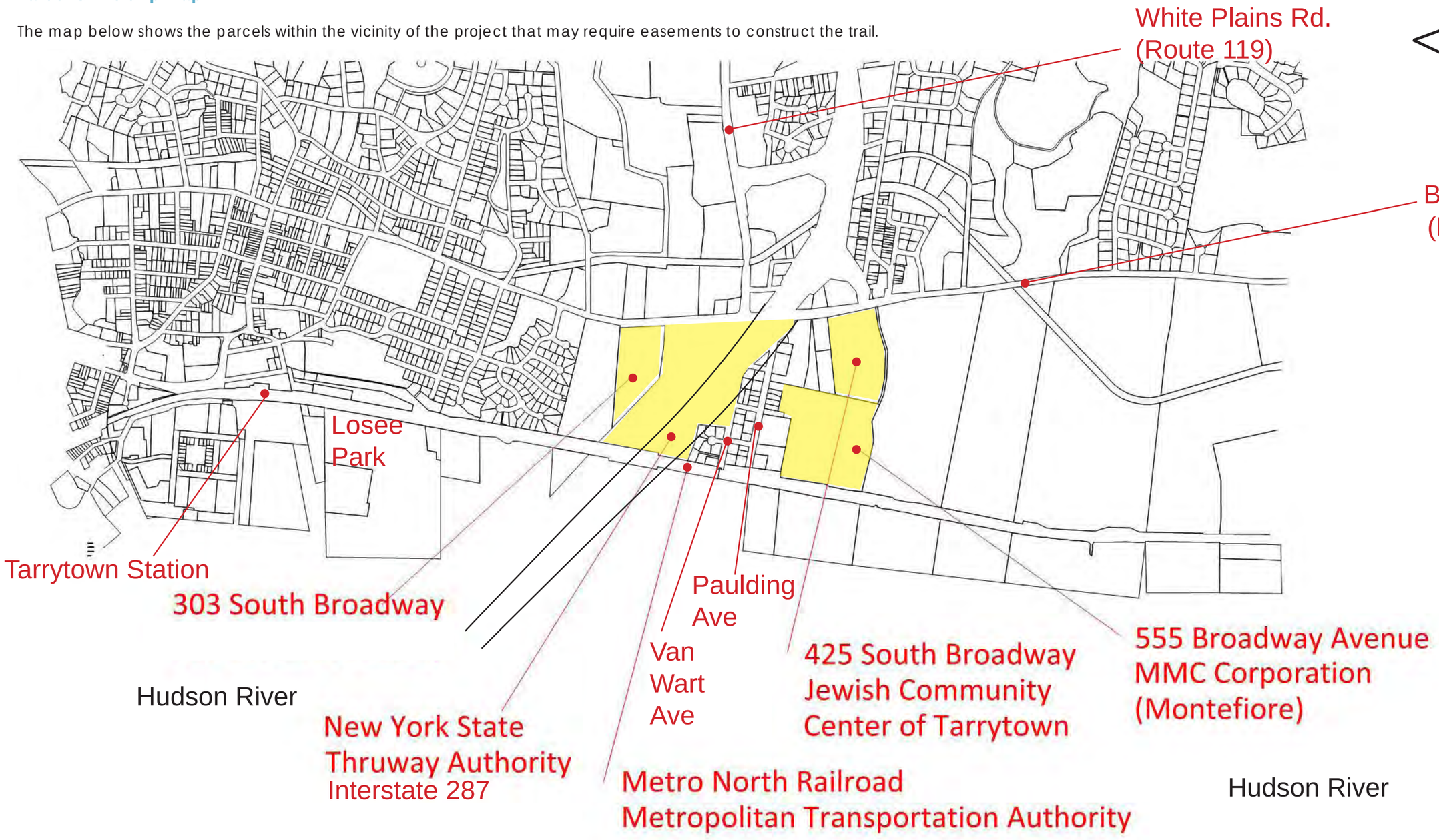
Based on an easement width of 20 feet for the trail, the approximate easement areas are given below. The easement for the 303 South Broadway property is estimated to be an additional 5 feet added to New York State Thruway property.

