



# THE HUDSON HIGHLANDS FJORD TRAIL

DRAFT MASTER PLAN

FEBRUARY 2020

## Updates to the Master Plan Identified Through Environmental Review and other Subsequent Planning Efforts

Dear Reader,

Thank you for your interest in the Hudson Highlands Fjord Trail Master Plan! We are pleased to share the vision for the Fjord Trail project, which has evolved since the idea was formed over 15 years ago by residents of Cold Spring and Philipstown. In the two years since this draft was completed, we have continued to host public engagement sessions and studies which have led to several important changes to the Master Plan. This memo is intended to highlight those changes known at this time for transparency.

### Little Stony Point

In the fall of 2021, HHFT staff held a number of focus group meetings in Cold Spring and Philipstown to gather input from groups using and managing Little Stony Point today, and those who might wish to program the space in the future (e.g., youth groups, educators from local schools, wellness and arts specialists). We then invited some of those focus group participants to join a design committee to serve as a sounding board with the landscape architects as they put pen to paper. We also took ideas for future spaces and uses at LSP to the community at the 2022 LSPCA Maple Syrup Day event and received a lot of votes and input!

1. **River Pool.** The Town of Philipstown Comprehensive Plan (adopted Nov 17, 2021) recognizes strong community desire for a public swim area. Little Stony Point just made Riverkeeper's list of top spots in the river where people are swimming (consistent demand for swimming). Additionally, OPRHP staff noted that enforcement of the No Swimming rule at the beach, coupled with unregulated swimming from those in boats offshore was both a management and equity challenge. The River Pool would provide a seasonal swim area with a floating dock and be monitored by an HHFT lifeguard. We'd like to couple that with a no-anchor zone to keep party boat activity away from the swimming area and the intended quiet of Sandy Beach to the south.
2. **Play Zone.** It has also been noted that there is a lack of playground space for youth. Locally, there are play fields for organized sports and tot play areas for very young children (Rec Center and Village Tot Park). The contemplated play zone at LSP is therefore designed to have age-appropriate play areas for tots to pre-teens.
3. **Amphitheater.** The amphitheater has been resized and reconsidered to double as a small program/performance space and an outdoor classroom. While school groups, including from Haldane, use Little Stony Point for outdoor education, there is no formal gathering space. Teachers provided input on basic needs, which include storage space, seating, and a roof to shelter children from the elements (hot sun or rain).

### Notch

Notch trailhead at the former Dutchess Junction Park site has been reduced in scale and scope through the environmental review process to avoid potential impacts on important habitat. This includes shrinking the footprint of the parking area, eliminating a meander path, maintenance facilities, and a classroom, and relocating the forest nets.





As the careful process of the environmental review continues, we anticipate a few more changes will be considered. As those are known and affirmed with the Lead Agency, OPRHP, we will update this memo to provide the most current information.

The Master Plan may be viewed and downloaded at <https://hhft.org/about-the-fjord-trail/master-plan/>

Hard copies of the plan document are available at the following locations:

- Beacon City Hall
- Cold Spring Village Hall
- Fishkill Town Hall
- Philipstown Town Hall
- Nelsonville Village Hall
- Blodgett Memorial Library
- Butterfield Library
- Desmond Fish Library
- Howland Public Library

Once the GEIS is final, after the public and agency comments have been received and considered by the Lead Agency, then the Draft Master Plan will be updated to reflect all of these changes.

Regards,

Amy Kacala  
Executive Director, HHFT



About  
the  
Work

2/21/2020 - Version 1.1

PREPARED BY:

**SCAPE**

GRAY  
ORGANSCHI  
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Pentagram

**LANGAN**

Fast + Epp

JON K. MILLER, PH.D.

***People have been cut off from the river long enough.***

***- Dr. Kathryn W. Davis***



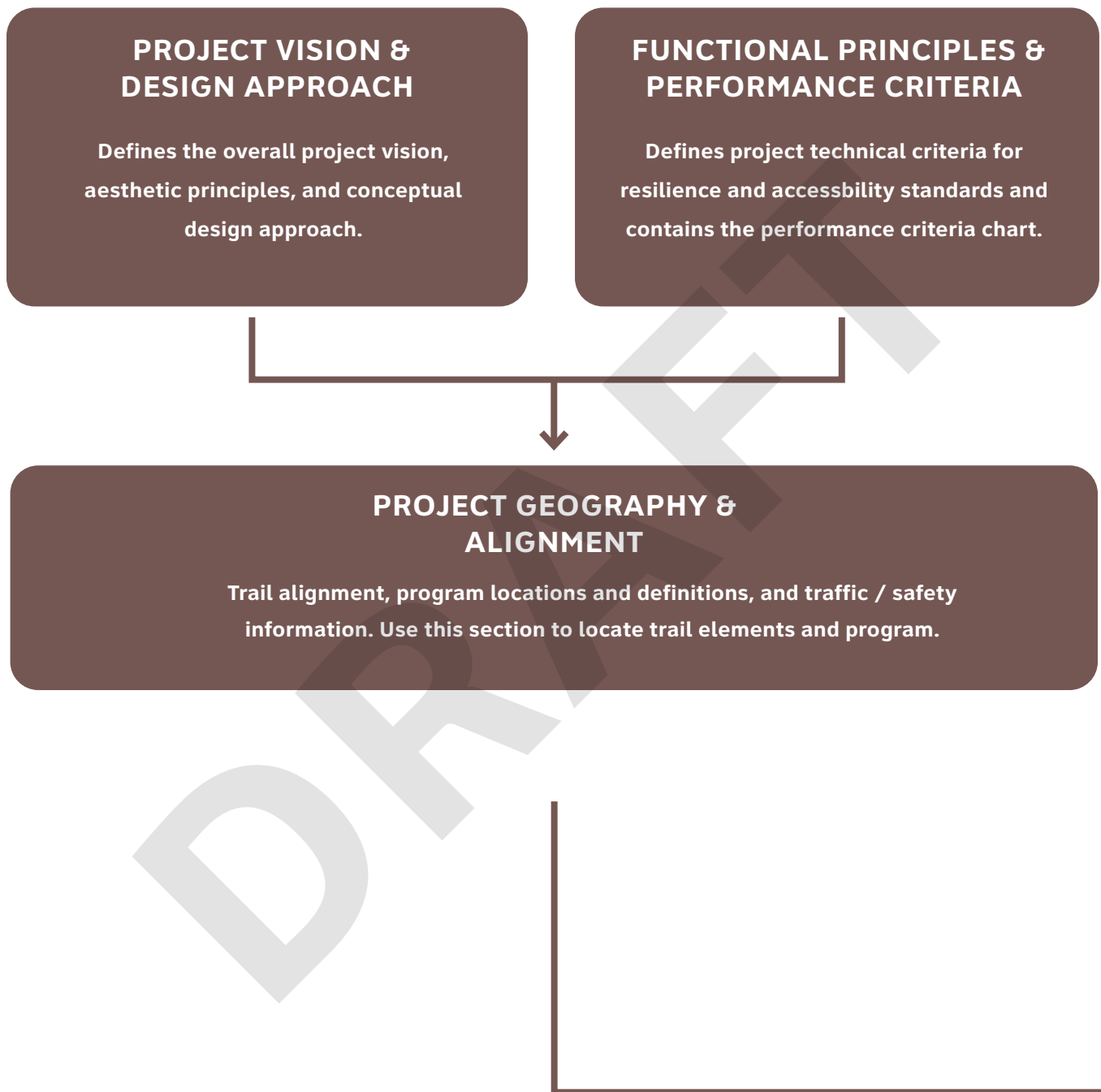


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# DOCUMENT STRUCTURE





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graph TD; A[DESTINATIONS & ENTRIES] --> C[IMPLEMENTATION & PHASING]; B[DESIGN GUIDELINES] --> C; B --> A;
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## DESTINATIONS & ENTRIES

Conceptual design framework for key destinations and entries along the Fjord Trail. Refer to this section for design and material strategies.

## DESIGN GUIDELINES

Refer to this section for design and material strategies for the Main Trail, meanders, trail banks, buildings, site fixtures and furnishings, planting and restoration strategies, and lighting.

## IMPLEMENTATION & PHASING





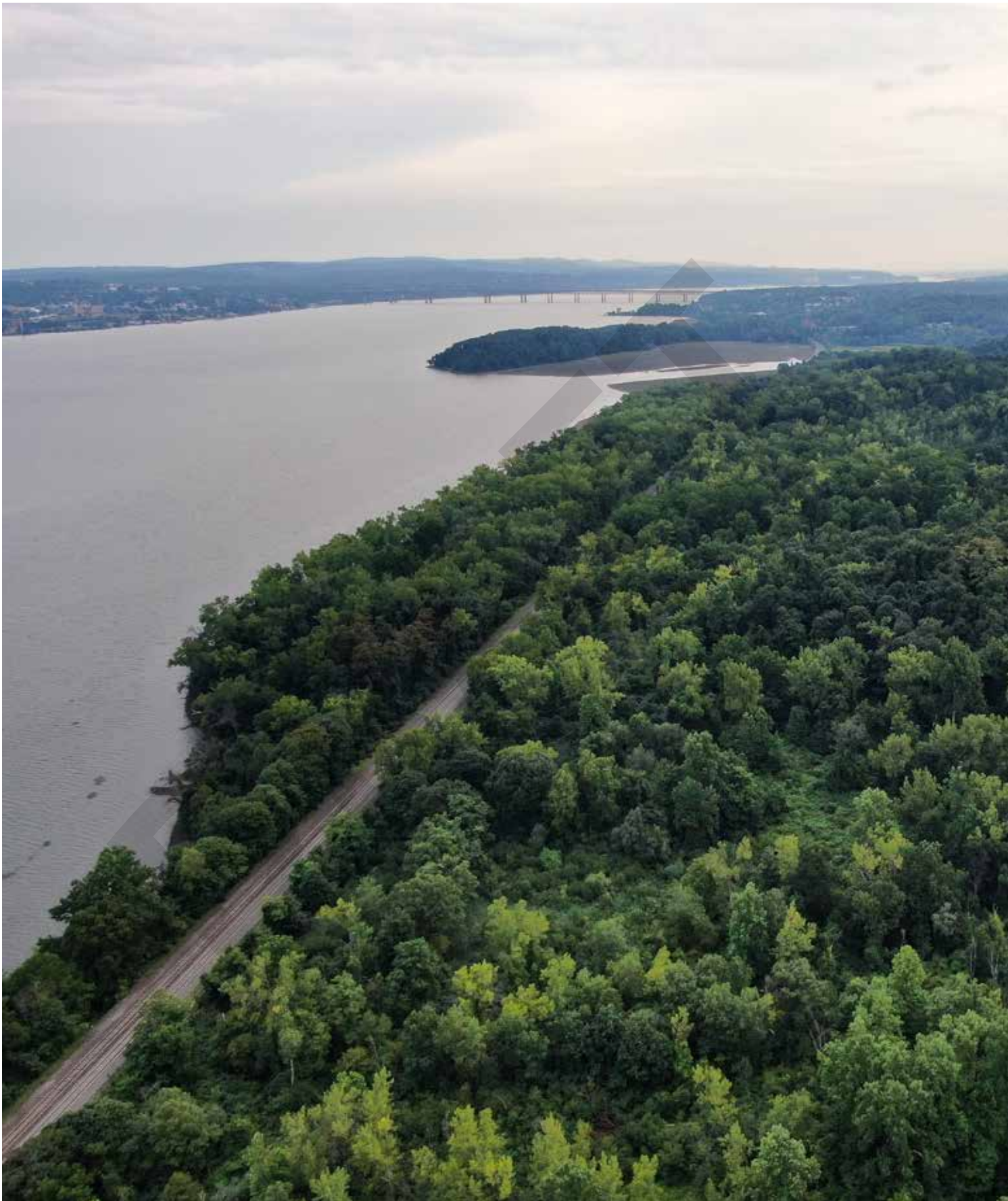






The background of the image is a dark, moody photograph of a forested hillside. The trees are dense and their colors are muted, appearing in shades of dark green and brown. The lighting is low, creating a sense of depth and mystery. The overall tone is professional and serious.

# **EXECUTIVE SUMMARY**







## THE HUDSON HIGHLANDS FJORD TRAIL

The Hudson Highlands Fjord Trail expresses reverence for the extraordinary landscape of the Hudson River and Highlands. This awe-inspiring place has been fused over time with the identity of our nation, as the historic fishing grounds and a sacred site of the Lenape people, as a critical point in the Continental Army's strategy in the Revolutionary War, and as a battleground for environmental justice and natural lands preservation. Perhaps nothing exemplifies the persuasive and powerful force of the Hudson River Fjord in the modern imagination than the paintings of the Hudson River School, which seared this landscape in the nation's memory and today continues to entice generations of creators, explorers, and wanderers to the region.

Today's river landscape has diverged from the idealized depictions of the Hudson River School. While the upland and background landscape have remained largely intact, the foreground has changed. Standard roadway and railway construction practices, urban development and suburban sprawl, and erosion control have hardened the edges and restricted access to the water. The extraordinary topography and ecology of the Hudson River are preserved, but they are now "beyond the rail" and "beyond the fence" – difficult for the public to access and appreciate.

**The Fjord Trail is an opportunity to restore the foreground, welcome people back to the water's edge, and celebrate the unique landscapes of the Hudson River valley. This project is much more than a trail; it is a linear park experience that invites all people to sensitively immerse themselves in the sublime landscapes of the Hudson River and Highlands. The project is at once a path, a portal, a place, and a preserve.**



The Fjord Trail creates 14.5 new miles of privately maintained public paths that trace the Hudson River and offer unique glimpses into the diverse landscapes of the Hudson Highlands. It is a place with varied scales of spaces and aesthetic experiences that emerge along the slender route, offering new ways to inhabit and understand the Highlands region. It is a portal that links the City of Beacon and the Village of Cold Spring to the water's edge and the greater Hudson Valley region, and connects urban residents of New York City to the scenic beauty and restorative power of the river and the highlands landscape. Finally, it is a preserve that protects and restores the landscape, inspiring conservation, stewardship, and engagement in the ecological cycles and patterns that are so often invisible in our busy lives. These ambitions combine to create a linear public landscape that connects over 8,000 acres of Hudson Highlands State Park Preserve directly to the Hudson River.

7.5 MILES OF MAIN TRAIL

6.5 MILES OF MEANDERS

6 DESTINATIONS

69 TRAIL BANKS

7 WATER TRAIL CONNECTIONS

8 REGIONAL TRAIL CONNECTIONS







HUDSON HIGHLANDS  
STATE PARK PRESERVE

COLD SPRING

CONSTITUTION MARSH

DOCKSIDE PARK

LITTLE STONY POINT

BREAKNECK  
RIDGE

STORM KING  
MOUNTAIN

STORM KING STATE PARK

LEGEND:

- MAIN TRAIL
- MEANDERS
- CONNECTORS
- TRAIL BANKS
- DESTINATIONS
- ENTRY POINTS
- DUTCHESS MANOR
- ROUTE 90
- METRO-NORTH RAILROAD
- NEWBURGH-BEACON FERRY LINE
- HUDSON RIVER WATER TRAIL

0 2.5 5 MILES



**The Fjord Trail unlocks the Hudson River landscape experience for all, revealing the sublime beauty of the Highlands region and enhancing access, recreation, and a sense of wonder for a new generation of environmental stewards.**

The project strives to reveal the landscapes of the river to all people, regardless of age, background, or ability level. A single, shared trail for all unites the project and connects the Village of Cold Spring with the City of Beacon. This accessible and bikeable path weaves in and out of distinct landscapes that define the Highlands region – the urban interface, the river’s edge, the steep highlands, the thick deciduous forest, and the tributary marshlands. The shared course is referred to as the Main Trail and is wide,

gentle, accessible; it offers small pull-off places called trail banks to rest, recover, and restore.

Meanders, or spur and loop trails, offer destination-based moments of immersion and escape from the shared space of the Main Trail. Meanders can be small, quick departures from the Main Trail to see a view or shore, longer, rambling walks, or even kayak trips that create new ways to traverse the Fjord Trail landscape. Meanders connect to significant places along the Fjord Trail. Some are constructed to amplify the understanding of the landscape – like the forest net canopy walk and the brick beach boardwalk – others are existing, like the Little Stony Point scramble and Pollepel Island overlook. A range of lightly programmed areas – a driftwood play space, a boulder scramble, a kayak launch, an outdoor education amphitheater–





provide destinations and create space for people of different ages and abilities to engage the wider landscape. Small, sensitive structures emerge along the trail and provide necessary services, like restrooms and wayfinding, to trail users.

The result is a landscape that can be experienced multiple ways, by people with diverse abilities and desires, with different modes of movement, over all the seasons. The Fjord Trail offers a network of experiences, interwoven with the Main Trail, that the visitor can encounter depending on desired duration, activity, pace, season, and time of day.

With all work, all decisions, the Fjord Trail expresses reverence for the regional landscape. Built elements will nest within a restored and living landscape that is ecologically rich and sculpted by

natural processes. Conservation and restoration figure prominently in the design, through the identification of sensitive habitats to avoid and landscape restoration opportunities to integrate into the trail vision. With access comes impact; therefore, the Fjord Trail's design language includes subtle but effective features like strong trail bank edges, buffers, and fences to keep people safe and ecosystems protected from overuse and damage. The project strives to balance the competing concerns of access and conservation to create an immersive experience of the ecological sublime.







### **MAIN TRAIL THROUGH THE FOREST**

The multi-use trail passes through distinct landscape experiences of river, forest, highlands and marsh.



### **THE FJORD TRAIL**

The Main Trail connects the Metro- North train station in Cold Spring to the station in Beacon (Dockside Park to Long Dock Park)





### MAIN TRAIL ALONG THE RIVER'S EDGE

The trail will reunite people with the river's edge where the shoreline is currently inaccessible.









# **PROJECT BACKGROUND**

**PROJECT PARTNERS**

**BACKGROUND & PLANNING PROCESS**

**PROJECT AREA & REGIONAL CONTEXT**



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**THE HUDSON HIGHLANDS FJORD TRAIL  
STEERING COMMITTEE**



**Parks, Recreation  
and Historic Preservation**



**Department of  
Transportation**



**Department of  
State**



**Department of  
Environmental  
Conservation**

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**NON-PROFIT**



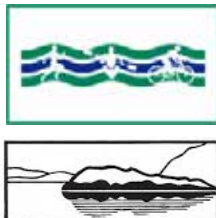
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**STATE AGENCY**



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**NY METRO AGENCY**



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**MUNICIPAL**

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**COMMUNITY-BASED NFP**

# PROJECT PARTNERS

Without the guidance and time generously given to the project by all its partners, the work in this document would not have been possible. Thank you to all the project partners, committees, and focus groups that collaborated with the design team to produce this Master Plan.

## STEERING COMMITTEE

- Amy Kacala, Scenic Hudson
- Steven Rosenberg, Scenic Hudson
- Andrew Chmar, SCDCE
- Linda Cooper, NYS OPRHP
- Evan Thompson, NYS OPRHP
- Jason Wolfanger, NYS DOT
- Lance MacMillan, NYS DOT
- Lisa Weiss, NYS DOT
- Bill Rudge, NYS DEC
- Emily Provonsa, Metro-North Railroad
- Emily Pereira, NYC DEP
- Terrance Nolan, Open Space Institute
- Steve Horowitz, Open Space Institute
- Hank Osborn, NY/NJ Trail Conference
- Paul Galley, Riverkeeper
- Michelle Smith, Hudson Highlands Land Trust
- Lee Kyriacou, City of Beacon
- Randy Casale, City of Beacon
- Ozzy Albra, Town of Fishkill
- Bob LaColla, Town of Fishkill
- Dave Merandy, Village of Cold Spring
- Fred Martin, Little Stony Point Citizen's Association
- Hadrien Coumas, The Lenape Center

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- Jesse Jaycox, NYS OPRHP
- Julie Lundgren, NYS NHP, OPRHP
- Nava Tabak, Scenic Hudson
- Paul Gallay, Riverkeeper
- Heather Gierloff, NYSDEC
- Erik Kiviat, Hudsonia
- Jim Lodge, Hudson River Foundation
- Nicole Wooten, Hudson Highlands Land Trust
- Josh Ginsberg, Cary Institute for Ecosystems Studies

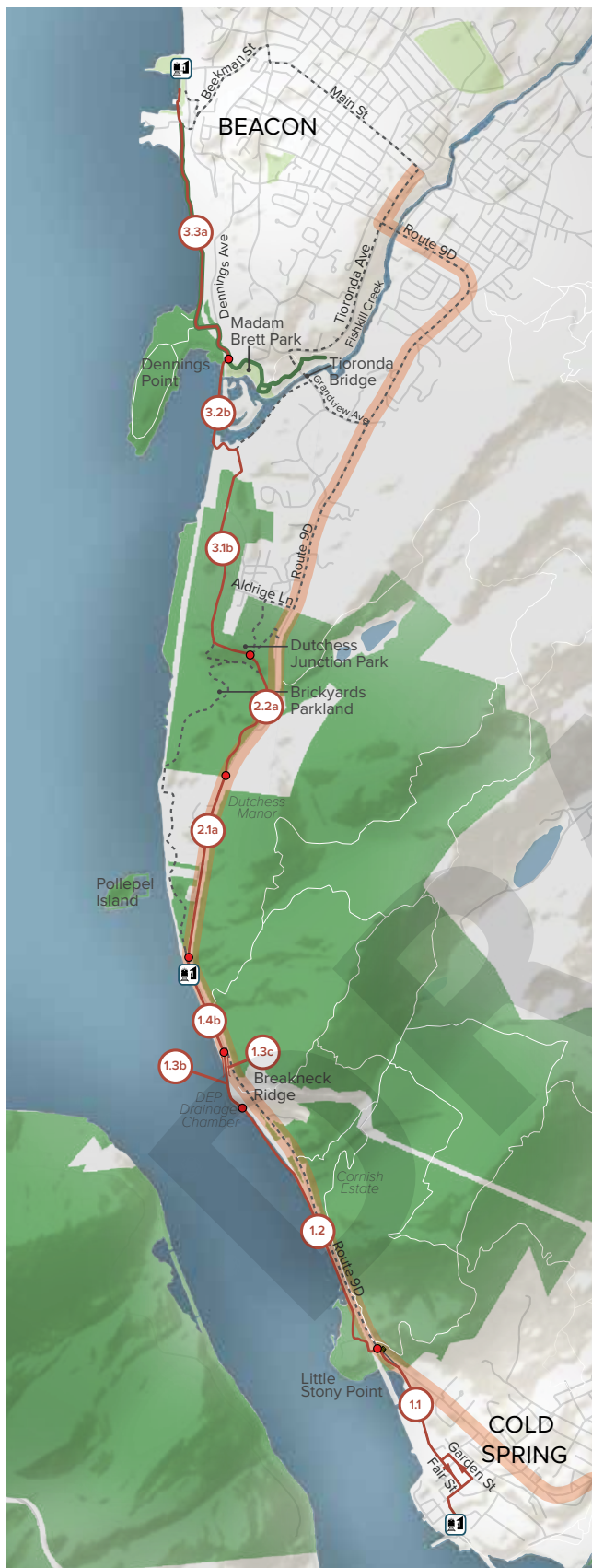






## BACKGROUND & PLANNING PROCESS

The Hudson Highlands Fjord Trail is not a new planning effort. It is the re-boot and re-envisioning of what was to be a trail connecting Cold Spring and Beacon into a world-class park that celebrates the unique character, ecology, history, and culture of the Hudson Highlands. The project design seeks to take full advantage of its setting in the Hudson Highlands to reconnect people to the Hudson River's edge, varied landscape, and many stories it holds about the past, present, and future.



- Routes considered
- Preferred route
- Change in route segment
- Orange shaded area: Parkway traffic calming: shoulder bicycle lanes (5'), coordinated banners/gateway/wayfinding signage

- 3.3a Existing trail network**  
Route trail along existing paths
- 3.2b MNR Causeway**  
Multi-use trail over the existing, unused MNR causeway
- 3.1b Brickyards Parkland**  
Multi-use trail through wooded area to the Fishkill Creek
- 2.2a Brickyard Parkland to Dutchess Junction Park (eastern upland route)**  
Multi-use trail at grade passing over two streams on bridges, benched into slopes or on structure over extremely steep grades
- 2.1a Breakneck Ridge Station to Brickyard Parkland**  
Buffer-separated multi-use trail along west side of Route 9D, requires new roadway alignment
- 1.4b Breakneck Connector (2014 CFA application)**  
Multi-use trail partly on structure and partly at grade
- 1.3c Bike-Ped bridge over railroad tracks**  
ADA compliant crossing over the railroad tracks
- 1.3b Breakneck Headlands/Shoreline**  
Multi-use path at grade; scramble and/or stair connection to Breakneck Ridge trail
- 1.2 Shoreline between Little Stony Point and Breakneck Ridge**  
Multi-use path along river's edge including at-grade asphalt path and structures over water
- 1.1 Cold Spring Station to Little Stony Point**  
Shared lane markings, sidewalks, signage; Multi-use path at grade in Little Stony Point

For planning purposes  
Concepts not based on survey

**RBA**

## FJORD TRAIL 2015 MASTER PLAN MAP

Map diagram describing the overall alignment and reaches of 2015 Master Plan. Image by RBA from "Hudson Highlands Fjord Trail Draft Master Plan," May 2015.

## BACKGROUND: THE 2015 MASTER PLAN

The vision for a trail was born out of citizen concern over unsafe pedestrian conditions along Route 9D and a sense of duty to find a solution before people were hurt. Conversations over coffee eventually grew into a coalition with a range of project partners including local municipalities, local and regional non-profits, Metro-North Railroad, and various state agencies. This group became the steering committee that pooled funds and hired a consultant to complete a master planning process for the Hudson Highlands Fjord Trail (Fjord Trail).

The purpose of the initial Master Plan study, as it was conceived at the time, was to evaluate the feasibility of creating a trail linking the Cold Spring and Beacon train stations. The study identified and evaluated various route alternatives based on project goals and public input, along with technical and cost feasibility. This analysis and public input culminated in a preferred alignment for the proposed Hudson Highlands Fjord Trail (Fjord Trail or Trail) as an accessible shared-use trail connecting the Village of Cold Spring, in Putnam County, to the City of Beacon, in Dutchess County. **The Preliminary Draft Master Plan for the Hudson Highlands Fjord Trail** (Preliminary Draft Master Plan) was completed and endorsed by all four communities in 2015. The Master Plan established that:

*“The goal of the project is to transform a portion of the State Route 9D/Metro-North Hudson Line corridor in the heart of Hudson Highlands State Park between the Village of Cold Spring and City of Beacon from a high speed thoroughfare into a multi-use, user-friendly recreational, tourism-oriented connection that provides people with a stronger visual and physical connection with the Hudson River.”*

The 2015 Master Plan also identified key goals that served as parameters to assess the feasibility and desirability of various proposed route alternatives:

**Safety:** Lack of pedestrian, hiker and cyclist safety was the initial issue that led to the grassroots support for the trail. It is necessary to address traffic safety concerns along this portion of State Route 9D, where visitors currently park to access the trailheads, by calming traffic and implementing pedestrian safety measures.

**Recreation:** Creation of this trail is an opportunity to provide a new recreational amenity for the region accessible to a broader population than just hikers. This project could transform the character of this stretch of Route 9D from that of a dangerous high-speed thoroughfare into a multi-modal recreational corridor that acknowledges the diverse needs of the motorists, pedestrians and cyclists using it. ADA access was sought where possible to open this unique area to people with disabilities, families with young children and the aging population. A trail located here would ultimately connect into a regional greenway and trail network, as well as the broader Hudson River Greenway, to create a multi-modal link between adjacent recreational opportunities and natural assets that people of all physical abilities could use.

**Highlight & retain natural beauty, ecology and environment:** Creating a continuous off-road, multi-use trail that provides visual and physical connection to the Hudson River and surrounding streams and woodlands is a major focus, given the strong public support for a such a trail. The design concepts developed are based on analysis of critical areas of environmental, cultural and archaeological significance, and have been developed to minimize environmental impacts during construction, to the extent possible, while maximizing exposure to natural surroundings and views.

**Economic development:** Encouraging non-motorized travel between Cold Spring and Beacon and their tourism-based destinations is a major goal that would be realized as a by-product of this trail. Once built, a continuous trail will highlight assets of these two communities as well as Hudson Highlands State Park Preserve. Therefore, unless there are specific economic development benefits for a given route segment, this goal is not analyzed in detail for each segment. Rather, it is regarded as a strong reason in support of implementing the entire trail route.

**Construction feasibility:** Evaluating the desirability of various route alternatives revealed a series of practical issues at the forefront of the analysis. These include political jurisdiction, property ownership, environmental constraints, engineering feasibility, construction issues, project cost, and political and public support.



## SINCE THE MASTER PLAN

### **Generic Environmental Impact Statement (GEIS):**

As part of the master planning process, a Generic Environmental Impact Statement will be prepared under the New York State Environmental Quality Review Act (SEQR), first as a Draft GEIS (DGEIS) and ultimately a Final GEIS (FGEIS). The New York State Office of Parks, Recreation and Historic Preservation (hereinafter “OPRHP”) is the Lead Agency for the State Environmental Quality Review Act (SEQR) review of the proposed Hudson Highlands Fjord Trail (Fjord Trail or Trail) and Scenic Hudson is serving as Project Manager for this assignment.

The DGEIS process was initiated in 2016 with the publication of the Draft Scoping Document on July 6, 2016. This scoping document provides a table of contents for items to be analyzed in a DGEIS, which will identify and evaluate benefits and potentially significant adverse impacts that are pertinent to the Proposed Action (in this instance, The Fjord Trail), and to identify appropriate mitigation measures, as well as, viable alternatives. It also eliminates consideration of any impacts that are irrelevant or non-significant. With its

publication, the Draft Scoping Document was made available for review and for public comment on the OPRHP project website, the Scenic Hudson website ([www.hudsonfjordtrail.org](http://www.hudsonfjordtrail.org)), and circulated to all involved and interested agencies. A public scoping session was held on November 14, 2016, and public comments were received on the Draft Scoping Document until November 18, 2016.

Concurrently with these agency and public reviews and comment, analysis was begun on the preferred route identified in the 2015 Master Plan. However, this process was paused in 2017 as public input and field work indicated that additional planning, design and route alternatives were merited for the project (see next section). Ultimately, A Draft Generic Environmental Impact Statement (DGEIS) will be developed addressing all items identified in this Final Scoping Document.



### **SITE WALKS**

*The design and environmental review team conducted several site walks throughout the planning process.*

**Breakneck Connector:** The segment of the potential Fjord Trail alignment between the Breakneck Ridge Trailhead and Breakneck Ridge Metro-North Station is one of the most heavily-used areas of the potential trail route, particularly in the Spring to Fall, with thousands of hikers arriving by car, train and bicycle on peak weekends. There is limited parking, no pedestrian walkways (hikers must walk along an informal path just outside the guardrail on 9D or on 9D itself), and no designated bicycle accommodation.

Based on these conditions, project stakeholders and the steering committee prioritized this segment as one of the most critical “sub-projects” within the Fjord Trail corridor and identified it as the first segment that should be constructed. Immediately after the master plan was completed, a full design for this segment was developed through construction documents for an off-road shared-use facility located between the Metro-North tracks and State Route 9D that would:

- Create a separated 12' trail for bikes and pedestrians between the Metro-North pedestrian bridge and the Breakneck Ridge Trailhead.
- Create designated parallel parking on Route 9D, create no parking zones to eliminate dangerous conditions, and expand and pave the Breakneck parking lot with permeable pavement and designate reserved parking spaces for emergency responders to ensure their safety and convenience when performing rescues.
- Add a new welcome center and signage for the Fjord Trail and trailheads of major trails in Hudson Highlands State Park Preserve like Breakneck Ridge!
- Remove invasive vegetation and plant native landscaping along the trail, including adding two to three rain gardens in and around the parking lot.

Receiving only one bid response several times higher than available funding, the project was halted. It is currently being reconsidered in parallel with the updated master planning process.



#### **BREAKNECK CONNECTOR**

*Currently, hikers and visitors walk single file along an extremely narrow path adjacent to State Route 9-D.*





STEERING COMMITTEE PROJECT KICK-OFF MEETING



## FJORD TRAIL 2.0: RE-THINKING THE 2015 MASTER PLAN

In the intervening years since the completion of the 2015 Master Plan, the vision and aspiration for the Project has evolved into the understanding that the full execution of the Hudson Highlands Fjord Trail should be the creation of a linear park of exemplary design at the intersection of the highlands and the river, providing enhanced access to opportunities for appreciation of both and celebrating the deep history, striking and dramatic scenery, rich biodiversity and ecological resources for which the Hudson Highlands region is known. The aspiration of this new phase of the Fjord Trail project is to create a master plan and design guidelines not just for a trail, but for a linear park that creates opportunities for appreciation and awe of this rich natural landscape.

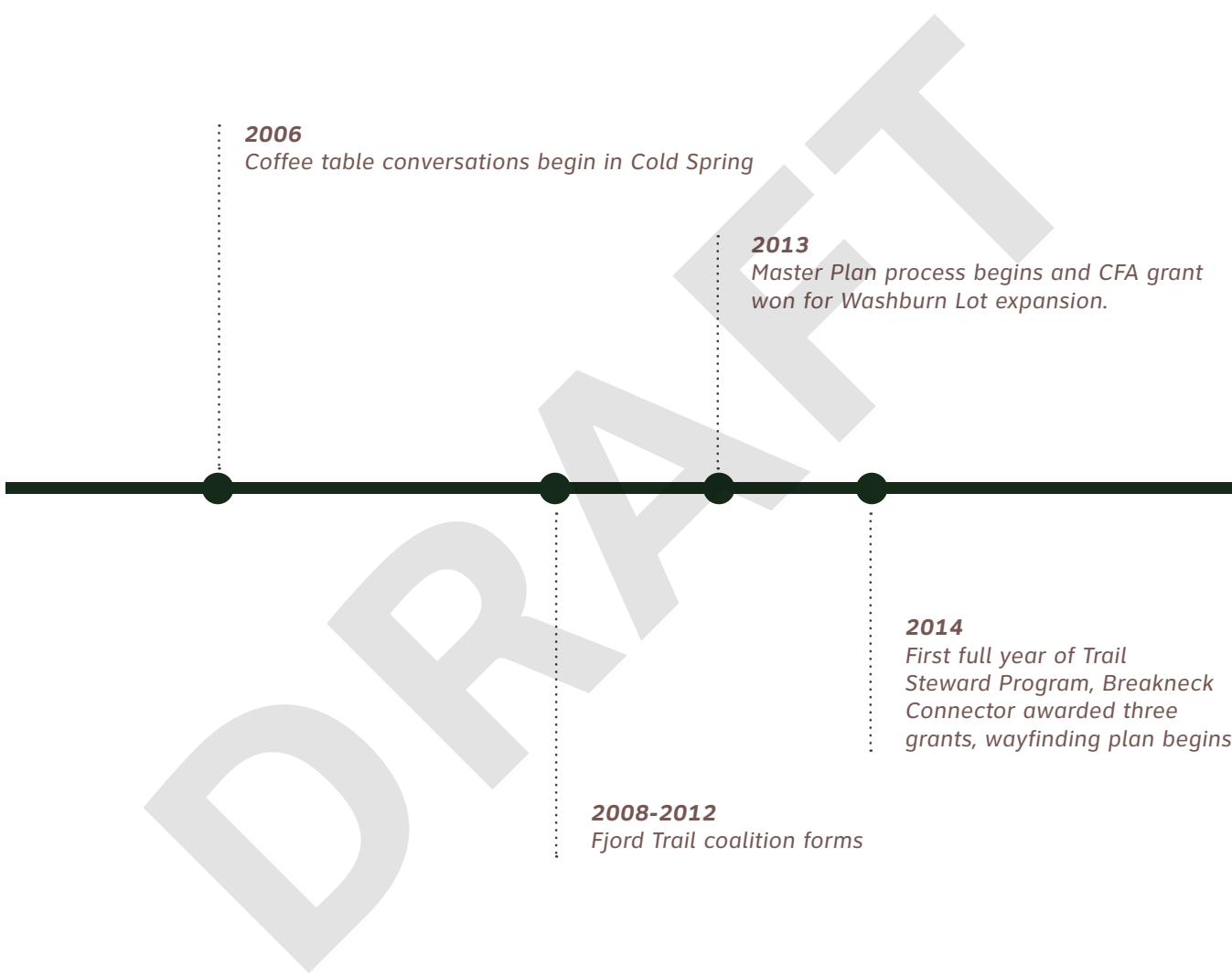
The design should achieve a sense of being the landscape versus something placed upon the landscape. The Fjord Trail, at its core, will connect people with this natural cathedral, including restoring public access to the river that has been impeded over time, creating an amenity for residents and visitors through waterfront access. In addition, Fjord Trail will incorporate and improve existing parks located in the project area, including improvements to trail systems, creation of family-friendly zones and education spaces, and landscape ecology restoration. The project is also as much about caring for the landscape - being restorative where needed to address past degradation as well as forward thinking for resilience and what future risks climate change and sea level rise will pose.

The Fjord Trail will be an amenity for the local communities and region, while also providing a landscape that supports the increased visitation to this area. It will provide alternative day trips for unprepared hikers unable to trek Breakneck Ridge. It will expand restroom facilities and create safe walkways for both area residents and visitors from the Metro-North stations and the local communities, connecting them to other trails in the region. It will include new parking areas, reducing the demand for parking in the local communities and the foot traffic through residential neighborhoods. Finally, it will improve access for emergency responders and encourage safer behavior, with the goal of easing the burden on local emergency responders. Altogether, the Fjord Trail will promote safer, more organized

access to popular destinations and help safeguard local quality of life for residents and integrity of the landscape in the face of high visitation.

Practically, for the Master Plan, this will entail looking beyond the narrow bounds of the trail alignment to the planning of the larger landscape corridor through which it will move. It also entails re-thinking the preferred alignment of the trail in some places to ensure achievement of the updated project goals.

PLANNING TIMELINE



**2015**

*Master Plan completed, Breakneck Connector engineering begins, GEIS grant won, DEP conversations begin.*

**2017**

*Washburn lot completed, Breakneck Connector put out to bid*

**2020**

*Fjord Trail 2.0 Master Plan completed*

**FJORD TRAIL 2.0**

**2019**

*Breakneck Connector, Bridge, and Overlook design begins.*

**2018**

*Fjord Trail 2.0 planning process begins, design team selected*

**2016**

*Work begins on environmental review and shoreline trail engineering*







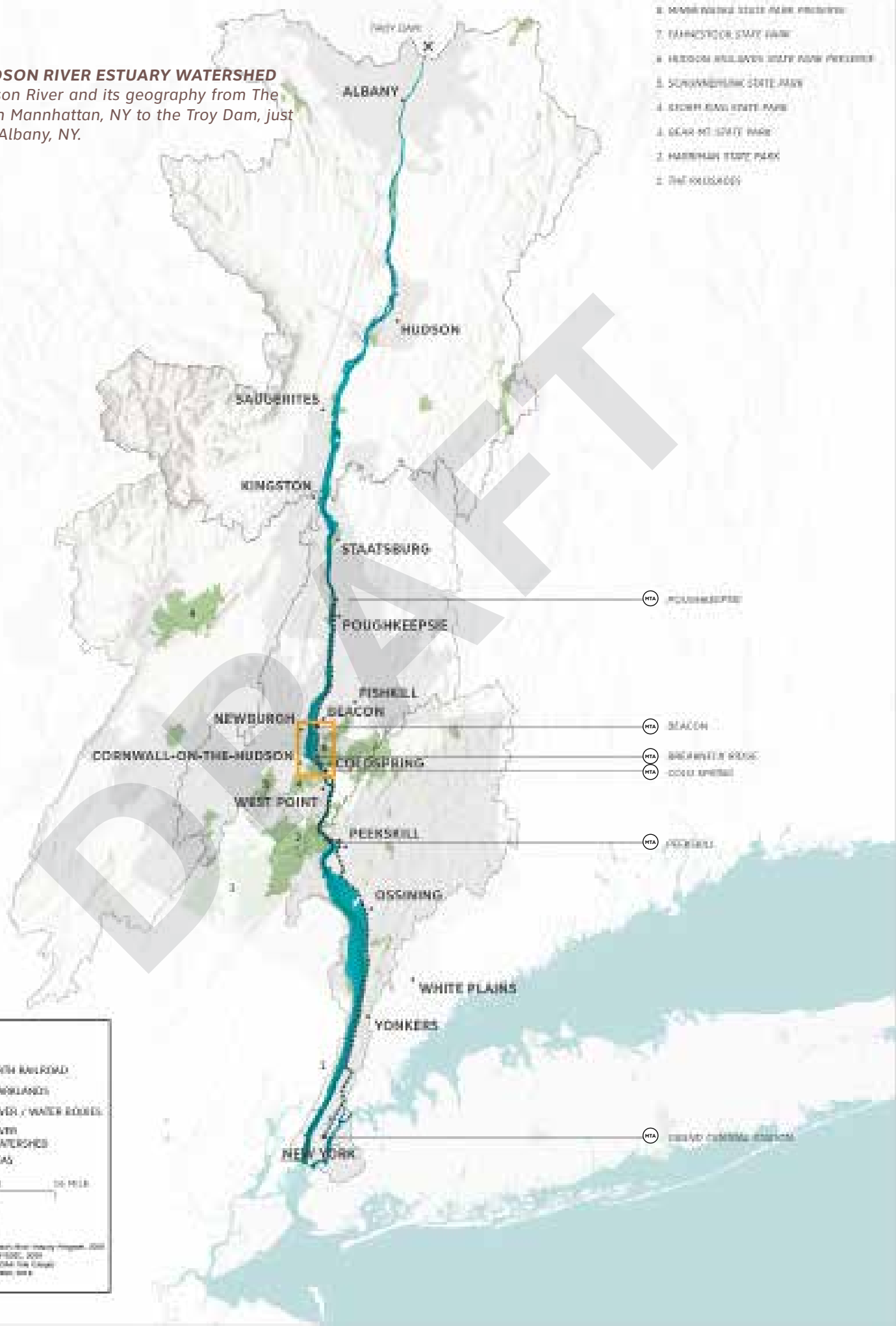
## PROJECT AREA & REGIONAL CONTEXT

Located within the Hudson Highlands State Park Preserve, the Fjord Trail project area spans roughly 7.5 miles north to south, from Cold Spring, NY to Beacon, NY. This area is a major destination, drawing hundreds of visitors weekly from across the region.

## THE HUDSON RIVER ESTUARY WATERSHED

The Hudson River and its geography from The Battery in Manhattan, NY to the Troy Dam, just north of Albany, NY.

8. MINNERVILLE STATE PARK PRESERVE
7. TARRYTOWN STATE PARK
6. HUDSON RIVER PARK PRESERVE
5. SUNNYSIDE STATE PARK
4. ROCKY HILL STATE PARK
3. GEAR MT. STATE PARK
2. HARRISMAN STATE PARK
1. THE HOLLANDS



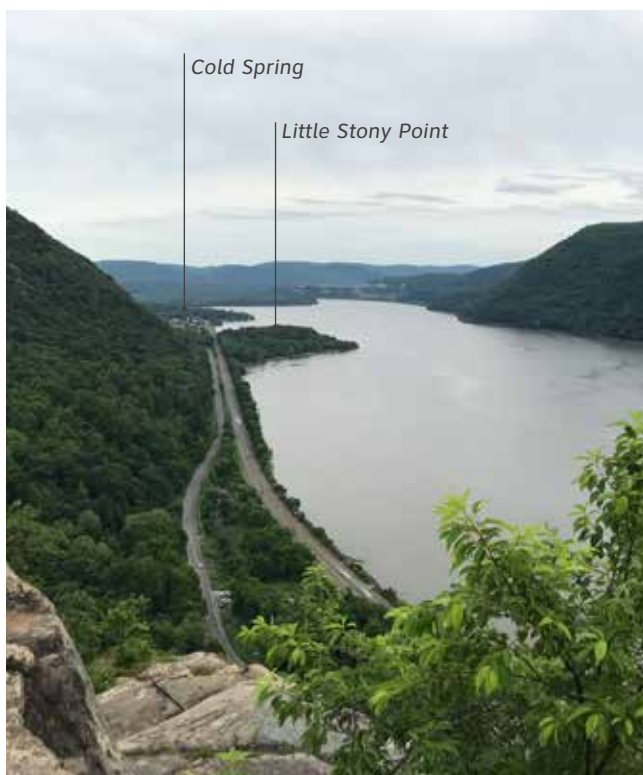


## REGIONAL CONTEXT

Extending several hundred miles north from Manhattan Island, touching five states, the Hudson Valley Region includes nine counties, 13 cities and over 200 villages and towns. The Hudson River stretches 315 miles from its headwaters in the Adirondacks to Battery Park at the southern tip of Manhattan, with a watershed covering over 13,000 square miles. 180 miles of the river (from the Troy Dam to the mouth of the Hudson) is a tidal estuary. An estuary is a place where saltwater and freshwater mingle. Seawater entering the Hudson meets freshwater flowing from the upper river and its tributaries. The Valley is a diverse and varied landscape with extensive preserved lands rich in scenic beauty and biodiversity.

Over the 180 miles of estuary, the river drops only 5 feet, making the Hudson a very slow-moving river. At high tide, the flow of the river is reversed, with the Hudson pushing saltwater into the river as far north as Poughkeepsie and affecting water levels all the way to the dam at Troy, NY (Lifset, Robert D. Power on the Hudson. University of Pittsburgh Press. 2014).

The Native Americans living along the river observed these tidal flows—they called it *Muhheakantuck* – “river that flows two ways”. The Hudson’s current changes direction four times daily as ocean tides pulse upriver 150 miles to the Troy dam.



### **THE FJORD**

*View from Breakneck summit.*



### **FISHKILL CREEK**

*A major tributary in the project site. Fishkill Creek is a wide stream that will require a crossing.*



### **STORM KING**

*View from the Breakneck site.*



### **CONSTITUTION MARSH**

*Located south of the project site. The Fjord Trail has opportunities to connect to this marsh.*

## PROJECT AREA

The proposed Fjord Trail will run along the eastern shore of the Hudson River from the Village of Cold Spring to the City of Beacon, navigating the narrow but dramatic landscape between the river and State Route 9D. The site is located within the Hudson Highlands State Park Preserve—In general, the name “Hudson Highlands” refers to the low mountains or high hills that border the Hudson River north of Peekskill and south of Newburgh, New York. The Hudson Highlands are a series of ridges and valleys that are split by the Hudson River, which flows through a steep-sided fjord carved out by glaciers during the Ice Age.

This area is a unique and well-known landscape in the region with rich scenic, biological / ecological, recreational, and cultural / historic value to a diverse group of stakeholders. Much of this landscape is preserved in the Hudson Highlands State Park Preserve stretching roughly from Cold Spring to Beacon. These unique, compelling factors

have made this area a popular destination for visitors from across the region and beyond. Its proximity to population centers like New York City and relatively easy access not only by car, but by rail - Metro-North regional rail has stops within the project area at Cold Spring, Breakneck Ridge, and Beacon - makes it highly accessible to the region.



### **BREAKNECK RIDGE**

*View from Storm King Mountain, across the Hudson River.*



## HUDSON HIGHLANDS STATE PARK PRESERVE

The Fjord Trail connects Beacon's Long Dock Park to Cold Spring's Dockside Park and to the extensive network of trails in the Hudson Highlands State Park Preserve.