Agency / Entity	Option A Square Feet (SF)	Option B Square Feet (SF)	Option C Square Feet (SF)
NYS Thruway Authority	14,000 SF	14,000 SF	14,000 SF
Metro North Railroad	49,000 SF	46,000 SF	64,000 SF
Village of Tarrytown	8,200 SF	7,900 SF	7,600 SF
Montefiore Medical Center	40,000 SF	40,000 SF	42,000 SF
Jewish Community Center	12,000 SF	12,000 SF	12,000 SF
303 South Broadway	2,000 SF	2,000 SF	2,000 SF

It is assumed for this report that the property from affected public entities will be a contribution in kind to the project. Private property acquisition or easement will need to be negociated based on a third party appraisal. Based on an estimated cost of $350,000 per acre or $8 per square foot, the estimated cost for property acquisition or easement ranges between $432,000 to $448,000.

Parcel Ownership Map

The map below shows the parcels within the vicinity of the project that may require easements to construct the trail.



RIVERWALK EXTENSION FEASIBILITY STUDY - REQUIRED PARCELS
TARRYTOWN, NY

Stantec

OPINION OF PROBABLE COST

A third-party opinion of probable cost was prepared for the three (3) options. A detailed break-down for each project option can be found in the Appendix. This opinion of probable cost has been inflated to construction year 2025 (four (4) years).

Table 8.3: Project Costs

Description	Option A	Option B	Option C
Construction Cost	$ 23,241,785	$ 37,226,511	$ 44,970,778
EIS Cost (Environmental Impact Statement)	$ 900,000	$ 900,000	$ 900,000
Permitting / Permit Preparation	$ 75,000	$ 75,000	$ 75,000
ROW Acquisitions / Easements	$ 432,000	$ 432,000	$ 448,000
Preliminary and Final Design (6% of Construction)	$ 1,400,000	$ 2,200,000	$ 2,700,000
Construction Inspection (10% of Construction)	$ 2,300,000	$ 3,700,000	$ 4,500,000
Other Studies:			
Additional Waterfront Borings (Based on 3500' of waterfront at 300' between borings. Five (5) completed to date at $135,000)	$ 190,000	$ 190,000	$ 190,000
Additional Land Borings at Each Pedestrian Bridge (3 Bridges)	$35,000	$35,000	$35,000
Soil and Groundwater Testing for Potential Contaminants	$ 25,000	$ 25,000	$ 25,000
Soil Characterization of Spoil Materials	$ 25,000	$ 25,000	$ 25,000
River Sediment and Scour Analysis	$ 40,000	$ 40,000	$ 40,000
NYS Office of Parks, Recreation and Historic Preservation – Historic and Archaeological Investigations	$ 35,000	$ 35,000	$ 35,000

Note:
The additional field studies can be conducted in the Spring/Summer 2021. Winter is not an appropriate time for many of these studies due to weather and access.

PROJECT CONSTRUCTIBILITY REVIEW

Stantec and their sub-consultants, SiteWorks and Chris Slocum Construction, were tasked with preparing an opinion of probable cost and also a constructibility review for the project. Preparing an estimate for the project requires that the approach to construction be reviewed and incorporated into the cost estimate.

Tarrytown RiverWalk Extension – Constructibility Review

The existing site has steep slopes down to the river, and the edge of the river contains an active railroad (Metro-North Railroad). This makes landside access to the site difficult for constructing a trail along the waterfront. There is the potential of bringing some construction equipment off Paulding Avenue through the former construction haul road by the Police Station. This could provide access for the construction of the new bridge at the existing signal bridge location and for construction of the stairs up to the SUP. For the construction of the crossing at Van Wart Avenue, construction equipment could access this area through the street network. Setting up construction operations at the cul-de-sac at Van Wart Avenue would be a challenge for community relations, however. For the construction of the Montefiore Bridge and trail, it would be possible to construct the trail in this vicinity wider and more robust to support construction equipment accessing the existing trail. There also appears to be a former access that was cut into the slope below the trail which could access the lower area adjacent to the tracks.