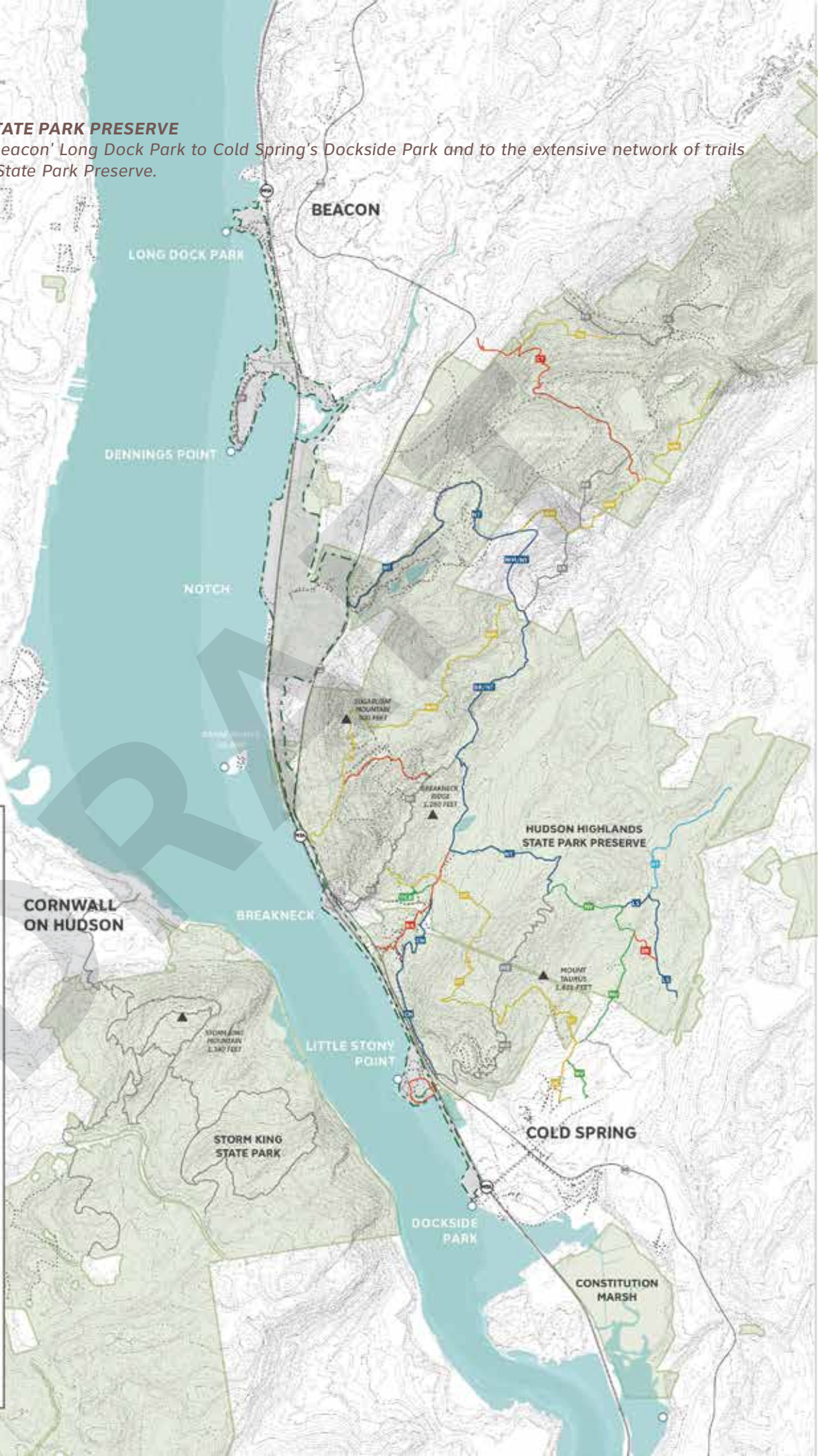
**LEGEND:**

- PROJECT AREA
- STATE PARK
- DESIGNATED HIKING TRAIL (BY BLAZE COLOR)
- UNDESIGNATED TRAIL
- METRO-NORTH RAILROAD
- WATER TRAIL ACCESS

**TRAIL KEY**

HF	HIGHLANDS TRAIL	1.30 MI
LS	LONESTAR	1.00 MI
BL	BROOK	0.95 MI
NV	NELSONVILLE	2.10 MI
UC	UNDERCLIFF	4.10 MI
WB	WASHBURN	2.60 MI
CH	CORNISH	1.40 MI
UCB	UNDERCLIFF BYPASS	0.33 MI
BR	BREAKNECK RIDGE	4.40 MI
NT	NOTCH	5.00 MI
WM	WILKINSON MEMORIAL	8.30 MI
BB	BREAKNECK BYPASS	0.76 MI
CT	CASINO	2.00 MI
FR	FISHKILL RIDGE	4.60 MI
DB	DRY BROOK	0.76 MI
DP	DENNINGS POINT	1.60 MI

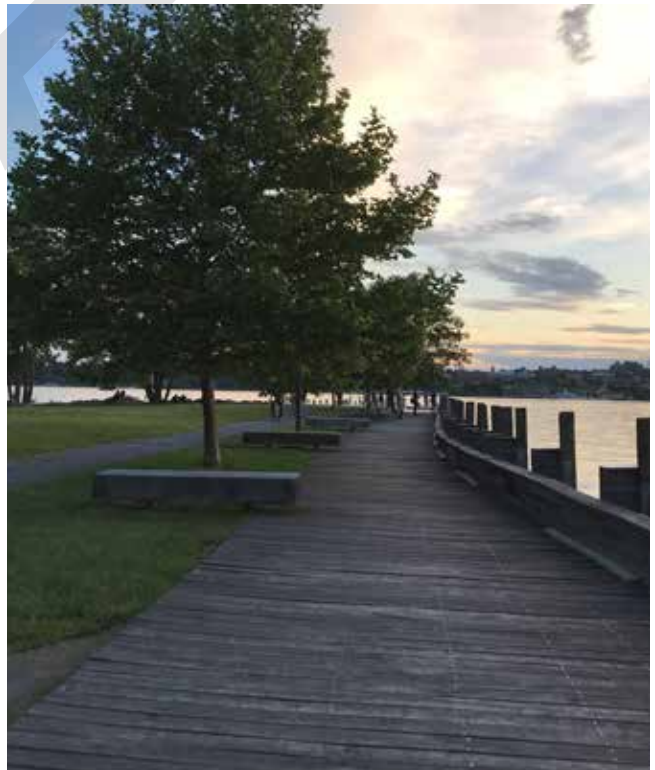
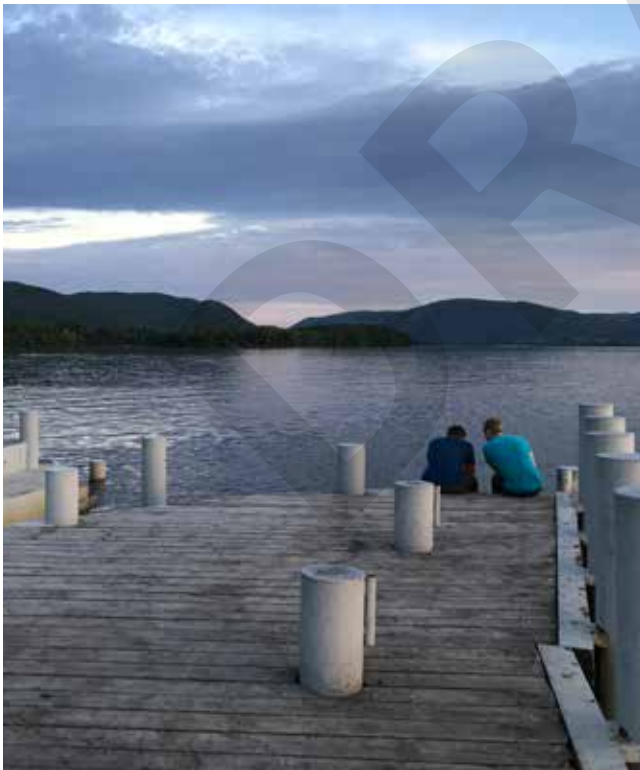
N 0 0.3 0.6 MILE







**DOWNTOWN COLD SPRING & METRO-NORTH STATION**



*Long Dock Park*





**BREAKNECK RIDGE**



**MT. TAURUS QUARRY / WASHBURN TRAIL**



## TRAIL NETWORKS

The Hudson Highlands State Park Preserve has several popular regional trails and hikes that draw many people to the area. The Fjord Trail will connect to the greater region's trail network and destinations, becoming part of the overall draw to the preserve.

According the recent surveys by the New York State Office of Parks, Recreation and Historic Preservation (OPRHP), with assistance from the New York – New Jersey Trail Conference (NY-NJTC), most visitors to major trails come from the Hudson River Valley and

the New York City metropolitan area. (Breakneck Steward Survey Report, Hudson Highlands and Breakneck Ridge: 2016 Data Collection Results)

The most trafficked trails in the Hudson Highlands State Park are those that have close access to the 9D and Metro-North Railroad. NYS OPRHP conducted surveys to plan a visitor use strategy for the region, and address the impacts caused by an increase in popularity. In their research, they identified several key trails:

- Washburn
- Undercliff
- Breakneck
- Breakneck Bypass
- Wilkinson Memorial

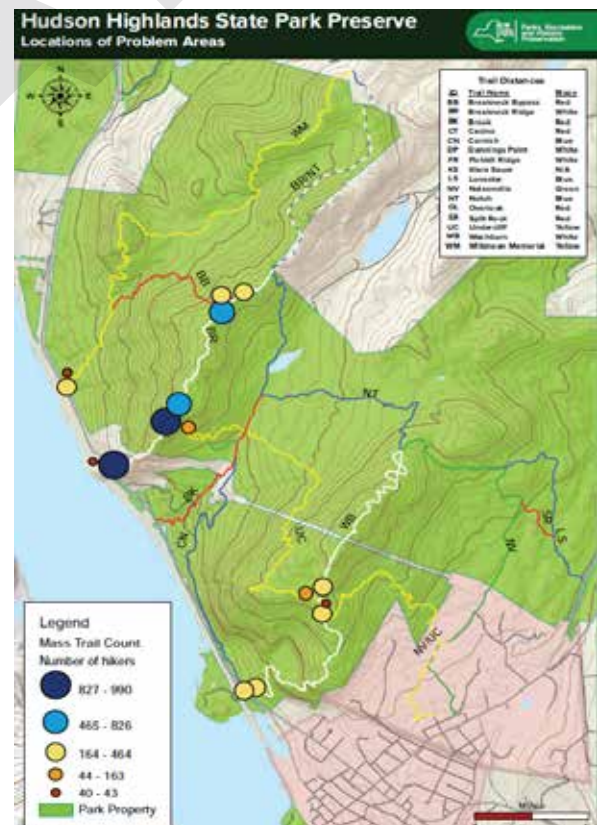
Table 1: Total Counts per Day

Date	Count*
Thursday, May 26, 2016	285
Saturday, June 18, 2016	1,441
Saturday, July 16, 2016	1,166
Saturday, August 20, 2016	1,118
Tuesday, September 13, 2016	133

Table 2: Total Counts by Location

Location	Count*	Percent of Total
WB	717	17%
WB x UC	434	10%
BR x UC	987	24%
BR x BB	709	17%
BR	985	24%
WM	312	8%
<b>Total</b>	<b>4,143</b>	<b>100%</b>

\*Adjusted for double-counting at intersections

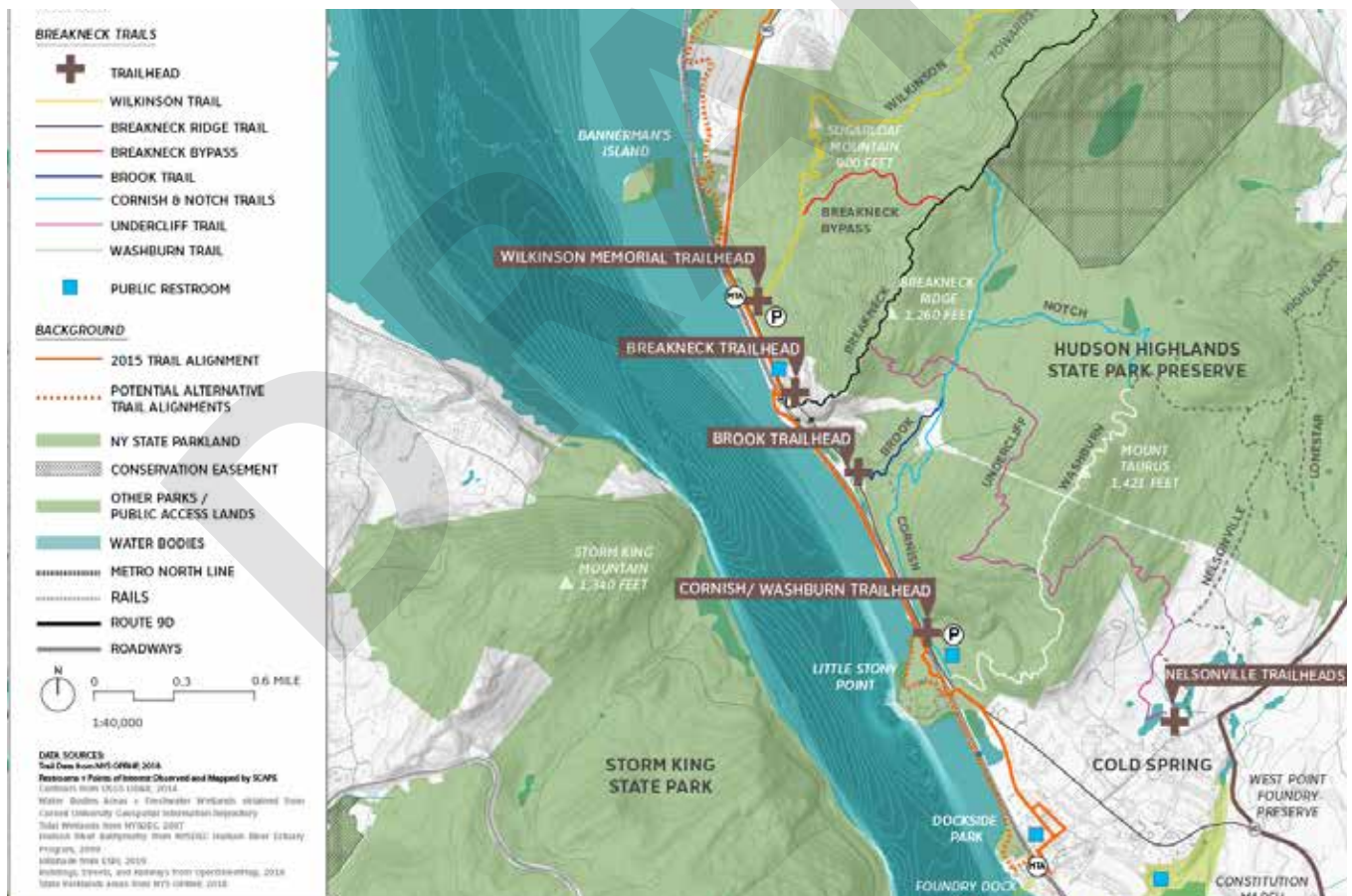


### DIAGRAMS FROM 2016 TRAIL SURVEY

Left diagram shows trail counts by location in 2016, right diagram give locations of study areas and frequency of visitation. Source: 2016 Hudson Highlands Trail Survey, NY State Parks + NY/NJ Trail Conference



**VIEW FROM SCENIC OVERLOOK AT BREAKNECK RIDGE**



### **BREAKNECK HIKING MAP**

Several options are available to hikers including loop trails and longer destination hikes.

## BREAKNECK RIDGE

Breakneck Ridge is amongst the most popular day hikes in the United States. It is estimated that there are 100,000 total visitors per year, with just over 10,000 visitors from Dutchess County and over 8,000 visitors from Putnam County, the two counties in closest proximity to the Breakneck Ridge Trailhead. While the hike has become increasingly popular in the past years due to the exposure of social media and its accessibility from New York City, over half of the visitors surveyed in 2018 stated that they learned about Breakneck from someone else. A quarter of the visitors surveyed knew about Breakneck Ridge, possibly living or working near the park and trail.

The high volume of hiker traffic moving along the busy Route 9D from the Breakneck Metro-North stop and Cold Spring to the trailhead has generated significant safety concerns and was the original impetus for the Preliminary Draft Master Plan completed in 2015. Safety remains a focus for analysis and study of the current design studies. The New York - New Jersey Trail Conference also

states that while trail conditions at Breakneck have improved (e. g. decreased reports of trail erosion and missing trail markers), litter and graffiti along the trail are increasingly problematic.

Hiking up Breakneck Ridge provides dramatic and panoramic views of Storm King Mountain and the broader Hudson Valley. Visitors ascend quickly up a series of exposed rock scrambles punctuated by 4 scenic overlooks. Over 1,200 feet of elevation is gained in approximately 1.5 miles. Once visitors reach the final overlook at Breakneck Ridge, there are options to return along the Bypass trail to the Breakneck Ridge Metro-North train stop, continue along a trail that continues to Mt. Beacon, or descend following the Brook Trail which exits at the Washburn Trailhead with the option to continue along 9D to downtown Cold Spring. (Breakneck Steward Survey Report)

### Breakneck Ridge Trail Stewards Program 2018 Counts

Memorial Day weekend through Columbus Day

	2014	2015	2016	2017	2018
Total Hikers Counted	26,743	33,872	35,570	38,714	33,700
Most Hikers in One Day	1,426	1,755	1,522	1,697	1,469
Days with Over 1,000 Hikers	2	14	22	28	13
Lost Hikers	99	102	49	30	26
Turned Away	392	470	528	512	539
Sent to Cold Spring	961	1,111	1,521	1,722	1,300
Sent to Beacon	472	652	992	1009	1,115
Injuries	25	25	24	31	24

#### **BREAKNECK RIDGE TRAIL COUNTS**

Hikers counted in the years 2014-2018 on Memorial Day through Columbus Day. Source: 2018 Trail Steward Program Counts, NY State Parks + NY/NJ Trail Conference





#### **METRO NORTH ARRIVAL**

*Hikers arrive on the Northbound Metro North Platform and continue through an informal path to route 9D.*



#### **WALKING ALONG ROUTE 9D**

*Hikers make their way from the Metro North Stop to the trail head along Route 9D.*





#### **BREAKNECK ROCK SCRAMBLE**

*Visitors scramble up to the first overlook of Breakneck Ridge. The ascent becomes more exposed to the sun & wind as hikers gain elevation.*



#### **VIEW FROM THE BREAKNECK SUMMIT**







# **PROJECT VISION & DESIGN APPROACH**

**THE SUBLIME LANDSCAPE**

**PROJECT GOALS**

**PARK, PLACE, PORTAL, PRESERVE**

**DESIGN APPROACH**

The Fjord Trail unlocks the Hudson River landscape experience for all, revealing the sublime beauty of the Highlands region and enhancing access, recreation, and a sense of wonder for a new generation of environmental stewards.





## LEGEND

### RELIEVE

-  REST + RESTORE
-  REFUEL + RELAX

### ACCESS

-  PARKING
-  BIKE TUNE UP/RENTAL
-  WATER ACCESS
-  RIVER TRAIL

### ENGAGE

-  VIEW POINT
-  HISTORIES OF THE HUDSON
-  LEARN + ENGAGE
-  MEET + ORIENT
-  EXPERIENCE LIVING RIVER

### TRAIL

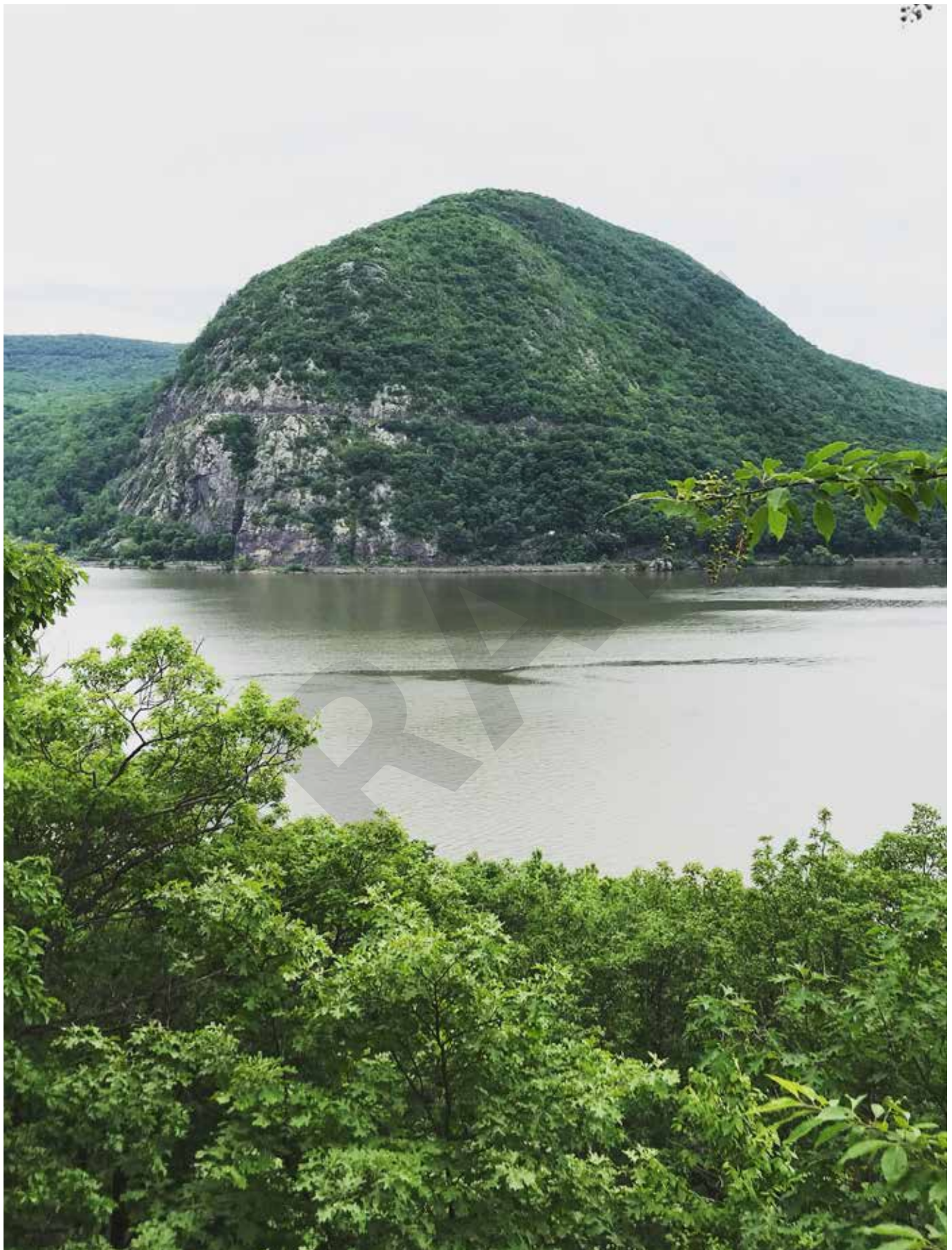
-  MAIN TRAIL
-  MEANDERS
-  ENTRANCES
-  CONNECTORS
-  MTA STATION/ STOP

## THE HIGHLANDS

## THE RIVER









# THE SUBLIME LANDSCAPE

The Fjord Trail expresses reverence for the extraordinary landscape of the Hudson River and Highlands. This awe-inspiring place has been fused in time with the identity of our nation, as a historic fishing grounds and sacred site of the Lenape people, as a strategic point of defense in the Revolutionary War, and as a battleground for environmental justice and natural lands preservation. Nothing better captures the persuasive and powerful force of the Hudson River Fjord than the paintings of the Hudson River School, which seared this place in time and today continue to entice generations of creators, explorers, and wanderers to the region.

Hudson River School paintings reveal iconic and curiously familiar moments—it is possible today to experience the sublime panoramas of Pope's North Gate of the Highlands, Showing Storm King Mountain and Johann Hermann Carmiencke's Hudson River at Cold Spring, thanks to the hard-fought conservation efforts of groups like Scenic Hudson. The foregrounds of these paintings frame the iconic Highlands topography, show people using the river's edge, and reveal the heterogeneity of the historic shoreline. Yet, today's foreground and shoreline have dramatically changed. While the upland and background landscape remain largely intact, standard practices of roadway and railway construction, urban development, and erosion control have hardened the edge and limited access to the water. Shallow water ecosystems romanticized by the Hudson River School painters have been replaced by bulkheads and riprap edges. Experientially, this urbanized foreground detracts from the surreal magic of the Fjord and river. Ecologically, this hardening represents the loss of fish spawning and feeding grounds, foraging and perching habitat for birds, and vegetated edges for shade and cover.

## HEALING THE FOREGROUND

The Fjord Trail is an opportunity to heal the foreground, bring people back to the water's edge, and celebrate the unique landscapes of the Hudson River valley. This project, much more than a trail, will invite all people to immerse themselves in the sublime experiences of the Hudson River and Highlands.



### **THE FJORD**

*View from Breakneck Ridge. The Fjord Trail will express extreme reverence for the regional landscape.*



### **DRIFTWOOD AT LITTLE STONY POINT**

*Up-close and immersive moments of driftwood ecology. The Fjord Trail will cultivate the ecological sublime.*



# PROJECT GOALS

Six goals articulate the aspirations of the Fjord Trail. These statements maintain the 2015 Master Plan goals and expand the vision for the project from a singular trail into a linear park experience.

## EXPRESS REVERENCE FOR THE REGIONAL LANDSCAPE

- Expose people to and inspire interest in the region's culture, history, and ecologies.
- Establish a legible design language that expresses the identity of the Hudson Highlands.
- Interpret and express the Hudson's multiple narratives through material selection and use, stewardship, and wayfinding.
- Ensure the trail does not dominate the legibility or health of the landscape itself.

## CULTIVATE THE ECOLOGICAL SUBLIME

- Foster visual and physical connections with the landscape.
- Promote productive ecological processes that enhance and preserve the scenic beauty of the area.
- Create a seamless connection between the foreground and the background.
- Seek out opportunities to repair the land and water edge.

## REUNITE WITH THE RIVER'S EDGE

- Respect and engage the dynamic processes of the Hudson River and its tributaries.
- Create new water access locations and opportunities.
- Enable water-based experiences and activities along the trail.

## CONNECT WITH THE GREATER REGION

- Create a new type of recreational amenity for the region.
- Enhance access to and connectivity among regional trails, parks, and local destinations.
- Make access to the region safer and more enjoyable. Improve safety along 9D.
- Create a multi-modal Fjord Trail experience accessible to all.

## CHOREOGRAPH VISITATION AND STEWARDSHIP

- Manage and curate access to popular destinations and sensitive sites.
- Motivate people to respect and care for the landscape.
- Minimize the negative impacts of high visitation.
- Connect users to the landscape through educational and creative programs.

## INSPIRE AND IMPLEMENT

- Develop a feasible and implementable design.
- Emphasize resilience and long-term sustainability.
- Inspire lasting support and stewardship.
- Consider material life cycles and durability.

**UNLOCKING THE SUBLIME**

A main trail and upland and lowland meanders unlock new experiences for Fjord Trail users.

**LEGEND:**

- MAIN TRAIL
- MEANDER
- CONNECTORS
- WATER TRAIL

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0 0.3 0.6 MILE





# VISION: PARK, PLACE, PORTAL, PRESERVE

The Fjord Trail is more than a path. It is a linear park that traces the river and offers unique glimpses into the diverse landscapes that compose the Hudson Highlands. It is a place, with varied scales of spaces and aesthetic experiences that emerge along its slender route, offering new ways to inhabit and understand the Highlands region. It is a portal that brings the towns and villages of the region to the water's edge and connects urban dwellers of New York City to the scenic beauty and restorative power of the region. Finally, it is a preserve that reveres and restores the landscape, connects to wider regional parks and trails, and inspires stewardship and engagement in the ecological cycles and patterns that are so often invisible in our busy lives.

With all work, all decisions, the Fjord Trail strives to express reverence for the regional landscape. Built elements will nest within a restored and living landscape that is ecologically rich and sculpted by natural processes, rather than the visible hand of the designer. This aspiration is coupled with the desire to reveal the Hudson Fjord to all people, regardless of age, background, or ability level. True public access means services, gradual slopes, and safe materials. The site is challenging - the topography of the Fjord is steep, and often unstable, intersecting major rail infrastructure and sensitive habitats. If access is provided without careful protections people can "love a landscape to death." The Fjord Trail vision balances these competing concerns of access and conservation and creates a Fjord Trail experience that allows all users to immerse themselves in the majesty of this place while protecting the ecological sublime.

**The Main Trail**, a trail for all, unites the project and connects the Village of Cold Spring with the City of Beacon, New York. This accessible and bikeable path weaves in and out of distinct landscape types that define the Highlands region - the urban interface, the river's edge, the steep highlands topography, and the tributary marshlands. The shared course is wide, gentle, accessible, and offers places to rest, recover, and restore.

**Meanders**, or spur and loop trails, offer destination-based moments of immersion and escape into the Fjord Trail landscape. Meanders can be small, quick departures from the shared course to see a view or shore, or longer, rambling walks that create new ways to traverse the Fjord Trail landscape.

**Connectors** are longer day hikes that depart from the park-like atmosphere of the Fjord Trail and open up new wilderness experiences of the Hudson Highlands landscape. Unlike meanders, which are part of the Fjord Trail, connectors link to the approximately 45 miles of hiking trail in this region. The most famous connector, Breakneck Ridge, extends from the Fjord Trail and offers panoramic views of the Fjord and Highlands landscape from an elevated vista. Others, like the West Point Foundry Preserve, connect to historic and cultural destinations of the region.

This combined circulation system of the main trail, meanders, and connectors, creates an infinite array of experiences of the Fjord Trail, enabling loops, multiple trips, and varied itineraries. It balances the needs for access for all with the desire to protect and experience the sublime landscape in a textural and tactile way.

LANDSCAPE ZONES OF THE FJORD TRAIL





# LANDSCAPE CHARACTER

The Fjord Trail weaves through unique landscape types, each with distinct ecological and immersive qualities. The surroundings, texture, and ecology inspired the vision and design of the proposal.



## THE RIVER'S EDGE

*An immersive experience of the Hudson River. Expansive river views and shoreline walks bring trail users directly to the Hudson River's edge. Opportunities for aquatic wildlife viewing and water access.*



## THE HIGHLANDS

*A dramatic encounter with glacial geology. Steep rock faces and historic landmarks line this narrow stretch of the Fjord Trail. Opportunities to connect with more challenging hikes such as Breakneck Ridge.*



## THE FOREST

*A quiet walk through an immersive forest canopy. Glimpses of the Hudson River and stream crossings connect people with the river system. Opportunities for ecological education and wildlife viewing.*



## THE MARSH

*A horizontal walk through wetlands at the confluence of Fishkill Creek. Open views of the Hudson and expansive marsh ecology. Opportunities for birding and interpretive elements.*







# AESTHETIC PRINCIPLES

A set of aesthetic principles guide the design approach of the Fjord Trail:

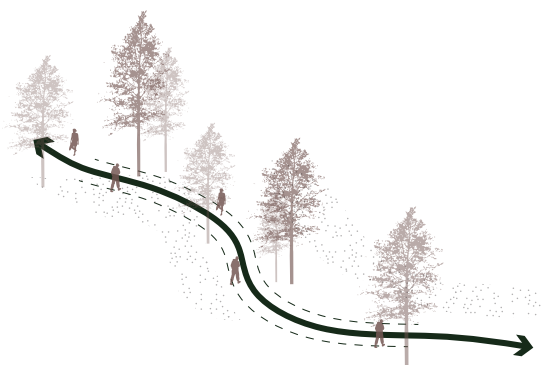
**Express and reflect the diversity of the landscape:** The design should encourage appreciation of the diverse landscape of the Fjord Trail. The Fjord Trail intentionally contains materials inspired by and crafted from the landscape itself, and these materials change as one moves from zone to zone. An ethos of landscape stewardship and active “maintenance and making” is embedded within the material vocabulary of each zone.

**Artfully integrate:** Built moments along the Fjord Trail should complement the landscape around them in tone, form, and materiality. In some places, this could mean that structures and trail banks do not exist as visible points of contrast to the landscape; rather, they visually emerge upon closer examination and as trail users approach. In other locations, careful contrast of tone, form, and materiality can be used to draw attention to the distinctiveness of each landscape.

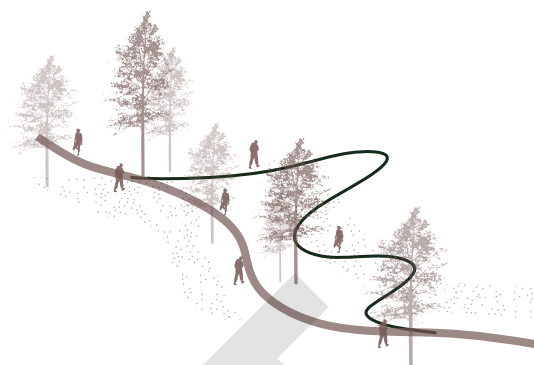
**Carve out careful moments of legibility:** While all elements should integrate and compliment the larger landscape, certain signature features, like special destinations and bridge crossings, may exercise a more legible use of contrast and surprise.

**Leave room for surprise and joy:** The design of the Fjord Trail system should be consistent and inspire confidence in a wide range of users without monotony. The design should incorporate moments of spontaneous wonder and celebration of the Hudson Highlands sublime. Meanders, hollow trail banks, and special destinations are places where unexpected views, experiences, and stories will be embedded, creating joy and excitement along the trail.

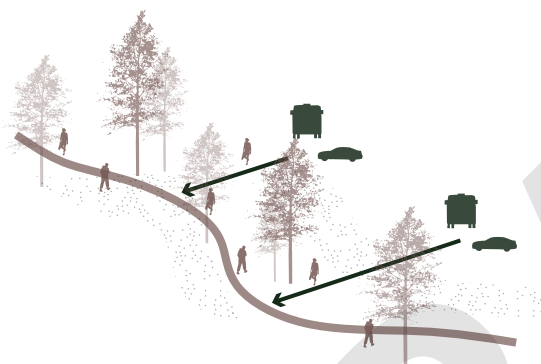
**Interpret and engage:** The design language of the Fjord Trail should move beyond static, pictorial representation of landscape and advance a post-picturesque ethos of placemaking that engages people directly in the management and stewardship of the land.



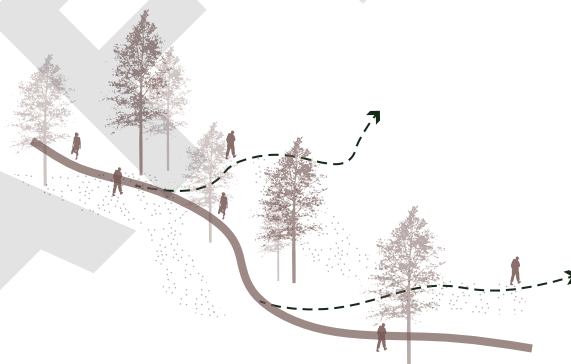
**MAIN TRAIL**



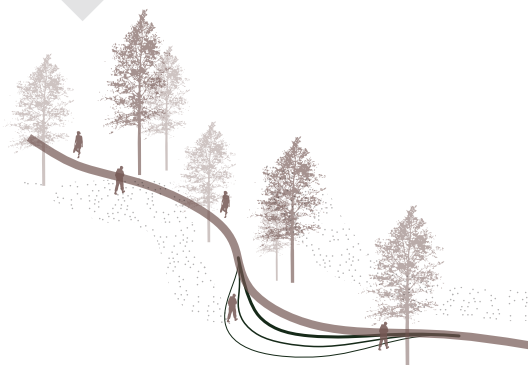
**MEANDERS**



**ENTRIES**



**CONNECTORS**



**TRAIL BANKS**



# DESIGN APPROACH

The Fjord Trail is conceived as an intuitive system, with a hierarchy of trails, entries, destinations, and moments branching from its path. The approximately 7.5-mile path crosses diverse landscape conditions, intersects regional hiking trails, and has multiple points of entry and departure.

## THE SYSTEM

The main trail is proposed to be a **consistent** thread that unites the park, with materials and expressions “as minimal and consistent as landscape conditions allow” and pathways carefully graded for bicycling, walking, and accessibility. The consistent main trail and its wayfinding connects the distinct landscape zones and instills a sense of confidence, a sense of place, and an overall cohesion to the project.

To amplify the diversity of the landscape and add interest along the walk, elements that branch off the main trail **change** with the surrounding landscape. These elements include meanders, entries, connectors, and trail banks.

Five key components comprise the system:

### **The Main Trail**

The Main Trail is the “trail for all,” an accessible path that connects the four landscape zones. The Main Trail will provide an accessible, walkable, and bikeable path and remain as constant as possible across the Fjord Trail landscape. The consistency of the Main Trail will foster confidence in the system, assuring users that they are on the right path.

### **Meanders**

Meanders are smaller, experiential spurs off the main trail. Each meander offers a unique pathway that amplifies the landscape experience in its zone. Not all meanders are universally accessible.

### **Entries**

Entries are moments where Fjord Trail users transition from vehicle to landscape, from road to Fjord Trail. Each entry will have a parking lot nearby, and some will also connect to the Metro North transportation network and future local trolley stops.

### **Connectors**

Connectors are moments where the Fjord Trail intersects other regional trail networks in the Hudson Highlands State Park Preserve. Each node at the connector will provide a place to orient, meet, and rest before embarking on a longer, more challenging hike.

### **Trail Banks**

Trail banks are wider, built-up moments along the trail that allow trail users to step off the path and rest, sit, or experience something special in the landscape. Trail banks range in size depending on how they are used: smaller banks are ideal for one or two people, while larger banks encourage special moments of gathering. Trail banks create space for an immersive landscape experience while creating clear edges and boundaries to limit access to more sensitive areas beyond.

MAIN TRAIL

BEACON

FISHKILL GREENWAY

NOTCH

RIVER TRAIL

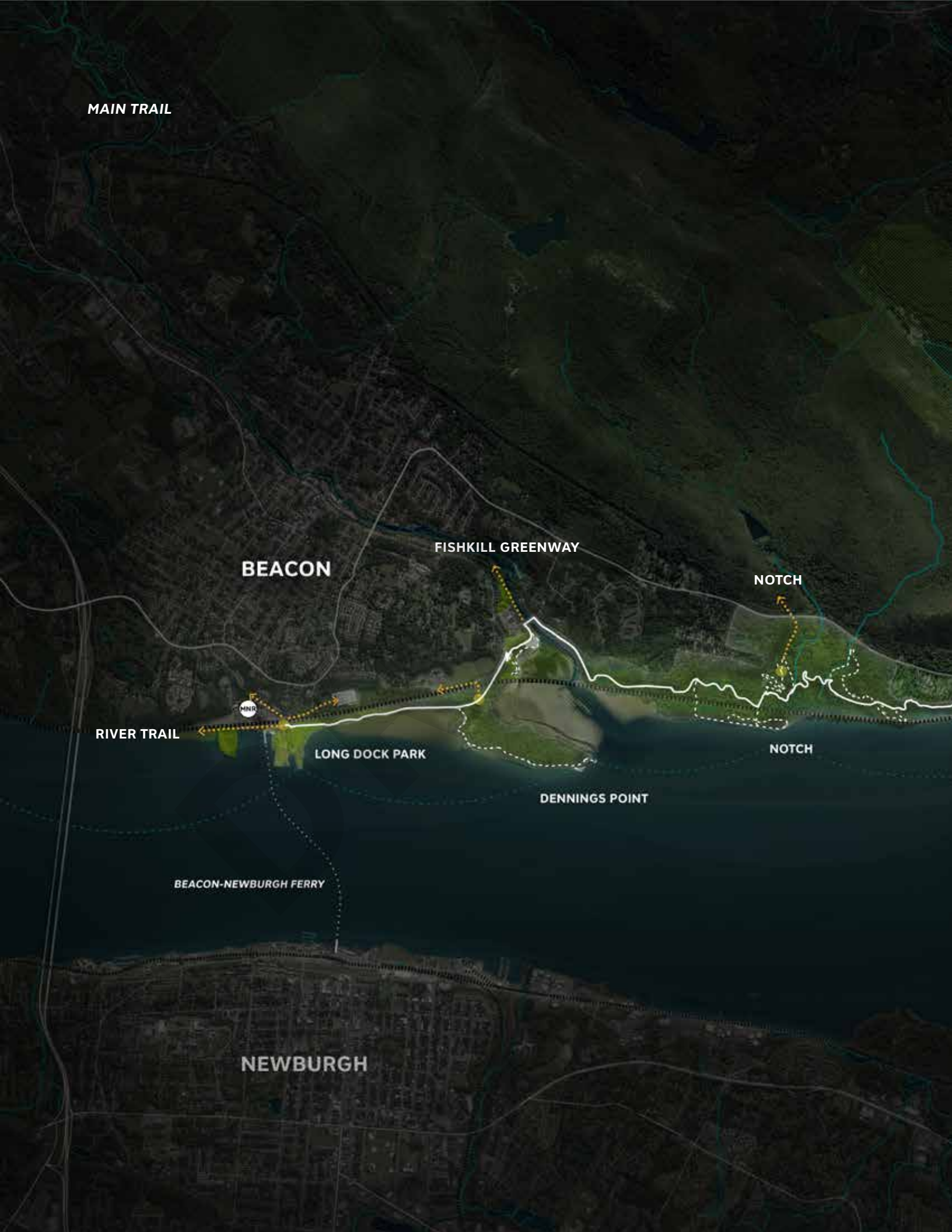
LONG DOCK PARK

NOTCH

DENNINGS POINT

BEACON-NEWBURGH FERRY

NEWBURGH







HUDSON HIGHLANDS  
STATE PARK PRESERVE

CONSTITUTION MARSH

W.P. FOUNDRY PRESERVE

COLD SPRING

WASHBURN

DOCKSIDE PARK

CORNISH

LITTLE STONY POINT

BREAKNECK

BREAKNECK  
RIDGE

WILKINSON

BREAKNECK

STORM KING  
MOUNTAIN

STORM KING STATE PARK

LEGEND:

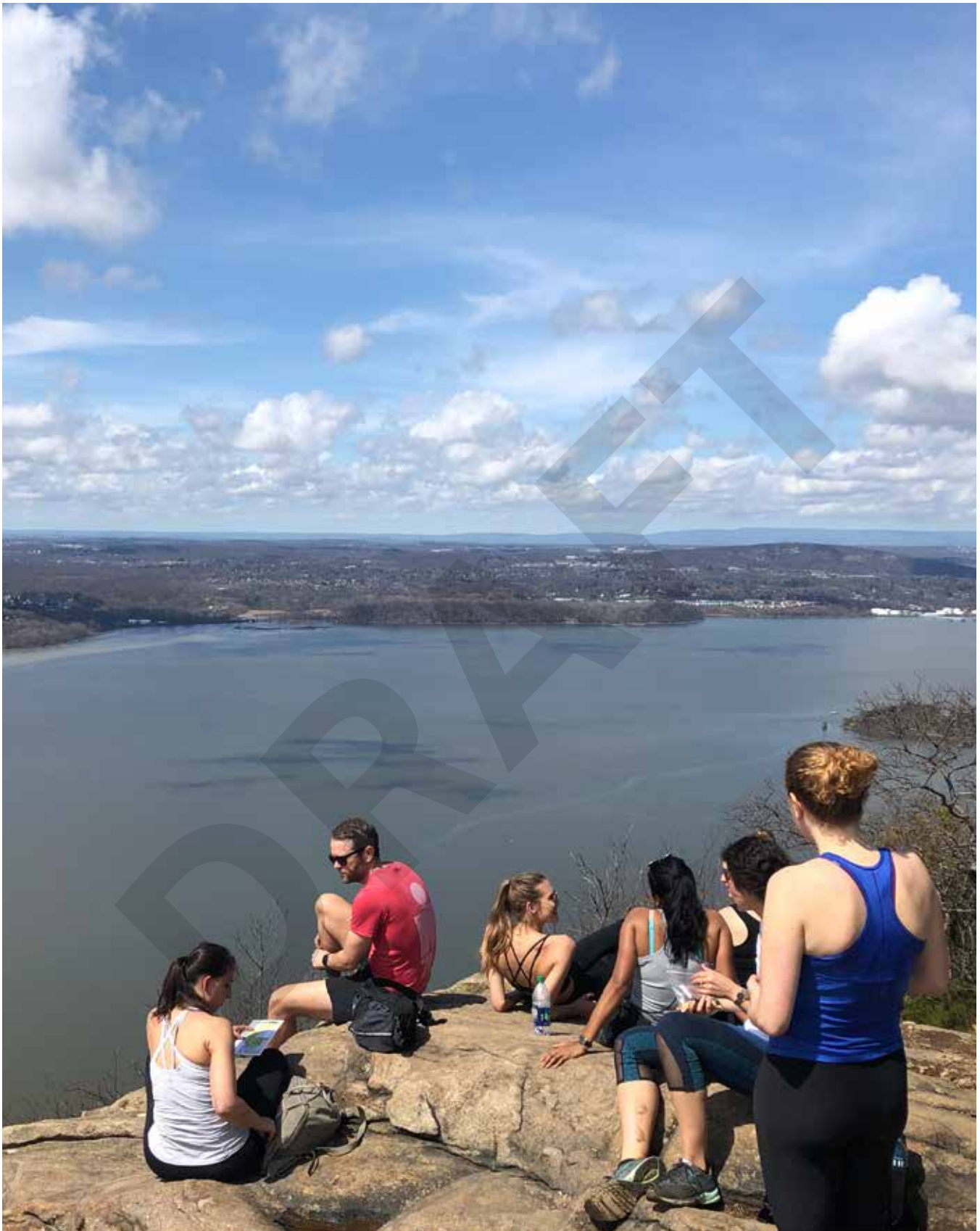
— MAIN TRAIL

- - - MEANDER

... CONNECTOR

- - - METRO-NORTH RAILROAD

N 0 2.5 5 MILES



**PLACES TO EXPERIENCE THE UNEXPECTED AND  
EXTRAORDINARY**



# PROGRAM: ACTIVITIES & STRUCTURES SUPPORT A SUBLIME LANDSCAPE EXPERIENCE

Carefully designed programs enable a wider range of users to experience and respect the Fjord Trail's sublime landscape. Built elements, like comfort stations and trail banks, will nest within a restored and living landscape that is ecologically rich and seems sculpted by natural processes, rather than the hand of the designer. While programmed moments are throughout the Fjord Trail, specific destinations serve larger groups and occur much more infrequently.

Places to:

## REST AND RESTORE

- Places to sit
- Platforms

## MEET AND ORIENT

- Visitor's Center
- Comfort Stations
- Steward Stations
- Shelters (shade, wind / rain protection, warming huts)

## EXPERIENCE THE UNEXPECTED AND EXTRAORDINARY

- Overlook Platforms
- Softer Overlooks

## LEARN AND ENGAGE

- Outdoor Classrooms / Amphitheater
- Citizen Science Programming
- Artist Points / Overlooks
- Wildlife Viewing Points
- Children's Play

## REFUEL, RELAX, AND GATHER

- Picnic Areas (pack in / out)
- Concessions / Food Trucks

## CROSS BUILT AND NATURAL SYSTEMS

- Larger Span Bridges
- Smaller Crossings
- Wildlife Crossings

## TRANSITION FROM VEHICLE TO LANDSCAPE

- Parking Lots
- Bike Rental
- Bike Tune-Up Stations
- Shuttle / Trolley Stops

## INTERACT WITH THE WATER'S EDGE

- Get Downs
- Floating Platforms
- Places to Fish

## EXPERIENCE THE LIVING RIVER

- Living Shorelines
- Intertidal Moments
- Driftwood Beaches

## ACCESS THE HUDSON RIVER WATER TRAIL

- Accessible Kayak Launches
- Shoreline Platforms and Stopping Points

## UNEARTH THE HISTORIES OF THE HUDSON

- Historic Interpretation
- Signage and Wayfinding

## MAINTAIN AND CARE FOR THE LANDSCAPE

- Maintenance Storage / Repairs
- Staff Facilities

**TRAIL BANKS, ENTRIES, AND DESTINATIONS**





HUDSON HIGHLANDS  
STATE PARK PRESERVE

CONSTITUTION MARSH

COLD SPRING

DOCKSIDE PARK

LITTLE STONY POINT

BREAKNECK  
RIDGE

BREAKNECK

STORM KING  
MOUNTAIN

STORM KING STATE PARK

LEGEND:

- MAIN TRAIL
- MEANDERS
- TRAIL BANKS
- DESTINATIONS
- ENTRY POINTS
- METRO-NORTH RAILROAD

N 0 2.5 5 MILES



THE FJORD TRAIL

MARSH

FOREST

BEACON

NOTCH

LONG DOCK PARK

DENNINGS POINT

BEACON-NEWBURGH FERRY

NEWBURGH







HUDSON HIGHLANDS  
STATE PARK PRESERVE

HIGHLANDS

COLD SPRING

RIVER

CONSTITUTION MARSH

DOCKSIDE PARK

LITTLE STONY POINT

BREAKNECK  
RIDGE

STORM KING  
MOUNTAIN

STORM KING STATE PARK

LEGEND:

- MAIN TRAIL
- MEANDERS
- CONNECTORS
- TRAIL BANKS
- DESTINATIONS
- ENTRY POINTS
- DUTCHESS MANOR
- ROUTE 9D
- METRO-NORTH RAILROAD
- NEWBURGH-BEACON FERRY LINE
- HUDSON RIVER WATER TRAIL

0 2.5 5 MILES



## STONE



## WOOD





# LANDSCAPE ZONES & MATERIAL FAMILIES

The Fjord Trail moves through the four landscape zones: the river, the highlands, the forest, and the marsh. As the surroundings change, the material identity and “look and feel” of the trail banks, meanders, and structures will similarly change. This approach magnifies the distinct aspects of each landscape zone, creates interest and surprise within each landscape zone, and uses an elemental, indigenous material palette to tell a deeper story about the cultural and ecological history of the place.

The design proposes two basic materials, stone and wood, and applies them differently in different locations along the trail. Each use of the material is inspired, but not dictated, by the surrounding landscape. Stone represents durability and permanence, a sense that the intervention will endure through centuries. At its most visible, stone in the Highlands takes the form of massive boulders, stony outcroppings of bedrock, and even dimensional quarry stone that evokes extraction and other cultural activities at Breakneck Ridge and Mt. Taurus. Closer to the river’s edge, the boulders give way to smaller stones, evoking the glacial processes of weathering until they erode to the pebbles on the Hudson’s beaches.

Wood, a cyclical and regenerative material, evokes a feeling of temporality, in contrast to

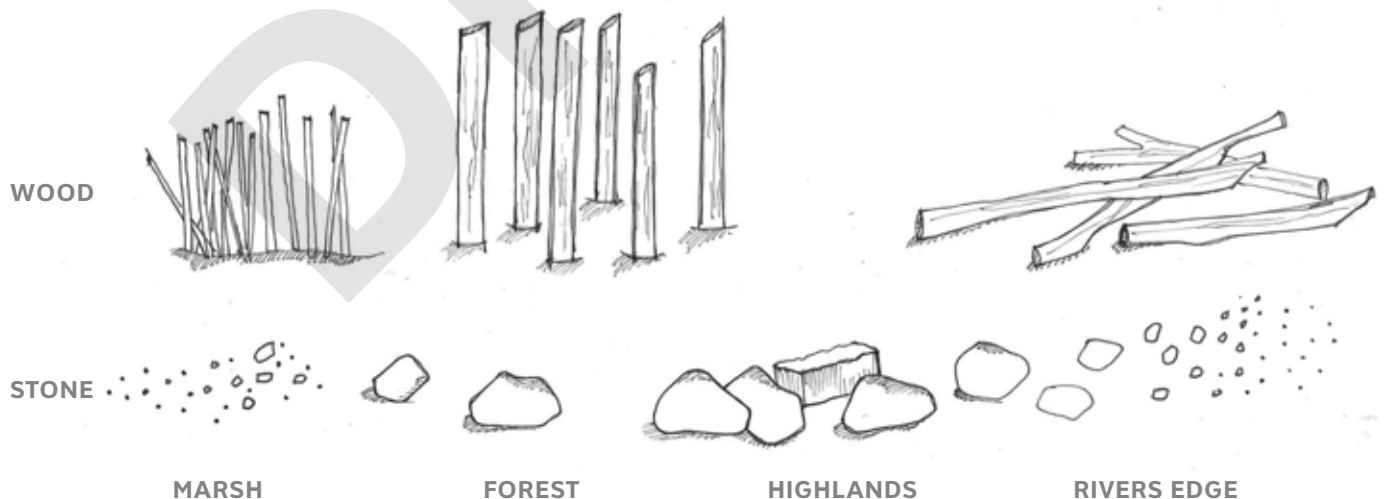
stone. In the forest, the design proposes larger, vertical or horizontal logs, representing the dense forest condition and shady quality of the forest understory. In the marsh, the scale of wood is reduced, representing the “reedy” and delicate nature of marsh vegetation. At the river’s edge, driftwood piles up. These naturally occurring elements present an opportunity for people to actively and directly engage with the management and stewardship of the land. The collection and bundling of logs, the piling and curation of driftwood, and the active interpretation of forest and marsh restoration foster a sense of stewardship.