Access and Mobilization

1) Over-Water Barge Approach:
Given that landside access for drilling equipment, cranes, concrete transit mix and dump trucks is very limited, another approach, other than from the land, to construct the waterfront portion of this trail is required. The estimate provides costs based on waterside access by barge, presuming that drilling equipment, cranes, concrete batch plant, and other materials would be constructed from a series of barges. It is likely that there will be two work barges and two material barges needed to construct the project.

Construction Approach:
Due to the difficulty in providing access to the site for ironworkers, it is assumed that having the major structural items prefabricated and shipped to the site would be more cost effective than constructing them in place. The boardwalk bridge sections, ramp sections, and prefabricated pedestrian bridges are to be assembled off-site at a location to be determined. Based on preliminary discussions with docks and marinas along the Hudson, the nearest location for staging appears to be in Brooklyn. Assembled boardwalk bridge sections, ramp sections, and pedestrian bridges can then by transported by flat-bed truck to a waterfront staging location. Boardwalk and ramp assemblies would then be loaded on barges by crane and transported by barge to the construction site (barge platforms). Boardwalk and pedestrian bridge ramp assemblies would be installed by crane from barge-mounted crane. Pedestrian bridges could be transported to a Metro-North Hub (presumably at Croton Yards), loaded onto rented rail equipment, and moved to the point of erection by work train (flat cars). The lifting and placing of the prefabricated pedestrian bridges is expected to be accomplished by rail-mounted crane, between the hours of 1:00 am and 5:00 am.

Risk in the Barge Approach:
This method of construction assumes water depth will allow barge approach sufficient to place the drilling equipment at the drilling location while remaining on the barge. Use of temporary bridges to

span, barge to shore has not been included in the cost estimate. Temporary drilling platforms in the river have not been included in the cost estimate.

2) Over-Land Approach – Metro-North Railroad:
Another approach to constructing the project would be the use of rented rail equipment and movement to the point of erection by work train (flat cars). This method presumes that drilling equipment, cranes, concrete, and other materials would be constructed from the railroad supported by a series of barge platforms. This approach would need extensive coordination with the railroad and further discussions with them is required before making a final recommendation on this approach. The schedule of trains and operations on the active tracks would need to be considered and evaluated to determine if this is a viable option. It could be that certain portions of the project would utilize this approach.

Construction Approach:
Boardwalk bridge sections, ramp sections to access prefabricated pedestrian bridges, and prefabricated pedestrian bridges would be assembled off-site (at a location to be determined). These assembled boardwalk bridge sections, ramp sections, and pedestrian bridges could be transported by flat-bed truck to MNR Hub staging location, presumably at Croton Yards, loaded on rented rail equipment and moved to the point of erection by work train (flat cars). Lifting and placing boardwalk assemblies, ramp assemblies and sections is expected to be accomplished by rail mounted crane (hours of work TBD). Lifting and placing the prefabricated pedestrian bridges is expected to be accomplished by rail mounted crane, between the hours of 1:00 am and 5:00 am.

3) "Leap Frog" Approach – Losee Park
Another option would be to construct the waterfront structure using a "leap frog" method, whereby the structure was started on land, by Losee Park and then the construction is progressed along the boardwalk with construction equipment traversing over the completed work. There is some concern about the weight limits of the bridge over the tracks to the north of the Tarrytown Station. This would have to be reviewed based on the anticipated construction equipment. In this scenario it would be less critical to have drilling equipment supported by barge mounted cranes and/or rail mounted crane, and the material supply would be over-land delivery from the boat club rather than by barge or rail mounted work train.

While temporary support would be required to allow passage of the drilling equipment over the drill line, these supports would likely be more economical and have significantly less environmental impact that the construction of overwater platforms. This option will require significant additional engineering to demonstrate viability.