The following sections describe material elements of the trail that change with the landscape. The tone, form, and materiality of the elements will be deployed in ways that engage and intensify visitors’ experience and understanding of the four landscape zones. These elements:

***Create an immersive experience the moment you step off the trail;***

***Are constructed of materials that highlight the unique characteristics of the surrounding landscape; and***

***Balance durability and permanence with regenerative life cycles.***



## MATERIAL GRADIENTS

As the Fjord Trail moves through the landscape, materials take different forms. One may even perceive gradients of material change across the site, illustrated in the above sketch.



#### **DRIFTWOOD BEACHES**

*On the north shoreline of Little Stony Point, beaches provide access to the river and driftwood accumulates.*



#### **BOULDERS AND BEACHES**

*Many different scales of stone line the Hudson River.*



#### **VEGETATED EDGES**

*At points along the shoreline, trees grow out to the water's edge.*



## MATERIAL FAMILIES: THE RIVER

At the edge of the river, users experience sweeping views of the Hudson River and Fjord. Driftwood is deposited on the shoreline by the tides, and large boulders break down in scale to smaller stones and pebble beaches. Opportunities for water access (kayaking, fishing, stand-up paddling, toes in the water) and wildlife viewing reunite trail users with the river's edge.

At the river's edge, the look and feel of the elements that change with the landscape will embrace the dynamic Hudson, amplifying the experience of the river.



### OVERLOOKING THE RIVER

At the river's edge, the Fjord Trail will provide moments for people to experience the dynamic shores of the Hudson.

**REUNITE WITH THE RIVER'S EDGE**

*Small beaches or points of access to the river provide sweeping views of the Fjord.*





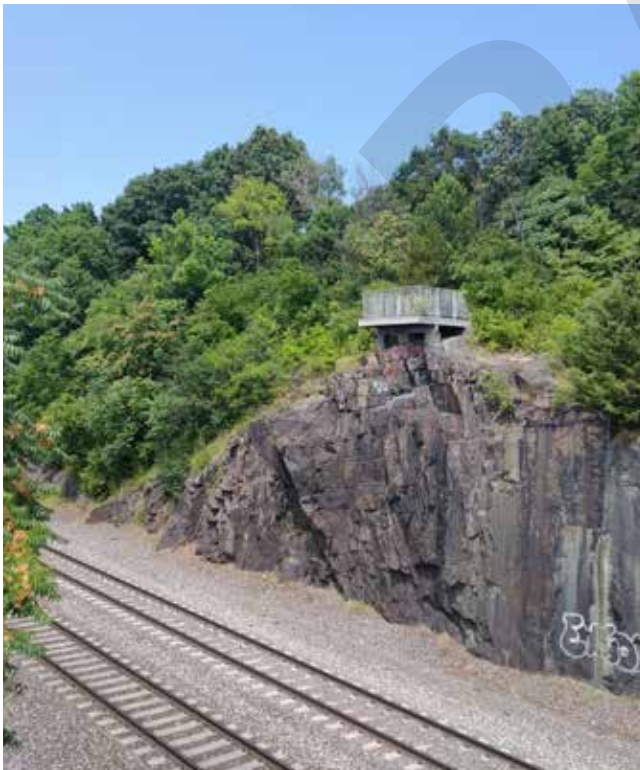






#### **BREAKNECK RIDGE**

*The rocky cliffs of Breakneck Ridge protrude out into the river.*



#### **VERTICAL ROCK FACES**

*Exposed rock at Metro North Railroad.*



#### **BREAKNECK HIKE**

*Hikers scramble up the rock face at Breakneck.*



## MATERIAL FAMILIES: THE HIGHLANDS

As Fjord Trail users move through the highlands, they encounter the drama of steep rock faces and historic landmarks. Large boulders and exposed rock comprise the material vocabulary of this area. The design also proposes using dimensioned quarry block, to interpret and engage people with the history of extraction at Breakneck Ridge and Mt. Taurus.

In the highlands, the look and feel of the elements that change with the landscape will reflect the rockiness of Breakneck and Storm King.



### STONE EXPRESSION

*Trail banks reflect the rocky nature of the Highlands zone.*

## **THE FJORD**

*Large stones provide places for people to sit and experience the dramatic topography of the Hudson Highlands State Park Preserve.*





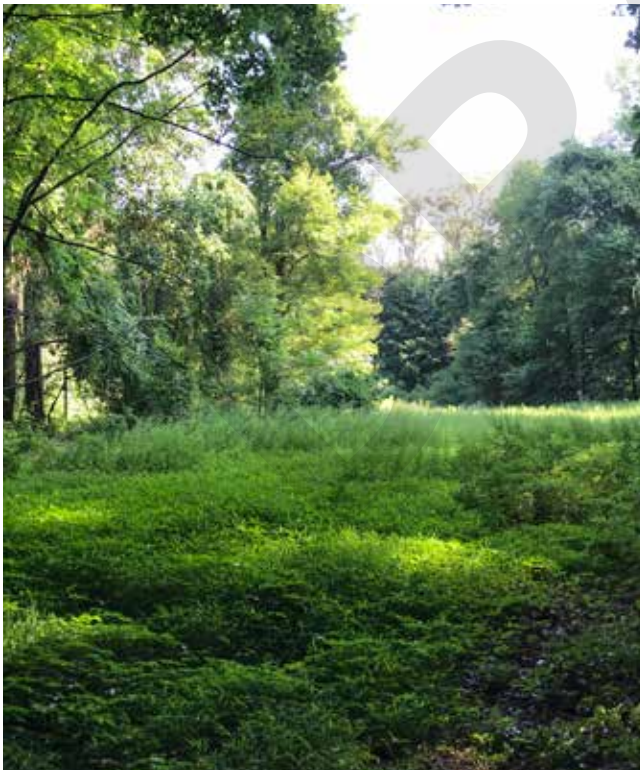






#### **FOREST CANOPY**

*People are immersed under a dense forest canopy.*



#### **CLEARINGS**

*In some locations, clearings interrupt the fabric of the forest canopy.*



#### **LEGACY OF BRICK-MAKING**

*Brick beach - a signature shoreline moment in the forest - is evidence of the area's industrial past.*



## MATERIAL FAMILIES: THE FOREST

The forest offers a very different experience from that of the Highlands or the river's edge. Walking through the understory immerses people in the forest ecosystem, where they can catch glimpses of the Hudson River and ephemeral spring streams. Tree trunks, fallen logs, and the occasional rock outcropping inspire the material vocabulary in this zone.

The elements that change with the landscape will be constructed with wood material palettes.



### WOOD MATERIAL PALETTES

*Trail banks in the forest evoke the character of the surrounding landscape.*



## **THE FOREST CANOPY**

*Moments along the forest, including net structures and canopy walks, invite users to visually visit the forest canopy.*











#### **EXPANSIVE LANDSCAPES**

*Exposure to the marsh provides an immersive experience in one of the Hudson River's tributaries.*



#### **VEGETATION**

*The delicate vegetation of the marsh landscape contrasts the heaviness of stone and trees in the forest.*



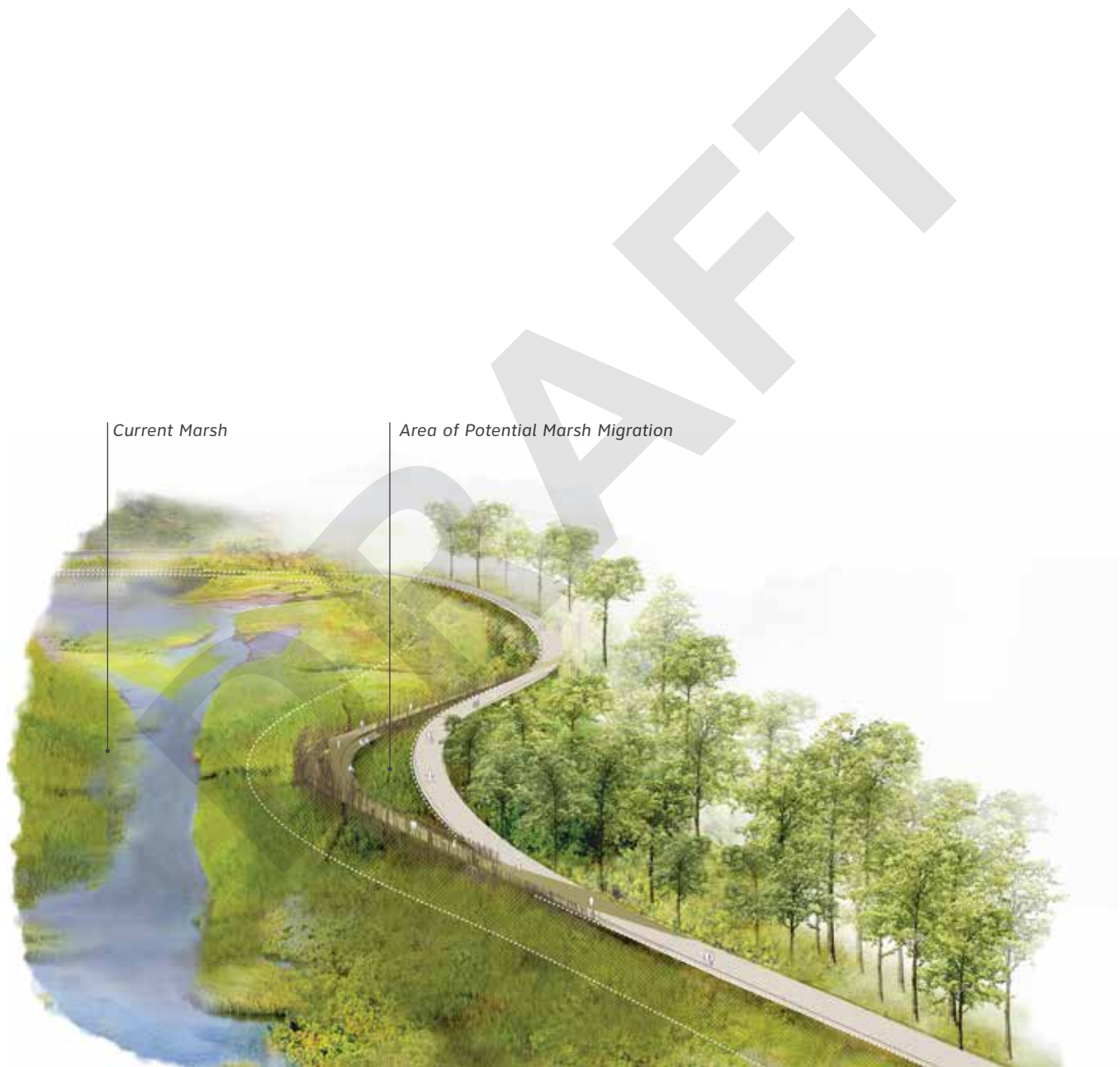
#### **VIBRANT ECOLOGIES**

*Marsh landscapes consist of many complex ecological systems.*



## MATERIAL FAMILIES: THE MARSH

Where Fishkill Creek meets the Hudson River, the marsh emerges from the dense canopy of the forest. Expansive views offer a different water experience of marsh ecology and wildlife. The material vocabulary of the marsh is inspired by the delicate, woven, often messy marsh vegetation.



### INTERPRET AND ENGAGE

*The trail banks in the marsh will engage Fjord Trail users with the ecology of the area and interpret how the landscape will change with time (i.e. sea level rise).*

## **OVERLOOKS**

*Overlooks in the marsh provide opportunities for people to experience the landscape without providing access to sensitive ecologies.*

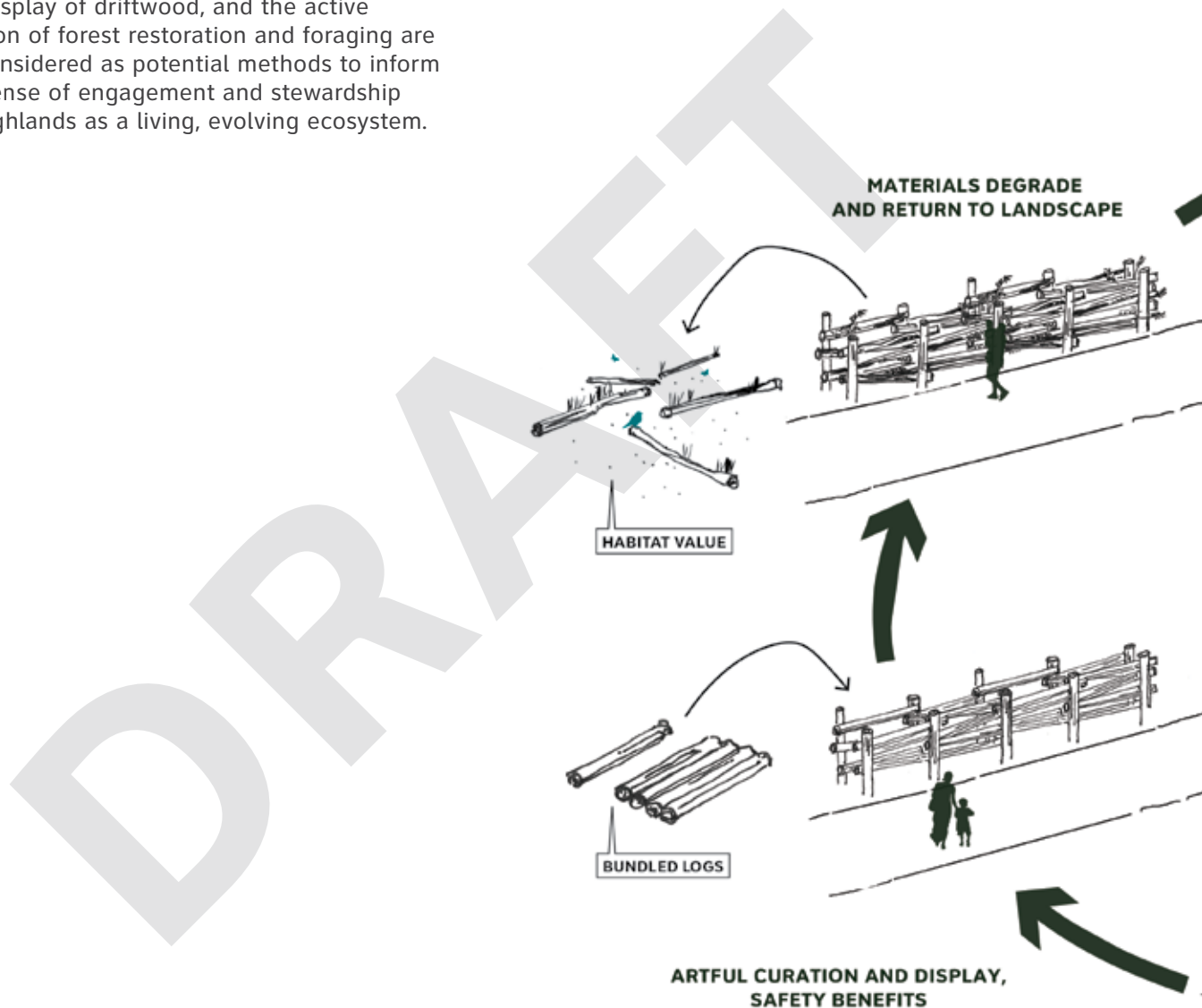




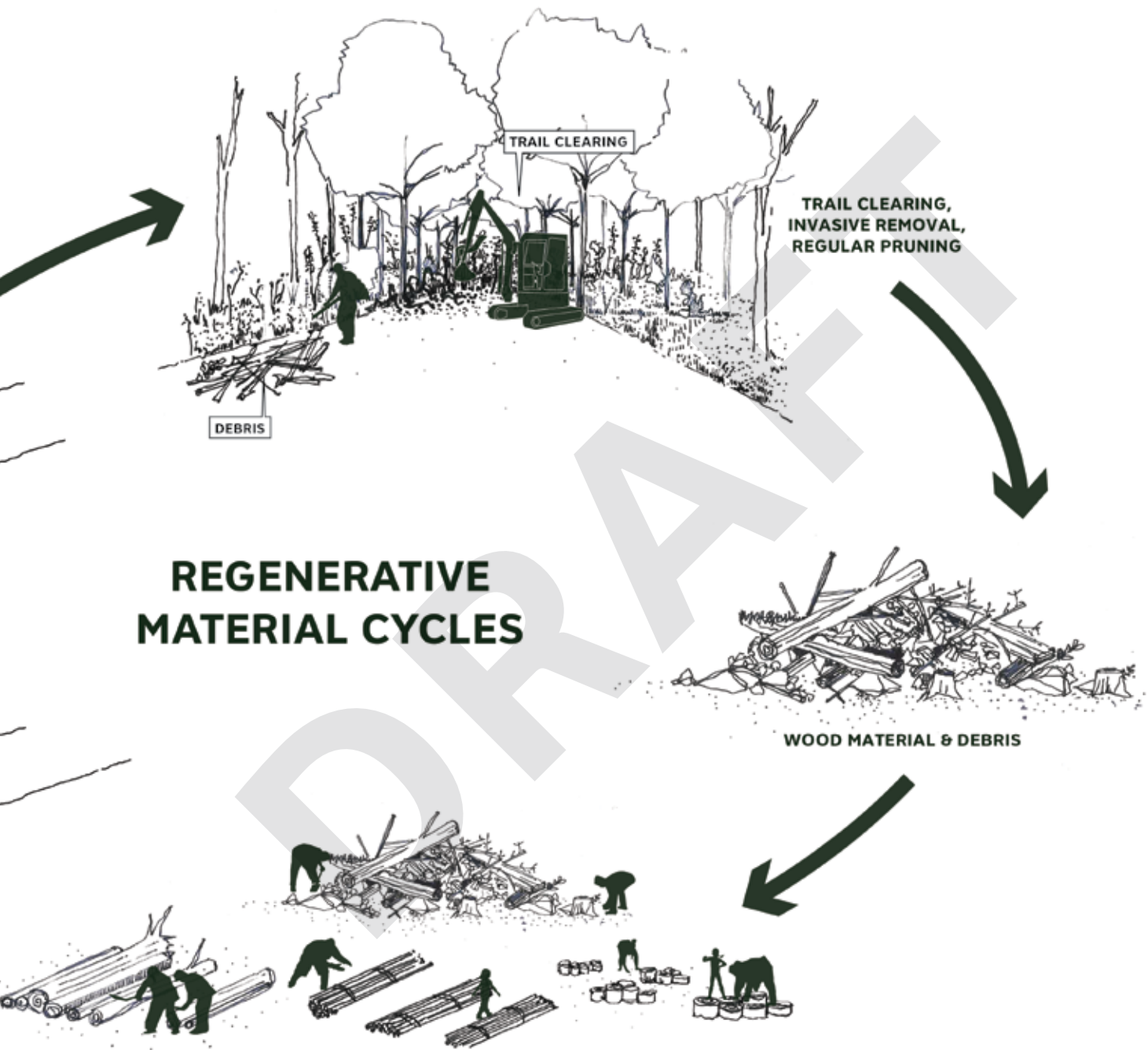


# THE NEXT GENERATION OF ENVIRONMENTAL STEWARDS

Inspired by the active scenes depicted in the foregrounds of the Hudson River School Paintings, landscape restoration, cultivation, and use are embedded in the proposed aesthetic of placemaking. The collection and bundling of logs, the artful display of driftwood, and the active interpretation of forest restoration and foraging are all being considered as potential methods to inform a greater sense of engagement and stewardship with the Highlands as a living, evolving ecosystem.





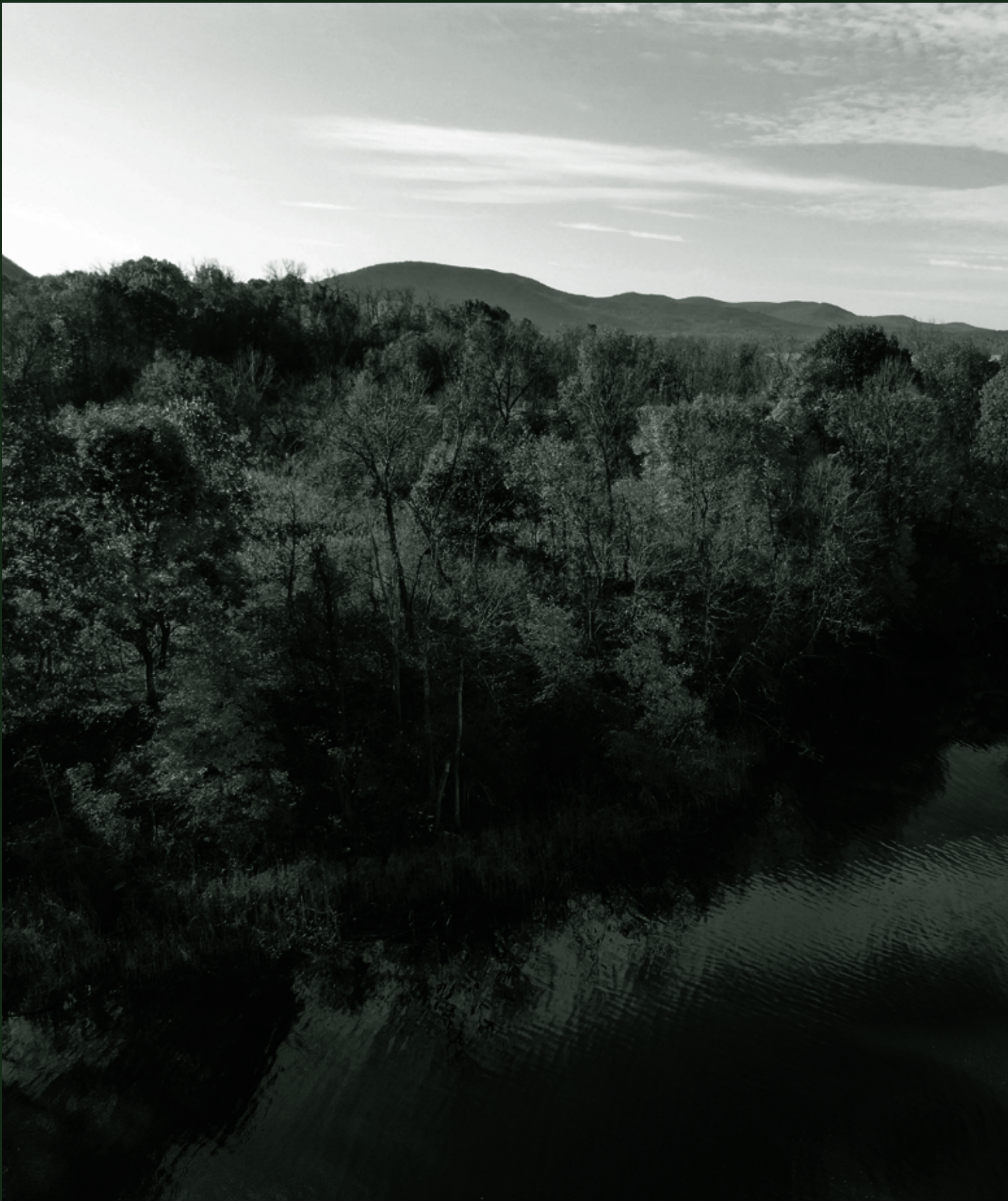








# **FUNCTIONAL PRINCIPLES & PERFORMANCE CRITERIA**

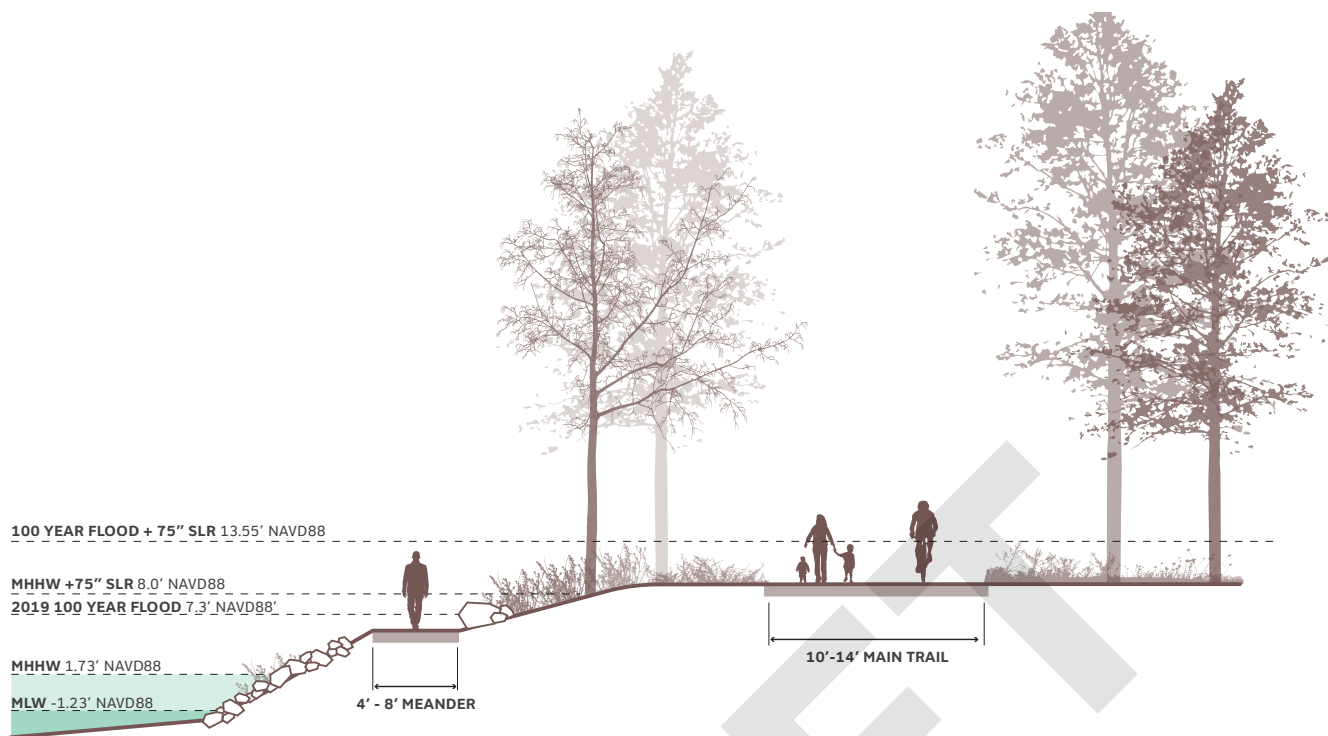






## FUNCTIONAL PRINCIPLES

In addition to the aesthetic principles that informed and shaped the look and feel of the Fjord Trail, two major functional principles played a role in the siting, material selection, width, and elevation of the main trail and meanders: **resilient design** and **accessibility and use**.



\*TIDAL DATUMS SHOWN ARE FOR COLD SPRING, NY. TIDE LEVELS RANGE "6" ACROSS THE PROJECT AREA.

\*SEA LEVEL RISE PROJECTIONS REPRESENT THE HIGH PROJECTION IN 2100 ESTABLISHED IN 6 NYCRR PART 490, PROJECT SEA-LEVEL RISE.

**SEA LEVEL RISE**  
 The Fjord Trail planning and design will accommodate up to 75" of sea level rise. To avoid daily inundation, all segments of the main trail should be constructed at or above 8' NAVD88.

TIME INTERVAL	LOW PROJECTION	LOW - MEDIUM PROJECTION	MEDIUM PROJECTION	HIGH - MEDIUM PROJECTION	HIGH PROJECTION
2020	2 INCHES	4 INCHES	6 INCHES	8 INCHES	10 INCHES
2050	8 INCHES	11 INCHES	16 INCHES	21 INCHES	30 INCHES
2080	13 INCHES	18 INCHES	29 INCHES	39 INCHES	58 INCHES
2100	15 INCHES	22 INCHES	36 INCHES	50 INCHES	75 INCHES

**TABLE 1: SEA LEVEL RISE PROJECTIONS**  
 The design of the Fjord Trail plans for 75 inches of sea level rise, the high projection for 2100 as stated in 6 NYCRR Part 490, Projected Sea-Level Rise.



## RESILIENT DESIGN

The Hudson River is both a river and a tidal estuary along this stretch of shoreline. Because the river is tidal, it is affected by sea level rise, and the Fjord Trail is vulnerable to coastal flooding. The impacts of climate change are projected to be significant in the coming years, with the potential for sea levels to rise 30 inches in just the next 30 years. In addition to rising sea levels, projections predict increased precipitation in the area which may contribute to increased flooding in the river tributaries from upland streams.

The design and planning of the Fjord Trail adopt the **high projection of 75 inches of sea level rise by 2100** from **6 NYCRR Part 490, Projected Sea-Level Rise**. The “high projection” is defined as “The amount of sea-level rise that ... is very unlikely (the 90th percentile of ClimAID model outputs) to be exceeded by the specified time interval.” The New York State Department of Environmental Conservation (NYSDEC) and other state agencies have adopted these projections, which are based on best available science and have been established for different geographical regions of New York.

The projections for the Fjord Trail project area are shown in Table 1: Sea Level Rise Projections. <https://www.dec.ny.gov/regulations/103877.html>

The resilient design standards for the Main Trail and its trail banks adopt a design flood elevation of 8' NAVD88, siting the elements above Mean Higher High Water in the event of 75 inches of sea level rise. This elevation is also above the current 100-year flood elevation of 7.3 ft NAVD88. In addition, the trail must be resilient in frequent flood events and designed to be floodable and easily repaired when the flood water recedes.

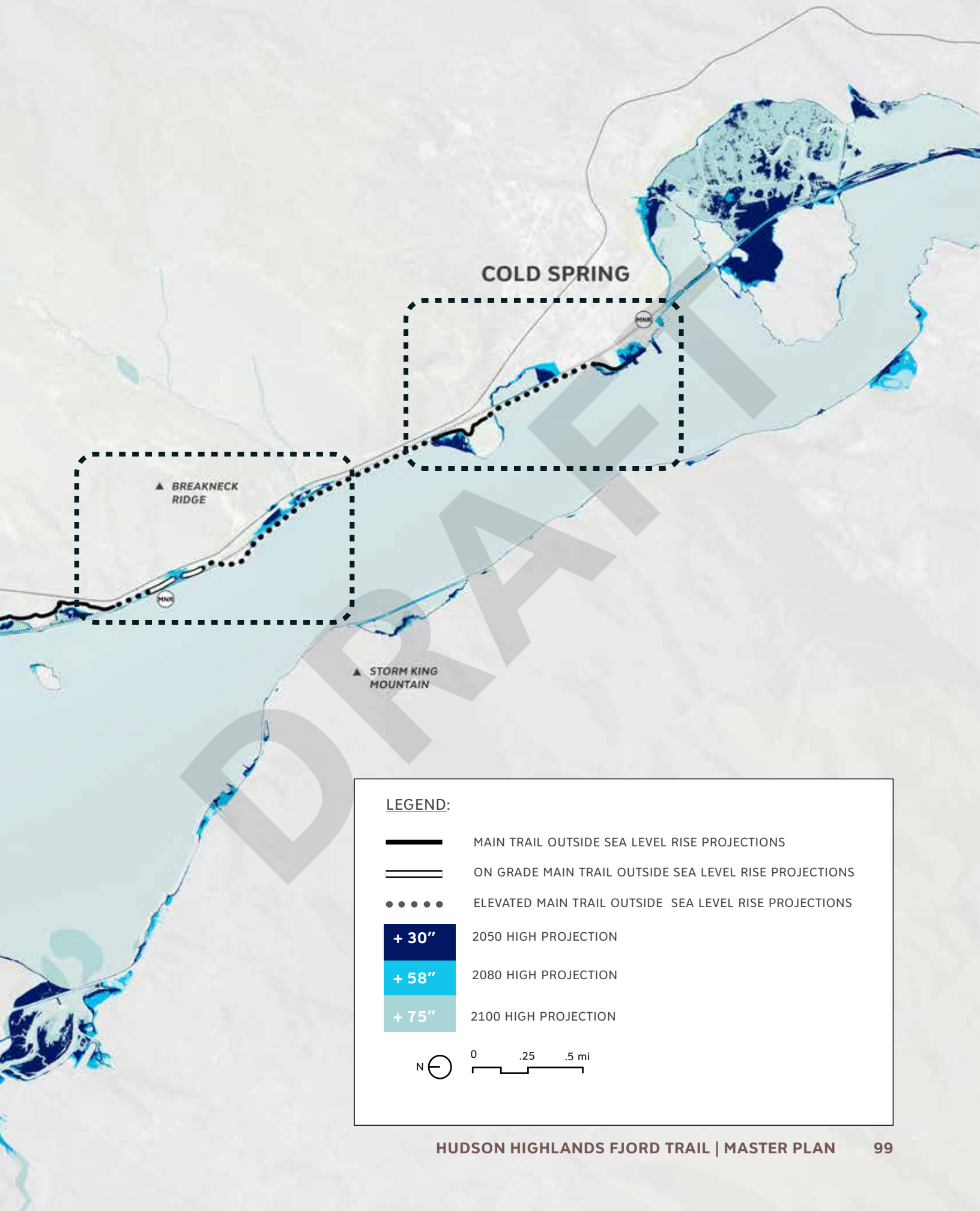
The resilient design standards for meanders differ from those for the Main Trail. Meanders are designed to get people closer to the water, and therefore do not necessarily have to be above the 75" sea level rise projections. See the section below that describes the relationships of each trail element to anticipated future water levels.

**SEA LEVEL RISE**

The Main Trail is above MHHW in 75 inches of sea level rise (High projection for 2100).



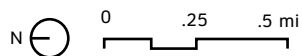


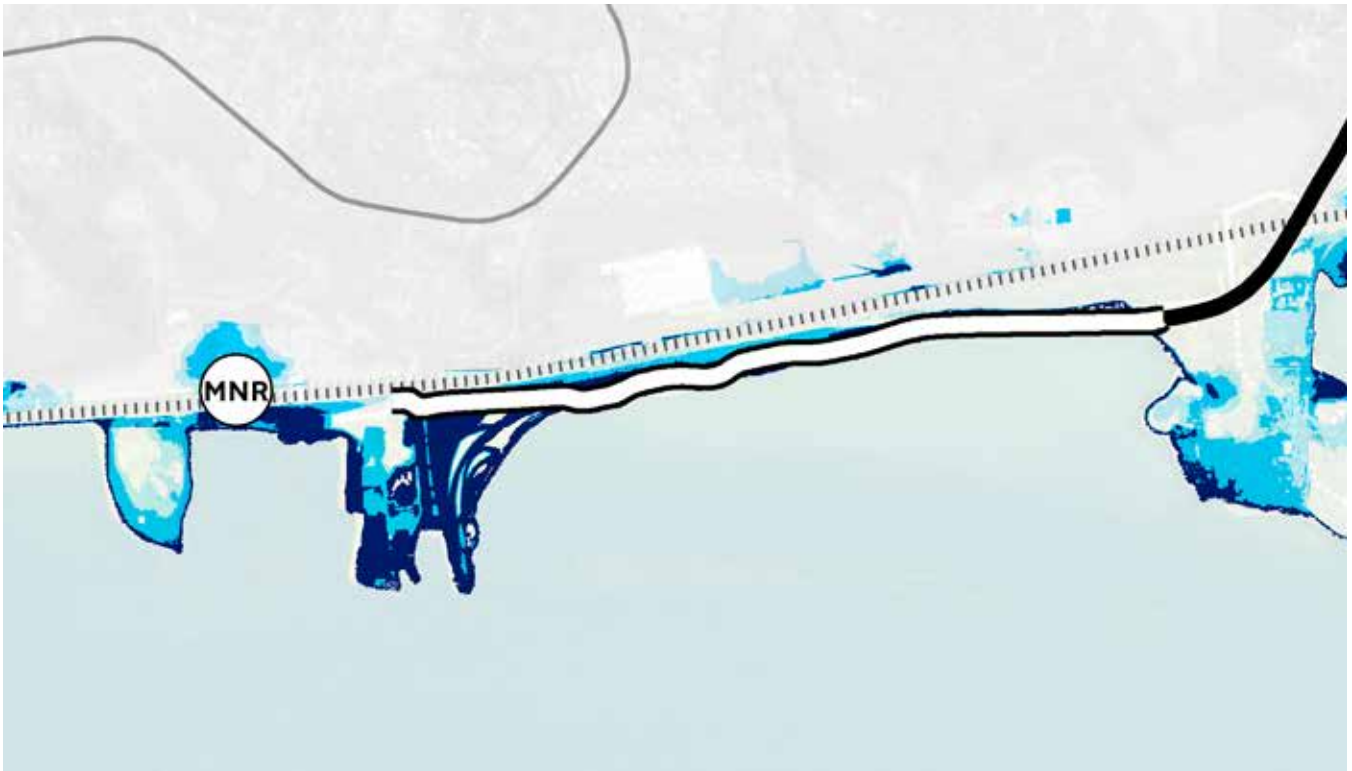


LEGEND:

- MAIN TRAIL OUTSIDE SEA LEVEL RISE PROJECTIONS
- == ON GRADE MAIN TRAIL OUTSIDE SEA LEVEL RISE PROJECTIONS
- ..... ELEVATED MAIN TRAIL OUTSIDE SEA LEVEL RISE PROJECTIONS

- + 30" 2050 HIGH PROJECTION
- + 58" 2080 HIGH PROJECTION
- + 75" 2100 HIGH PROJECTION



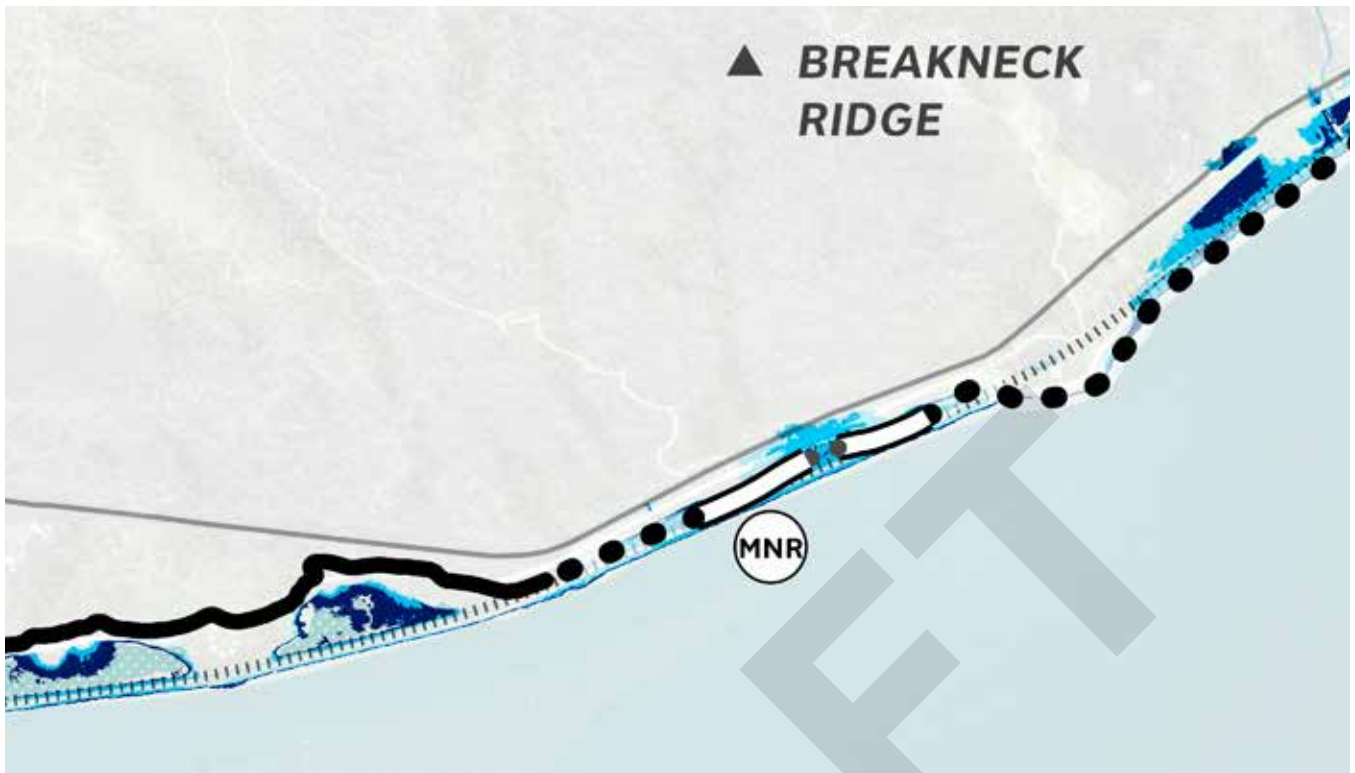


*LONG DOCK*

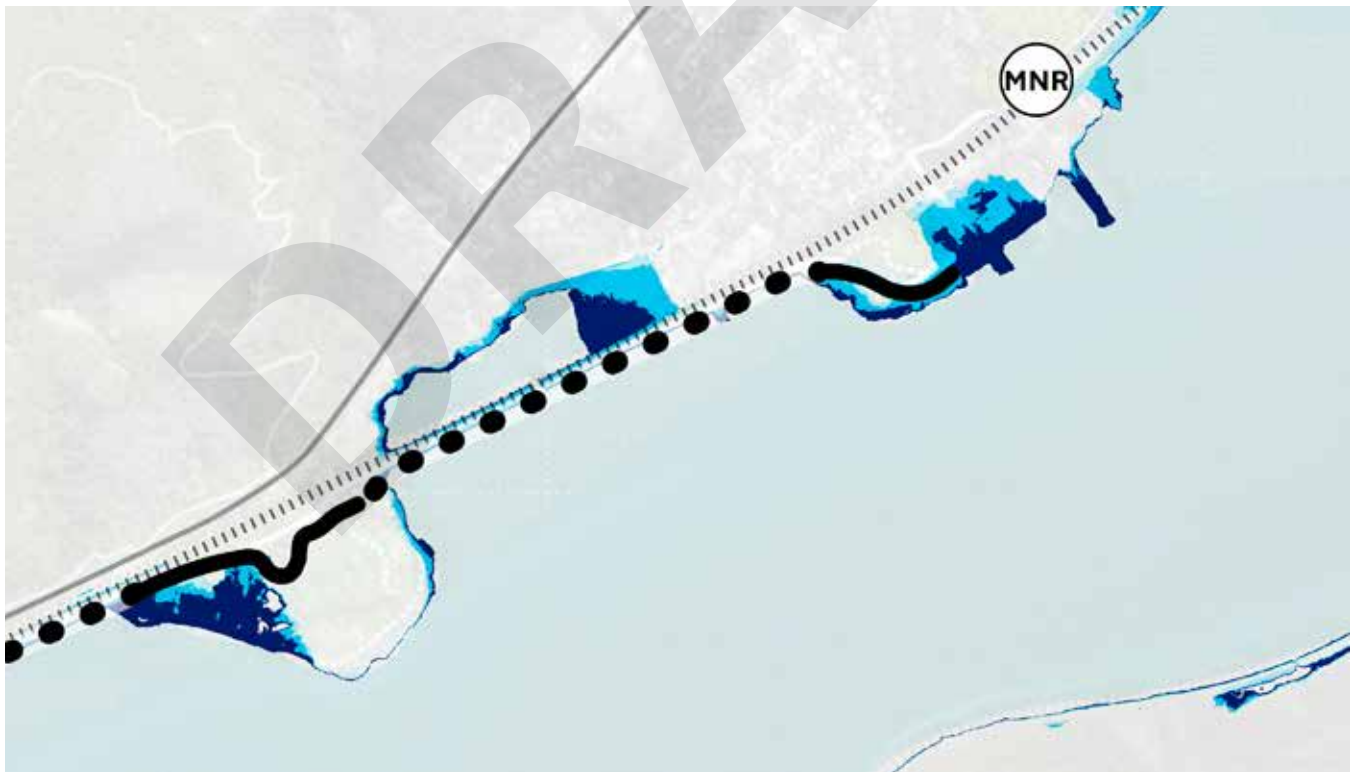


*BRICK BEACH*





BREAKNECK

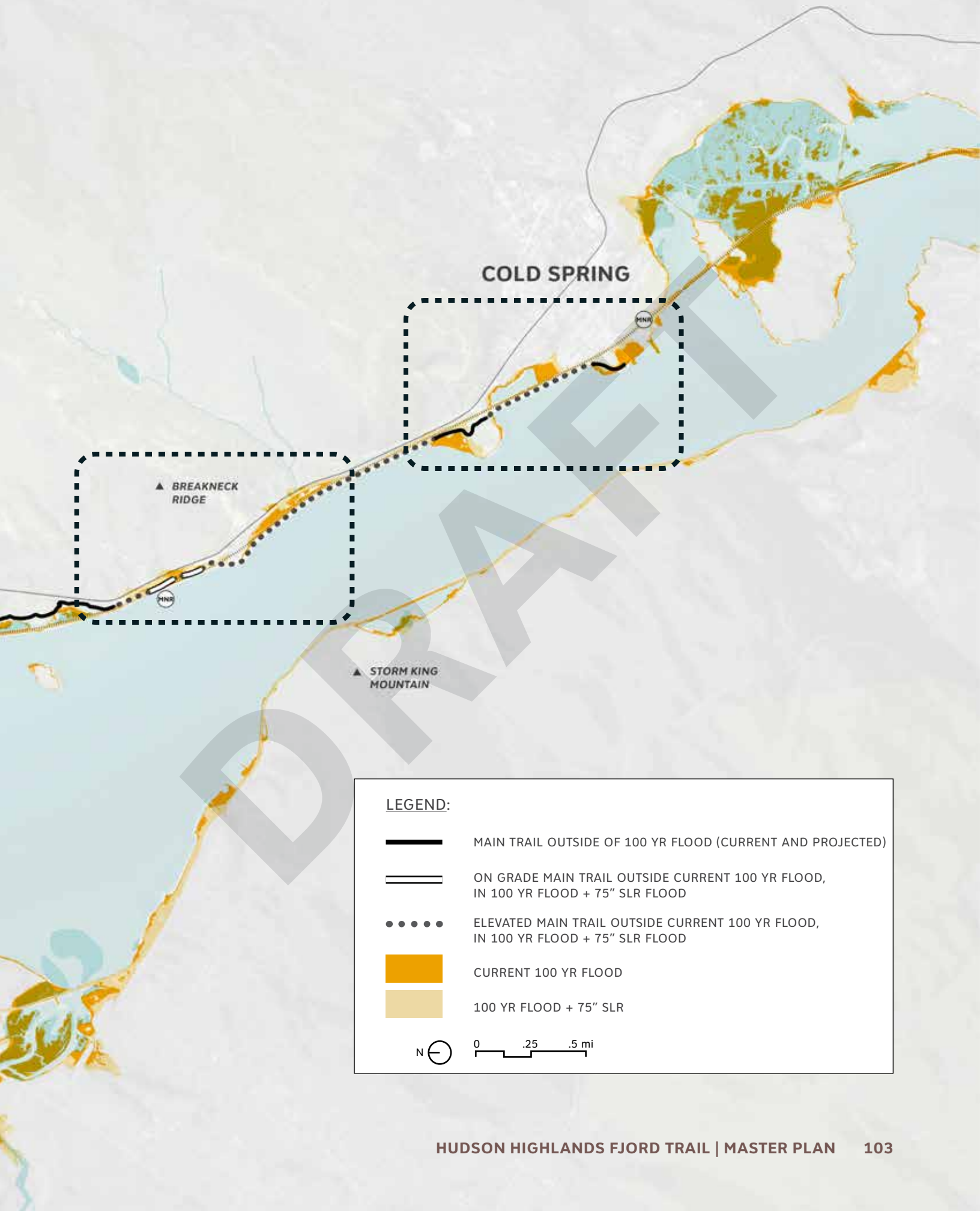


DOCKSIDE

**MAIN TRAIL ABOVE 100 YR FLOOD TODAY, AND RESILIENT TO FUTURE FLOODING WITH SEA LEVEL RISE**  
Current 100 yr flood (1% annual chance storm) and 100 yr flood + 75" of sea level rise (2100 high estimate)