Specific Constructibility Observations
Based on field visit and observations, it appears that the new bridge at the existing signal bridge will need to be relocated further south on the project. Metro-North has installed some significant communication/electrical structures in the vicinity of this bridge location. In addition, the existing Cuomo Bridge abutments and piers may make it difficult to maneuver in this area.

SECURE AGREEMENTS FOR LONG-TERM OPERATIONS AND MAINTENANCE

Long-term operation and maintenance agreements are needed to support the trail. The Village of Tarrytown has agreed to provide day-to-day policing, cleaning and maintenance of the trail; however, they will not be able to support the long-term capital maintenance work that will be required.

Typical Working Barge with Crane

"Leap Frog" Method of Construction at Silver Sands State Park, Milford, CT

APPENDICES

Appendix A - First Advisory Committee Meeting

On November 20, 2017, a meeting was held with the RiverWalk Advisory Committee. The following plans, maps and graphics were presented at the meeting.

- Overall Plan Showing Routes Evaluated
- C100 Losee Park Connection
- C101 Tappan Landing Area
- C102 At New Cuomo Bridge
- C103 South of Cuomo Bridge
- C104 Connection at Van Wart Avenue
- C201- Section A-A Bridge Over Railroad at Tappan Landing
  Section B-B Trail at Top of Slope at Tappan Landing
- C 202 Section F-F Trail South of Bridge
- C105 Trail Connection to Visitor Center
- C106 Route 9 Improvements
- C107 Route 9 Improvements to Paulding Avenue
- C108 Trail Along Police Station on South Side of Thruway
- C109 Trail at Montefiore
- C110 South Trail Connection to Existing RiverWalk

Appendix B - Second Advisory Committee Meeting

On February 8, 2018, a second meeting was held with the Advisory Committee. The following plans, maps and graphics were presented.

- Option 1A Waterfront Route and Elevator
- C100 - Section 1 Section at Waterfront North of Cuomo Bridge
  - Section 2 Bridge over Railroad North of Cuomo Bridge
- C101 Study of Elevator Connection to Cuomo Bridge
  - 1 Path to Elevator with Retaining Wall
  - 2 Path to Elevator with Tunnel
  - 3 Section at Tunnel with Elevator
- Option 1B Waterfront Route and Switchbacks
- C102 Plan with Switchbacks Under Bridge and Trail Landward of Railroad
- C103 - 5 Section at Switchbacks at Bridge
  - 6 Section at Switchbacks at Bridge
- C104 9 Section Parallel to Thruway (I-287)
- Option 1C Waterfront Route and Street Alignment
- Option 1D Waterfront Route and Wooded Route (Montefiore and JCC)
- C105 - 7 Bridge over Railroad at Van Wart Street
  - 8 Bridge over Railroad at Montefiore node (Existing RiverWalk)
- Option 2A Upland Route and Elevator
- C106 Plan North of Cuomo Bridge
- C107 - 3 Section at Top of Slope Tappan Landing
  - 4 Section at Quay Neighborhood
  - 1 Railroad Bridge North of Cuomo Bridge
  - 2 Section at Water north of Cuomo Bridge
- Option 2C Upland Route and Street Alignment
- C108 - 10 Section along Van Wart Street
  - 11 Section along Paulding Avenue
- Option 2D Upland Route and Wooded Route
- Option 3A Water Route Combined with Land Route and Elevator
- Option 3B Water Route with Land and Switchbacks
- Option 3C Water Route with Land and Street Alignment
- Option 3D Water Route with Land and Wooded

Appendix C - Third Advisory Committee Meeting

A third meeting was held with the Advisory Committee. The following plans, maps and graphics were presented.