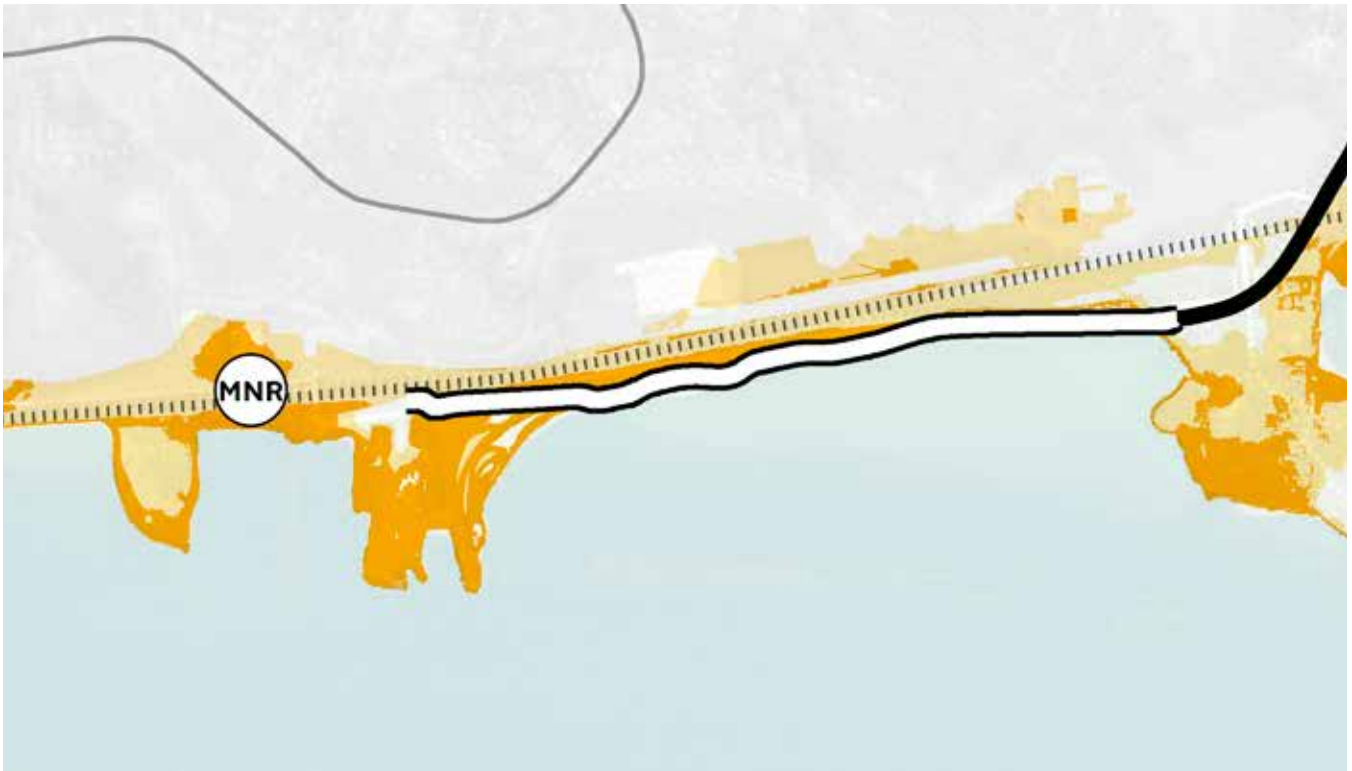


**LEGEND:**

- MAIN TRAIL OUTSIDE OF 100 YR FLOOD (CURRENT AND PROJECTED)
- == ON GRADE MAIN TRAIL OUTSIDE CURRENT 100 YR FLOOD, IN 100 YR FLOOD + 75" SLR FLOOD
- ..... ELEVATED MAIN TRAIL OUTSIDE CURRENT 100 YR FLOOD, IN 100 YR FLOOD + 75" SLR FLOOD
- CURRENT 100 YR FLOOD
- 100 YR FLOOD + 75" SLR



0 .25 .5 mi

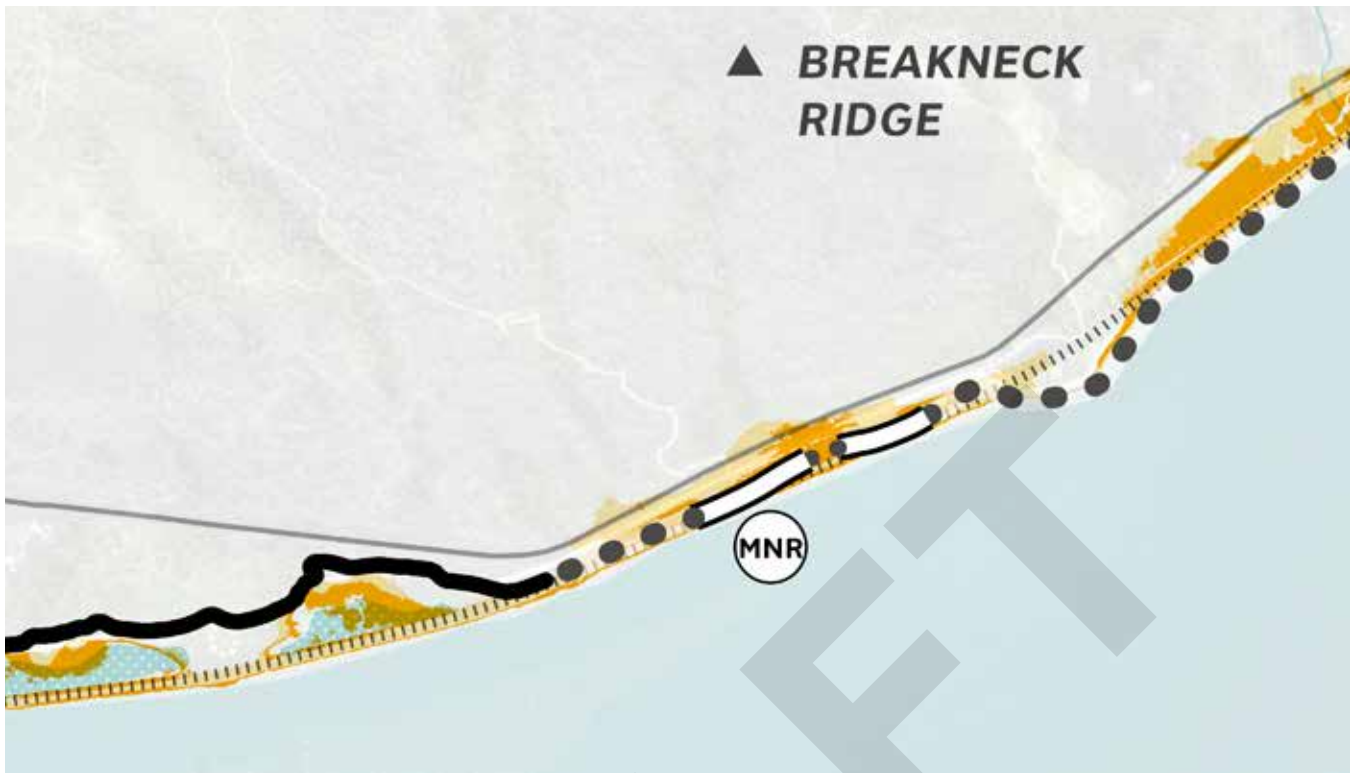


**LONG DOCK**



**BRICK BEACH**





**BREAKNECK**



**DOCKSIDE**

## MAIN TRAIL

### OUTDOOR RECREATION ACCESS ROUTES (ORARS)

**DEFINITION** Connects outdoor constructed features and spaces within picnic and camping facilities, viewing areas, and trailheads only.

**WIDTH** 36 inches min + turning clearance when necessary (Fig 1,2)  
Vertical clearance: 8 feet minimum required for constructed elements, recommended for natural elements (tree branches, rocky outcroppings...)

**SURFACE** **Firm and Stable**  
Slip resistance is not required because leaves and needles, dirt, ice, snow, and other surface debris and weather conditions are components of the natural environment that would be difficult, if not impossible, to avoid. Best practices to encourage safe use through all seasons recommended.

#### Openings

Openings in the surface of the ORAR must be small enough so that a sphere more than **one-half inch** in diameter cannot pass through. Elongated openings should be placed perpendicular to the dominant direction of travel. (Fig 3)

#### Obstacles

Obstacles are anything that interrupts the evenness of the surface of an ORAR (joints in concrete, asphalt, or board surfaces, tree roots and rock,...)  
For concrete, asphalt, or boards, obstacles cannot exceed 1/2" in height.  
For other materials obstacles **cannot exceed 1 inch** in height at their highest point. Tread obstacles must be separated by at least 48 inches.

## SLOPES

ORAR sections may be constructed with a running slope up to **1:20 (5%)**. To accommodate steep terrain, ORARs may be designed with shorter sections that have a steeper running slope and length with resting intervals at the top and bottom of each section. The running slope must never exceed **1:10 (10 %)**. (Fig 4)

RUNNING SLOPES	MAXIMUM LENGTH
0:00 (0%) 1:20 (5%)	Any length
1:20 (5%) - 1:12 (8.33%)	50 feet
1:12 (8.33%) 1:10 (10%)	30 feet

#### CROSS SLOPES

Concrete, asphalt, boards—1:48 (2%) max  
All other surfaces when necessary for drainage —1:20 (5%) max (Fig 6)

#### RESTING INTERVALS

Resting intervals are required at the top and bottom of an ORAR section any time the running slope **exceeds 1:20 (5%)**.  
Adjacent to ORAR: 60" long 36" wide min. Must provide ABA turning space. (Fig 7)  
Within ORAR: 60" long min and at least as wide as the widest section of the ORAR leading to it. (Fig 8)

## RAILS

Guard rails shall be located along open-sided walking surfaces that are located more than 30" above the floor.



Figure 1

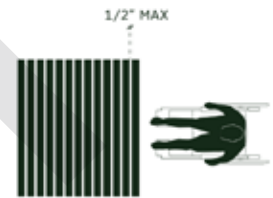


Figure 3

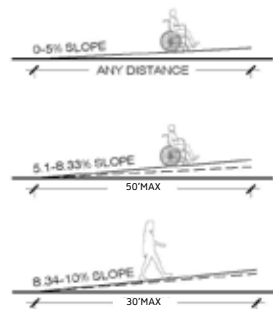


Figure 4



Figure 6

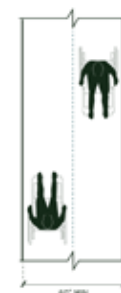


Figure 7

## ACCESSIBILITY GUIDELINES (FROM AGODA)

Refer to the United States Access Board's Final Accessibility Guidelines for Outdoor Developed Areas (AGODA) for complete set of guidelines.



# ACCESSIBILITY & USE

The Main Trail, the trail for all, is an accessible route connecting Cold Spring to Beacon. To achieve the accessibility goals of the trail, the siting was carefully selected to avoid trail slopes greater than 1:10, limit trail slopes between 1:10 and 1:20, and to provide ample clear zones on either side of the trail for resting intervals. The material selection is driven by the need to provide firm and stable trail surfaces with tactile shoulders for visually impaired users.

The United States Access Board outlines accessible design standards for outdoor areas such as outdoor recreation access routes, trails, trailheads, beaches, and picnic areas. These standards were adopted for the design of the main trail and, where possible, meanders and are outlined in the **Final Accessibility Guidelines for Outdoor Developed Areas**. Different portions of the Fjord Trail shall comply with different standards (see Table 2).

As future trail phases begin design and implementation, coordination with stakeholder groups is recommended to incorporate accessible design techniques in addition to the minimum required standards.

TRAIL TYPE	CLASSIFICATION	ACCESSIBLE DESIGN STANDARD
Main Trail	Outdoor Recreation Access Route (ORAR)	Accessibility Standards for Federal Outdoor Developed Areas (AGODA)
Entries	Outdoor Recreation Access Route (ORAR)	Accessibility Standards for Federal Outdoor Developed Areas (AGODA)
Meanders	Trail (if applicable)	Accessibility Standards for Federal Outdoor Developed Areas (AGODA)
Connectors	Trail	Accessibility Standards for Federal Outdoor Developed Areas (AGODA)
Trail Banks	Outdoor Recreation Access Route (ORAR)	Accessibility Standards for Federal Outdoor Developed Areas (AGODA)
Buildings	ADA Building	ADA Accessibility Guidelines

**TABLE 2: ACCESSIBILITY STANDARDS**  
The above table outlines the accessibility standards for the design of the major components of the Fjord Trail.







## PERFORMANCE CRITERIA

The performance criteria establish a foundation for the design guidelines, providing a framework for detailed design of future trail phases to ensure that the project continues to meet the goals and aspirations set during the planning process. As future phases receive funding for implementation, the performance criteria will serve as a conformance checklist. Future phases of the Fjord Trail will need to demonstrate that proposed designs conform to project standards and material guidelines.

# PERFORMANCE CRITERIA & CONFORMANCE CHECKLIST

GOAL	OBJECTIVES	DESIGN CRITERIA	MINIMUM REQUIRED (IF APPLICABLE)	DESIGN GUIDELINE SECTION
EXPRESS REVERENCE FOR THE REGIONAL LANDSCAPE	Expose people to and inspire interest in the region's culture, history, and ecologies.	Trail (main and / or meanders) provides people physical or visual access to points of scenic, historic, cultural, or ecological relevance.		<a href="#">Draft Alignment</a>
		Include interpretive information to make people aware of scenic, historic, cultural, or ecological resources.		<a href="#">Signage &amp; Wayfinding</a>
	Establish a legible design language that expresses the identity of the Hudson Highlands.	The design of the individual trail segments and destinations shall adhere to the design guidelines established in the Master Plan.		<a href="#">Implementation &amp; Phasing</a>
		The Main Trail will be as consistent as possible in material and form, with some expected variation between grounded trail and elevated trail segments.		<a href="#">Main Trail</a>
		Bicycle facilities, picnic tables, waste receptacles, guardrails, Metro-North fence remain consistent throughout the Fjord Trail.		<a href="#">Site Fixtures &amp; Furnishings</a>
	Interpret and express the Hudson's multiple narratives through material selection and use, stewardship, and wayfinding.	Signage and wayfinding along the Main Trail is recognizable and in a consistent design language.		<a href="#">Signage &amp; Wayfinding</a>
		Meanders, meander wayfinding, trail banks, and structures assume a material palette inspired and crafted from the surrounding landscape.		<a href="#">Meanders</a> <a href="#">Trail Banks</a> <a href="#">Destinations</a>
	Ensure the trail does not dominate the legibility or health of the landscape itself.	Trail alignment sensitively navigates existing grade and minimizes the extent of disturbance of the existing topography using elevated trails where necessary to achieve accessibility requirements.		<a href="#">Draft Alignment</a>
		Planting along the trail and trail banks draws from the species of the immediately surrounding landscape or restores a desired condition / habitat adjacent to the trail or trail bank.		<a href="#">Planting &amp; Restoration</a>



GOAL	OBJECTIVES	DESIGN CRITERIA	MINIMUM REQUIRED (IF APPLICABLE)	DESIGN GUIDELINE SECTION
CULTIVATE THE ECOLOGICAL SUBLIME	Foster visual and physical connections with the landscape.	Site Main Trail and meanders to capture views of the near and distant landscape, including notable scenic landscape elements.		<a href="#">Draft Alignment Main Trail</a>
		Meanders provide physical access to notable landscape elements in the surrounding landscape in each of the landscape zones.		<a href="#">Draft Alignment Meanders</a>
	Promote productive ecological processes that enhance the scenic beauty of the area.	In addition to wetlands, seek opportunities to create a mosaic of habitats with high ecological value and function that provide environmental and societal benefits. Restoration should strive to incorporate multiple habitat characteristics to achieve the greatest ecological benefit at a single location.		<a href="#">Planting &amp; Restoration</a>
	Create a seamless connection between the foreground and the background.	Employ strategic planting along and near the trail to restore degraded areas and screen undesirable views.		<a href="#">Planting &amp; Restoration</a>
		Align the Main Trail and meanders to capture distant views and the foreground landscape. Strategically screen undesired elements from view.		<a href="#">Draft Alignment Main Trail Meanders</a>
	Seek out opportunities to repair the land and water edge.	Respect and support vulnerable plant, fish, and wildlife species, and rare ecological communities.		<a href="#">Planting &amp; Restoration</a>
		Design and develop land and water uses to maximize their integration or compatibility with the identified ecological community.		<a href="#">Draft Alignment Program Planting &amp; Restoration</a>
		Maintain or restore hydrologic connections.		<a href="#">Draft Alignment Planting &amp; Restoration</a>
		Maintain and protect living aquatic resources.		<a href="#">Planting &amp; Restoration</a>
		Protect and restore tidal and freshwater wetlands.		<a href="#">Planting &amp; Restoration</a>

GOAL	OBJECTIVES	DESIGN CRITERIA	MINIMUM REQUIRED (IF APPLICABLE)	DESIGN GUIDELINE SECTION
<b>REUNITE WITH THE RIVER'S EDGE</b>	Respect and engage the dynamic processes of the Hudson River and its tributaries.	Consider seasonal changes in river system and design for flooding, storm waves, and ice.		<a href="#">Resilient Design</a>
	Create new water access locations and opportunities.	Provide infrastructure and facilities necessary for people to access and interact with the water from the trail (Main Trail or meanders).		<a href="#">Draft Alignment</a> <a href="#">Site Fixtures</a> & <a href="#">Furnishings:</a> <a href="#">Water Access</a>
		Kayak launches, where indicated, comply with ADA requirements.		<a href="#">Site Fixtures</a> & <a href="#">Furnishings:</a> <a href="#">Water Access</a>
	Enable water-based experiences and activities along the trail.	Support and encourage in-water recreational activities in suitable locations. Incorporate design strategies that do not encourage swimming (unless swimming specifically allowed).		<a href="#">Draft Alignment</a> <a href="#">Program</a> <a href="#">Site Fixtures</a> & <a href="#">Furnishings:</a> <a href="#">Water Access</a>



GOAL	OBJECTIVES	DESIGN CRITERIA	MINIMUM REQUIRED (IF APPLICABLE)	DESIGN GUIDELINE SECTION
<b>CONNECT WITH THE GREATER REGION</b>	Create a new type of recreational amenity for the region.	Provide program in specific locations, as indicated in the Master Plan.		<a href="#">Draft Alignment Program</a>
	Enhance access to and connectivity among regional trails, parks, and local destinations.	Create physical connections to existing trails and trail heads (from the Main Trail and/or meanders).		<a href="#">Draft Alignment</a>
	Make access to the region safer and more enjoyable: Improve safety along 9D.	Incorporate traffic calming initiatives including speed limit reduction, speed tables, signals, etc, to be coordinated with NYS DOT.		<a href="#">Traffic &amp; Safety</a>
	Create a multi-modal Fjord Trail experience accessible to all.	The Main Trail is bikeable and walkable.		<a href="#">Main Trail</a>
		The main trail is wide enough to support concurrent use by people traveling in multiple modes of non-motorized movement.	The Main Trail is at 10' - 14' wide, allowing pedestrian and bicycle movement in both directions.	<a href="#">Main Trail</a>
			The Main Trail will maintain overhead clearances of 8' and side clearances of 6'.	<a href="#">Main Trail</a>
		The Main Trail is an accessible route and complies with the standards in Outdoor Developed Areas: A Summary of Accessibility Standards for Federal Outdoor Developed Areas (AGODA).	The Main Trail is classified as an "Outdoor Recreation Access Route." The main trail will maintain < 1:20 slope to the greatest extent possible.	<a href="#">Accessibility &amp; Use Main Trail</a>

GOAL	OBJECTIVES	DESIGN CRITERIA	MINIMUM REQUIRED (IF APPLICABLE)	DESIGN GUIDELINE SECTION
<b>CHOREOGRAPH VISITATION &amp; STEWARDSHIP</b>	Manage and curate access to popular destinations and sensitive sites.	Provide design techniques to keep trail users on the trail and its facilities. (i.e. buffers)		<a href="#">Main Trail</a> <a href="#">Meanders</a> <a href="#">Trail Banks</a>
	Motivate people to respect and care for the landscape.	Utilize design features such as trail alignment, buffers, and trail bank materials to allow people to experience the surrounding landscape with minimal / limited impacts on potentially sensitive ecosystems.		<a href="#">Main Trail</a> <a href="#">Meanders</a> <a href="#">Trail Banks</a>
		Include stewardship and care guidance on signage along the trail and at destinations.		<a href="#">Signage &amp; Wayfinding</a>
	Minimize the negative impacts of high visitation.	Institute a pack-in, pack-out ethos for the park. Locate waste receptacles at trail entries.		<a href="#">Site Fixtures &amp; Furnishings: Waste Receptacles</a>
		Provide shuttle / trolley to minimize vehicular traffic, parking, and pedestrian circulation on roadways.		<a href="#">Traffic &amp; Safety</a>
		Safely connect to Metro-North train stations.		<a href="#">Draft Alignment</a> <a href="#">Traffic &amp; Safety</a>
	Connect users to the landscape through educational and creative programs.	Designate specific trail banks as outdoor classrooms to accommodate larger class or educational groups.		<a href="#">Draft Alignment</a> <a href="#">Program</a>



GOAL	OBJECTIVES	DESIGN CRITERIA	MINIMUM REQUIRED (IF APPLICABLE)	DESIGN GUIDELINE SECTION
INSPIRE & IMPLEMENT	Develop a feasible and implementable design.	The design and construction documentation of individual trail segments and destinations should incorporate constructability review (by an engineer or contractor with relevant local experience) and cost estimator (by an estimator with local experience in projects of similar nature).		<a href="#">Implementation &amp; Phasing</a>
		Design of individual trail segments and destinations should consider permitting restrictions as part of the design process and integrate anticipated mitigation into the design (either on or off-site).		<a href="#">Implementation &amp; Phasing</a>
	Emphasize resilience and long-term sustainability.	The Main Trail is floodable and designed to withstand storm events.	The Main Trail minimum design elevation is 8' NAVD88, above the 100 year (1% annual chance) storm assumption for 2020 (7.3' NAVD88).	<a href="#">Resilient Design Main Trail</a>
		The elevation of the Main Trail will be such that it will not be inundated by high tide with 75" of sea level rise (2100 High Projections).	The Main Trail minimum design elevation is 8' NAVD88, planned to clear MHHW + 75" SLR (2100 high projection established by New York State in 6 NYCRR Part 490, Project Sea Level Rise).	<a href="#">Resilient Design Main Trail</a>
	Inspire lasting support and stewardship.	Management / maintenance strategy engages people directly with the stewardship of the land.		<a href="#">The Next Generation of Environmental Stewards Maintenance, Sustainability, &amp; Stewardship</a>
	Consider material life cycles and durability.	All exterior materials used in the construction of the trail should be designed or selected to survive.	All exterior materials used in the construction of the trail should be designed or selected to last a minimum of 50 years.	







# **PROJECT GEOGRAPHY & ALIGNMENT**

**DRAFT ALIGNMENT**

**TRAFFIC & SAFETY**

**PROGRAM**

**TRAIL GEOGRAPHY**

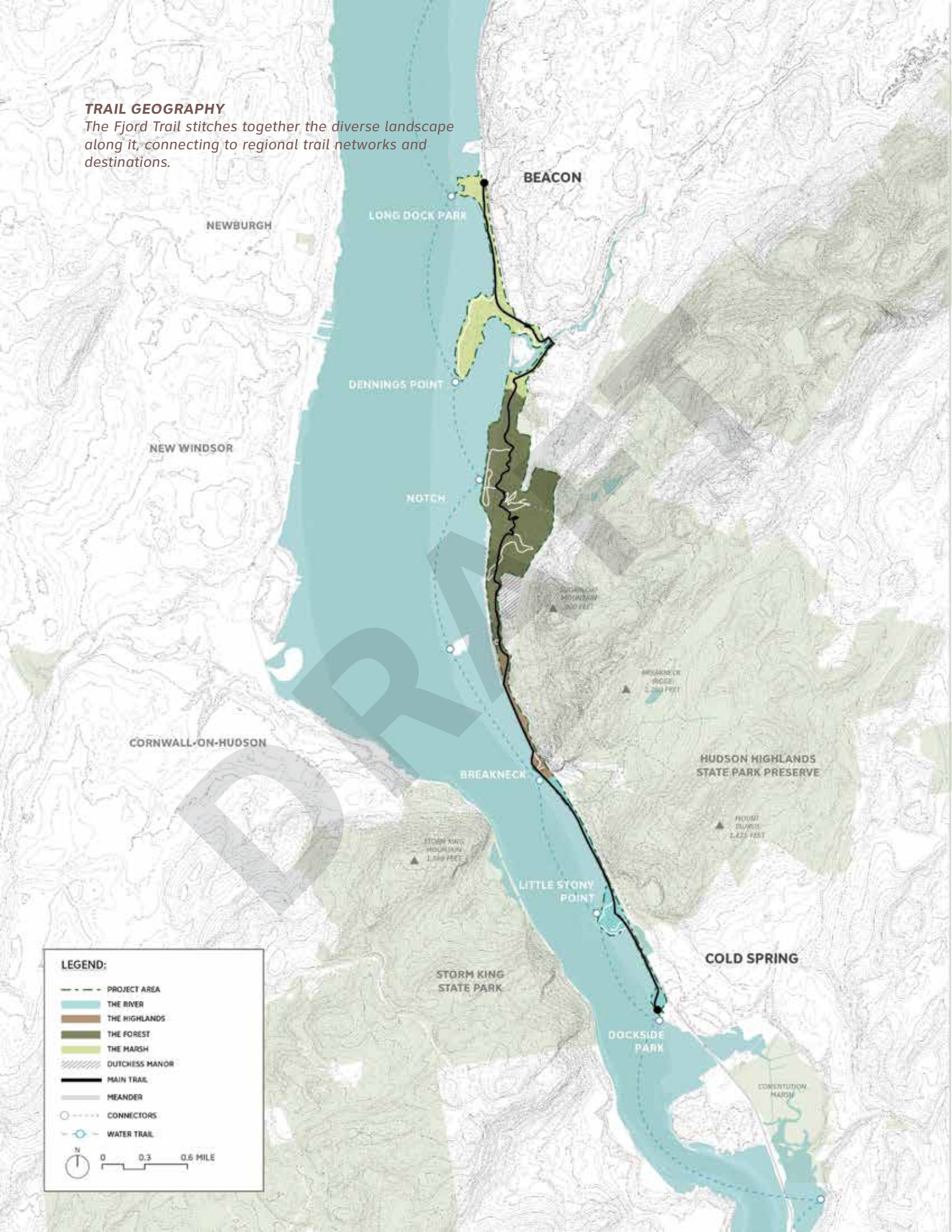
The Fjord Trail stitches together the diverse landscape along it, connecting to regional trail networks and destinations.