- C101 - Plan at Losee Park along Waterfront Route
- C102 - Plan North and South at Cuomo Bridge along Waterfront Route
- C103 - Plan South of Cuomo Bridge to Montefiore Crossing
- C104 - Stairs at Cuomo Bridge – Option 1
- C105 - Stairs at Cuomo Bridge – Option 2
- C106 - Trail from RiverWalk through Montefiore/JCC
- C107 - Sections at Montefiore Bridge over Railroad, Section at Van Wart and Section at Tappan Landing for Waterfront Route
- C108 - Section at Signal Bridge and Stairs from Signal Bridge to Waterfront Route
- C109 - Profile along Stairs at Cuomo Bridge – Option 1
- C110 - Profile along Stairs at Cuomo Bridge – Option 2

Appendix D - Fourth Advisory Committee Meeting

On April 27, 2018, a fourth meeting was held with the Advisory Committee. The following plans, maps and graphics were presented.

Option 1 Signal Bridge and Montefiore Crossing
- C101.1 – Plan at Signal Bridge under Cuomo Bridge
- C102.1 – Waterfront Route Losee Park Connection
- C103.1 – Plan North and South at Cuomo Bridge
- C 104.1 – Plan South of Cuomo Bridge to Montefiore Crossing
- C 105.1 – Stair at Cuomo Bridge
- C 106.1 – Trail from RiverWalk through Montefiore/JCC

Option 2 Signal Bridge and Van Wart Crossing
- C 101.2 – Stair at Cuomo Bridge
- C 102.2 – Waterfront Route Losee Park Connection
- C 103.2 – Plan North and South at Cuomo Bridge
- C 104.2 – Plan South of Bridge to Van Wart
- C 105.2 – Stair at Cuomo Bridge
- C 106.2 – Trail from RiverWalk through Montefiore/JCC

Option 3 Signal Bridge and Waterfront/Land Route
- C 101.3 – Overall Plan Signal and Water/Land Route
- C 102.3 – Water Route from Signal Bridge to Losee Park
- C 103.3 – Land Route to Signal Bridge
- C 104.3 – Land Connection to Van Wart Above Retaining Wall
- C 105.3 – Stair at Cuomo Bridge
- C 106.3 – Trail from RiverWalk through Montefiore/JCC

Appendix E - Public Meeting Documents

An Open House Public Meeting was held on June 24, 2018. The following plans, maps and graphics were presented.

- Overall Plan with Two Questions
- Existing Conditions
- Connection to SUP
- Stair Connection
- Accessible Trail Connection
- Waterfront Renderings
- Trails Options A, B, C
- Voting Chart

Appendix F - Metro-North Railroad Meeting Documents

A meeting was held with Metro-North on July 17, 2018. The following plans, maps and graphics were presented.

- Cover Sheet
- Overall Plan with Two Questions
- Original RFP Map
- Existing Conditions
- Bridge Restrictions Map
- Route 9 Improvements
- Option 1 - Waterward
- Option 2 - Landward
- C109 – Switchback under Cuomo Bridge
- 1A - Waterfront and Elevator
- 1B - Waterfront and Switchbacks
- 1C - Waterfront and Street Alignment
- 1D - Waterfront and Wooded Route
- 2A - Upland and Elevator
- 2B - Upland and Switchbacks
- 2C - Upland and Street Alignment
- 2D - Upland and Wooded Route
- 3A - Waterfront/Land and Elevator
- 3B - Water/Land and Switchbacks
- 3C - Water/Land and Street Alignment
- 3D - Water/Land and Wooded Route
- Site Walk Photos (3)
- SUP Connection
- Stair Connection
- Accessible Trail Connection
- Trails Options A, B, C
- Option 1 - Signal and Montefiore Crossing Sections
- Option 2 - Signal and Van Wart Crossing Sections
- Renderings (4)

Appendix G - Preliminary Plan Drawings

This appendix contains preliminary engineering drawings of Concept A, Concept B and Concept C, including bridge connections to the GMMCB Shared Use Path, the bridge connection to Van Wart and the bridge connection to Montefiore.

Appendix H - Renderings

This appendix contains renderings of the Waterfront Boardwalk, Van Wart Bridge and Montefiore Bridge.

Appendix I - Opinion of Probable Construction Cost Detailed Breakdown

Appendix J - Phase I Site Assessment

Appendix K - Geotechnical Report

Appendix L - Bathymetric Report

Appendix M - Topographic Survey