**LEGEND:**

- PROJECT AREA
- THE RIVER
- THE HIGHLANDS
- THE FOREST
- THE MARSH
- DUTCHESS MANOR
- MAIN TRAIL
- MEANDER
- CONNECTORS
- WATER TRAIL

N

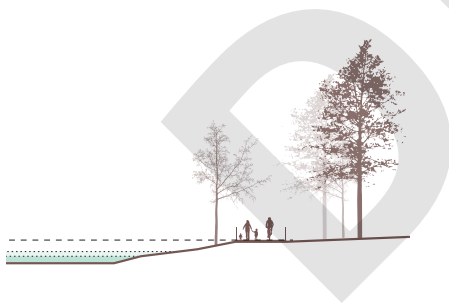
0 0.3 0.6 MILE



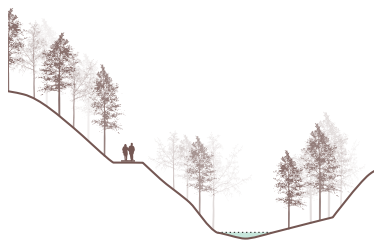


The Main Trail, Meanders, Connectors, Entries, Trail Banks, and Destinations function together as a system that connects the diverse landscape along the Fjord Trail project area with the regional landscape of the Hudson Highlands State Park Preserve. Together, these elements transform the Fjord Trail from a “trail” to a “linear park,” tapping into a wider range of landscape conditions, experiences, and trail geographies.

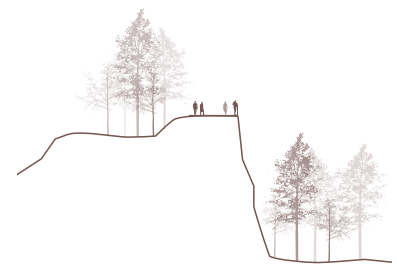
The Fjord Trail is no longer just a corridor trail project connecting Cold Spring, Breakneck, and Beacon, but rather a series of nodes and destinations that are strung together by an accessible trail. The Meanders expand the project geography, traversing varied landscape conditions. The map (left) of the project area has been elaborated to include key destinations and landscapes along the trail.



**SHORELINE EXPERIENCES**



**FOREST EXPERIENCES**



**DRAMATIC VIEWS**







## DRAFT ALIGNMENT

The alignment of the trail - where and how it meets the ground - is a vehicle for storytelling and interpreting the Fjord and Hudson Highlands landscape. Careful siting through extensive site analysis, site walks, and stakeholder discussions and meetings informed the current draft alignment represented in this section.

As part of the planning process, an environmental review will analyze the draft alignment for conflicts with natural, ecological, historic, and cultural resources. This analysis, along with further coordination with NY State OPRHP and other state agencies and stakeholders, will inform improvements to this draft alignment.

The plans and typical sections in this section demonstrate the high-level planning and siting of Fjord Trail elements. Each series is organized by landscape zone. Refer to these plans for general location of elements and refer to **The Design Guidelines Chapter** for more detailed information on design strategies, materials, and typical details.

# THE RIVER

The River's Edge will engage with the Hudson River's forces. Programmatic elements reunite people to the shoreline, foregrounding its dynamic ecologies.











## 1- DOCKSIDE PARK

*The Village of Cold Spring, Dockside Park, and Little Stony Point*



## 2 - DOCKSIDE TO LITTLE STONY POINT

*Portion of trail along Metro North Railroad, between Dockside and Little Stony Point.*





**3- LITTLE STONY POINT**  
*Little Stony Point Meander and Main Trail*



**4- SHORELINE TRAIL**  
*Shoreline trail along Metro North Railroad.*





MP101: DOCKSIDE PARK

KEY



PROPOSED

- MAIN TRAIL**
  - ON GRADE MAIN TRAIL
  - ELEVATED MAIN TRAIL
  - SHORELINE TRAIL
  - ALTERNATIVE ALIGNMENT
- MEANDERS**
  - ON GRADE MEANDER
  - ELEVATED MEANDER
- TRAIL BANKS**  
ALL NUMBERS (5) REFER TO TRAIL BANK INDEX
  - ENTRY BANK
  - INTERSECTION BANK
  - RIVER TRAIL BANK
  - HIGHLANDS TRAIL BANK
  - FOREST TRAIL BANK
  - MARSH TRAIL BANK
- DESTINATION**
  - CONNECTOR TRAILS
  - BRIDGES
  - STAIRS
  - SELECTIVE VEGETATION CLEARING FOR VIEWS
  - ENTRY CAIRN

EXISTING

- EXISTING TRAIL NETWORK
- 8' NAVD83 CONTOUR
- METRO NORTH RAILROAD W/ 25' BUFFER ZONE
- EXISTING WETLAND (NYDEC, NWI)
- EXISTING WATER BODY (NYDEC, NWI)
- SUBMERGED AQUATIC VEGETATION SAV (NYDEC)
- EXISTING LANDSCAPE FEATURE
- PARCEL BOUNDARIES (PUTNAM, DUTCHESS COUNTY)

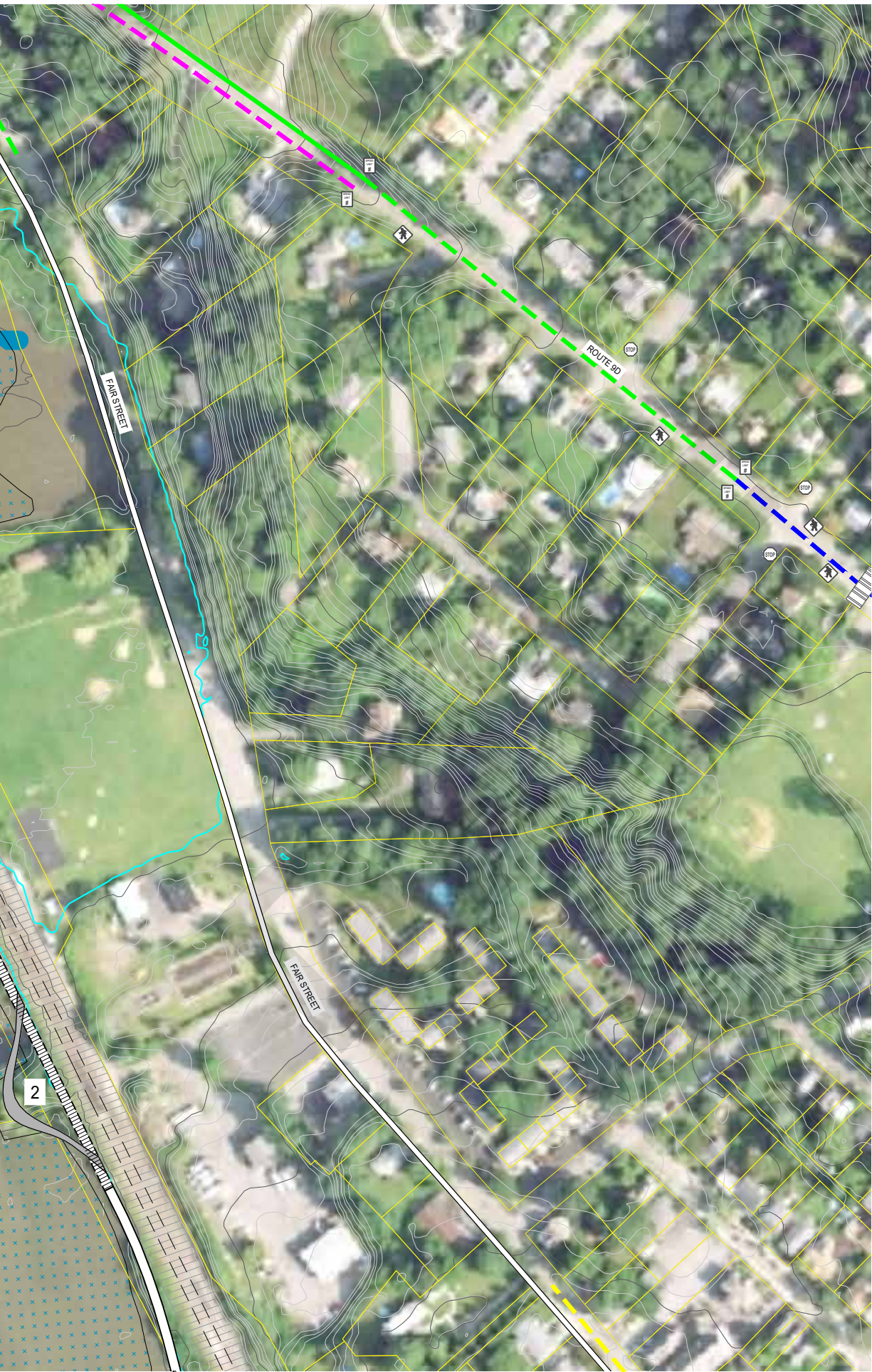
TRAFFIC + SAFETY

- | EXISTING | PROPOSED |                         |
|----------|----------|-------------------------|
|          |          | YIELD SIGN              |
|          |          | STOP SIGN               |
|          |          | PEDESTRIAN WARNING SIGN |
|          |          | SPEED LIMIT SIGN        |
|          |          | CROSSWALK               |
|          |          | STREET LIGHT            |
|          |          | PARKING                 |
- 
- | EXISTING | PROPOSED | SPEED LIMIT |
|----------|----------|-------------|
|          |          | 15 MPH      |
|          |          | 25 MPH      |
|          |          | 30 MPH      |
|          |          | 40 MPH      |
|          |          | 45 MPH      |
|          |          | 55 MPH      |









**MP102: DOCKSIDE  
+ METRO NORTH**

**KEY**



**PROPOSED**

- MAIN TRAIL**
  - ON GRADE MAIN TRAIL
  - ELEVATED MAIN TRAIL
  - SHORELINE TRAIL
  - ALTERNATIVE ALIGNMENT
- MEANDERS**
  - ON GRADE MEANDER
  - ELEVATED MEANDER
- TRAIL BANKS**  
ALL NUMBERS (5) REFER TO TRAIL BANK INDEX
  - ENTRY BANK
  - INTERSECTION BANK
  - RIVER TRAIL BANK
  - HIGHLANDS TRAIL BANK
  - FOREST TRAIL BANK
  - MARSH TRAIL BANK
- DESTINATION**
  - CONNECTOR TRAILS
  - BRIDGES
  - STAIRS
  - SELECTIVE VEGETATION CLEARING FOR VIEWS
  - ENTRY CAIRN

**EXISTING**

- EXISTING TRAIL NETWORK
- 8' NAVD83 CONTOUR
- METRO NORTH RAILROAD W/ 25' BUFFER ZONE
- EXISTING WETLAND (NYDEC, NWI)
- EXISTING WATER BODY (NYDEC, NWI)
- SUBMERGED AQUATIC VEGETATION SAV (NYDEC)
- EXISTING LANDSCAPE FEATURE
- PARCEL BOUNDARIES (PUTNAM, DUTCHESS COUNTY)

**TRAFFIC + SAFETY**

- | EXISTING | PROPOSED |                         |
|----------|----------|-------------------------|
|          |          | YIELD SIGN              |
|          |          | STOP SIGN               |
|          |          | PEDESTRIAN WARNING SIGN |
|          |          | SPEED LIMIT SIGN        |
|          |          | CROSSWALK               |
|          |          | STREET LIGHT            |
|          |          | PARKING                 |
- 
- | EXISTING | PROPOSED | SPEED LIMIT |
|----------|----------|-------------|
|          |          | 15 MPH      |
|          |          | 25 MPH      |
|          |          | 30 MPH      |
|          |          | 40 MPH      |
|          |          | 45 MPH      |
|          |          | 55 MPH      |









## MP103: LITTLE STONY POINT KEY



### PROPOSED

- MAIN TRAIL**
  - ON GRADE MAIN TRAIL
  - ELEVATED MAIN TRAIL
  - SHORELINE TRAIL
  - ALTERNATIVE ALIGNMENT
- MEANDERS**
  - ON GRADE MEANDER
  - ELEVATED MEANDER
- TRAIL BANKS**  
ALL NUMBERS (1) REFER TO TRAIL BANK INDEX
  - ENTRY BANK
  - INTERSECTION BANK
  - RIVER TRAIL BANK
  - HIGHLANDS TRAIL BANK
  - FOREST TRAIL BANK
  - MARSH TRAIL BANK
- DESTINATION**
  - CONNECTOR TRAILS
  - BRIDGES
  - STAIRS
  - SELECTIVE VEGETATION CLEARING FOR VIEWS
  - ENTRY CAIRN

### EXISTING

- EXISTING TRAIL NETWORK
- 8' NAVD83 CONTOUR
- METRO NORTH RAILROAD W/ 25' BUFFER ZONE
- EXISTING WETLAND (NYDEC, NWI)
- EXISTING WATER BODY (NYDEC, NWI)
- SUBMERGED AQUATIC VEGETATION SAV (NYDEC)
- EXISTING LANDSCAPE FEATURE
- PARCEL BOUNDARIES (PUTNAM, DUTCHESS COUNTY)

### TRAFFIC + SAFETY

- | EXISTING | PROPOSED |                         |
|----------|----------|-------------------------|
|          |          | YIELD SIGN              |
|          |          | STOP SIGN               |
|          |          | PEDESTRIAN WARNING SIGN |
|          |          | SPEED LIMIT SIGN        |
|          |          | CROSSWALK               |
|          |          | STREET LIGHT            |
|          |          | PARKING                 |
- 
- | EXISTING | PROPOSED | SPEED LIMIT |
|----------|----------|-------------|
|          |          | 15 MPH      |
|          |          | 25 MPH      |
|          |          | 30 MPH      |
|          |          | 40 MPH      |
|          |          | 45 MPH      |
|          |          | 55 MPH      |









**MP104: SHORELINE TRAIL SOUTH**

**KEY**



**PROPOSED**



**EXISTING**



**TRAFFIC + SAFETY**





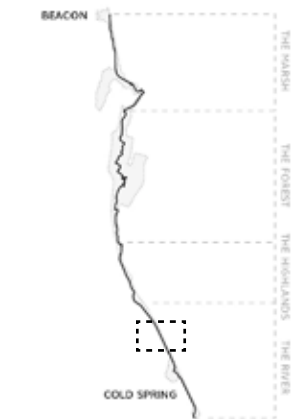






MP105: SHORELINE TRAIL NORTH

KEY



PROPOSED



EXISTING



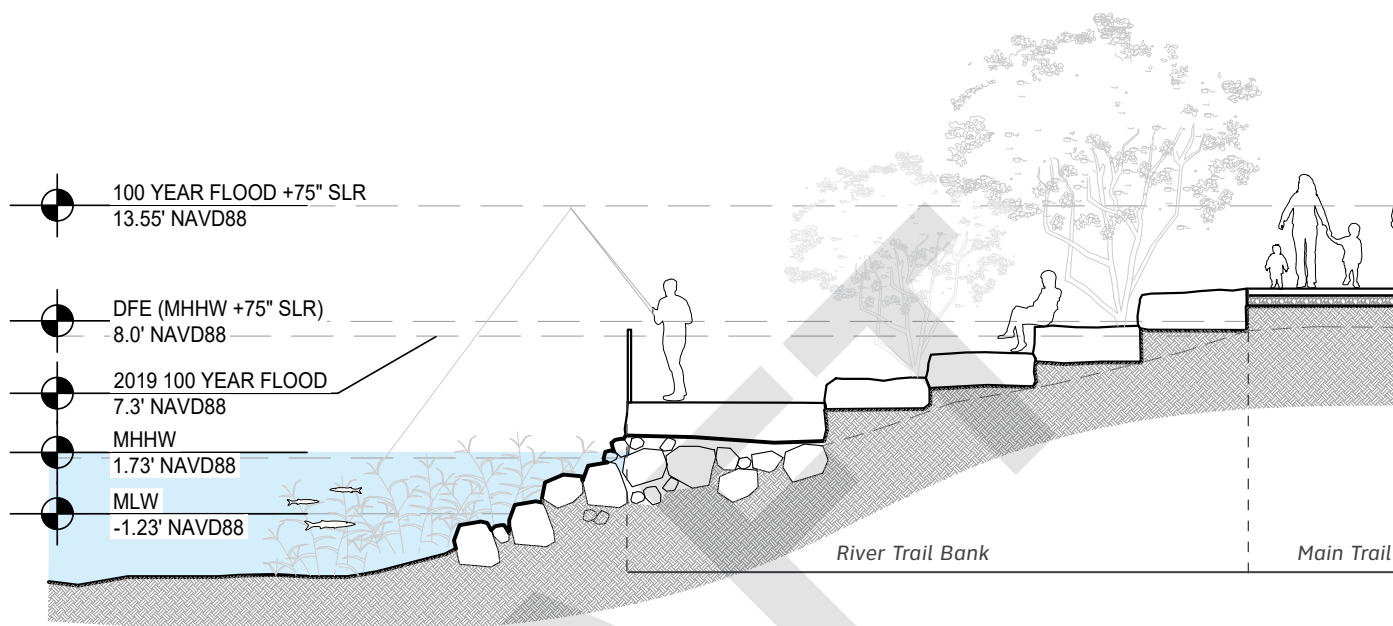
TRAFFIC + SAFETY





## RIVER TRAIL BANK

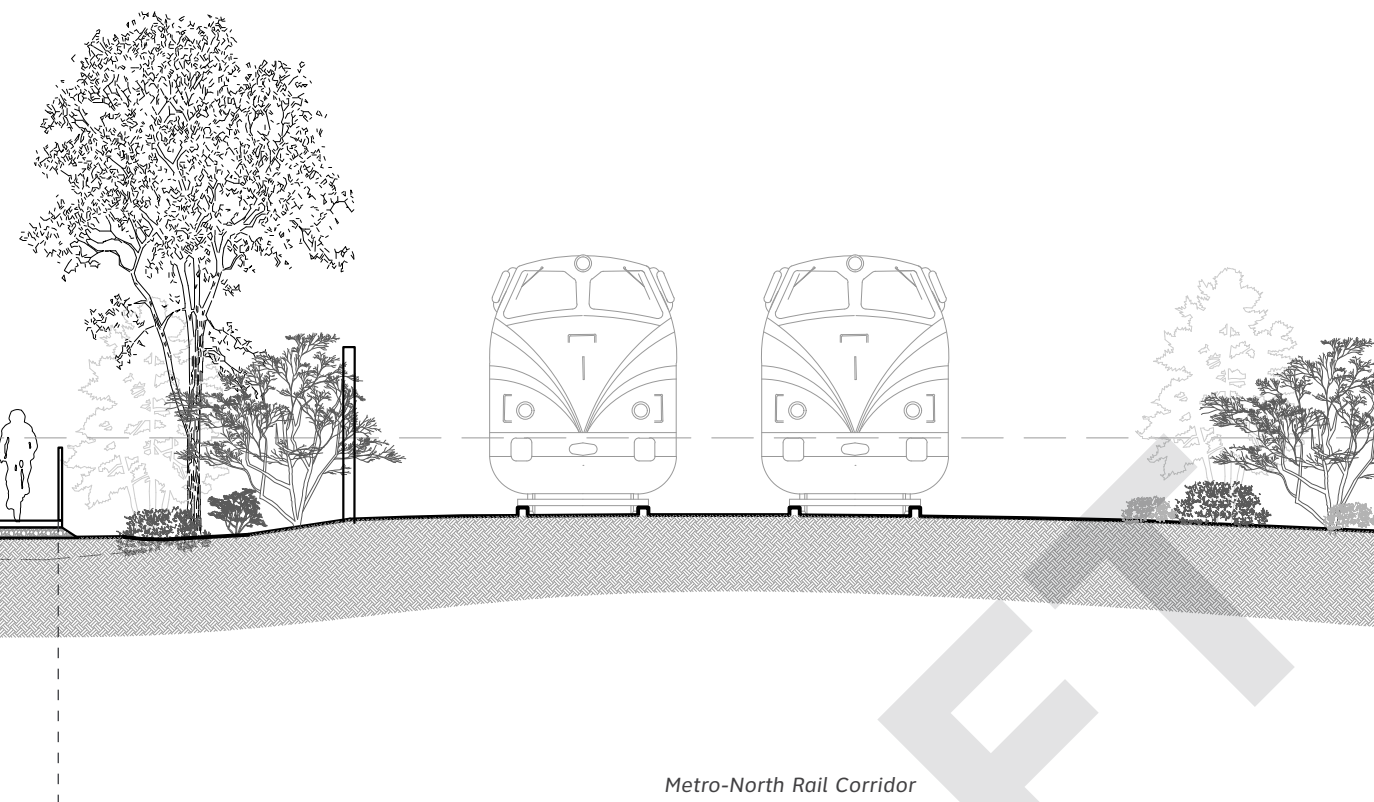
A potential get down along the shoreline.



## VEGETATED EDGE

The trail will weave through existing vegetated areas, preserving as many mature tree clusters as possible.



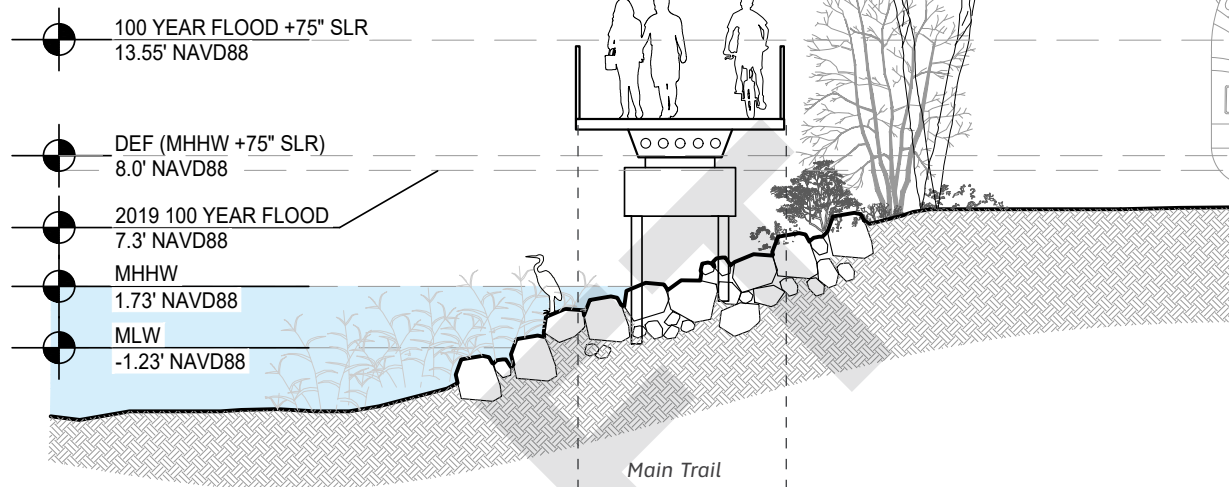


#### **METRO-NORTH RAIL CORRIDOR**

*The Shoreline Trail will run along the Metro-North Railroad*

### RIVER SHORELINE TRAIL

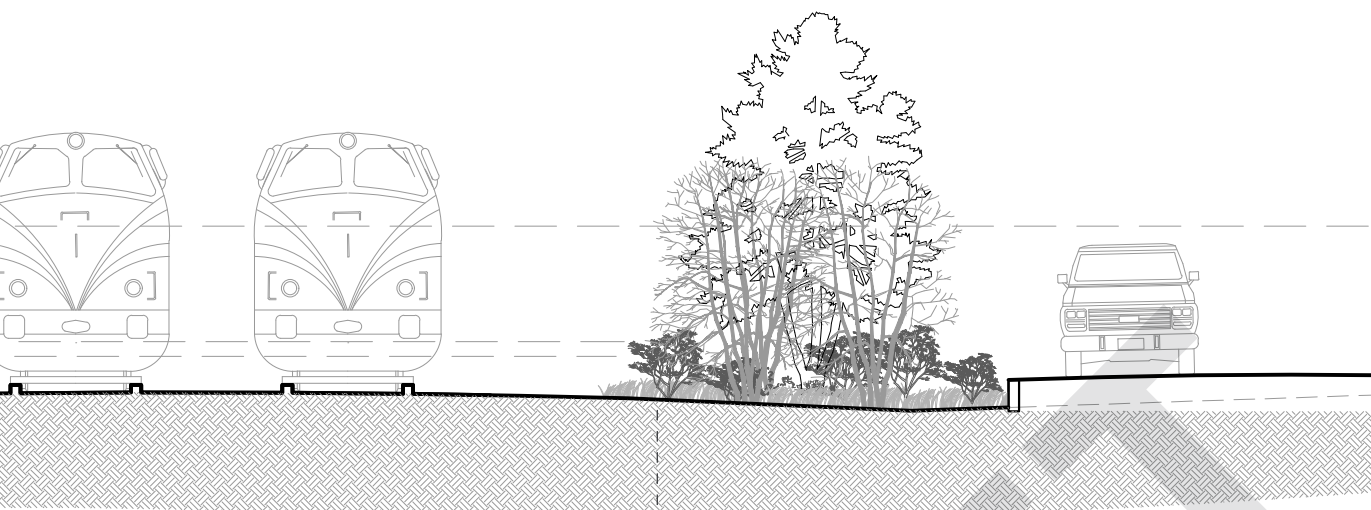
An elevated Shoreline Trail will be above 75" of sea level rise and resilient in future flood events.



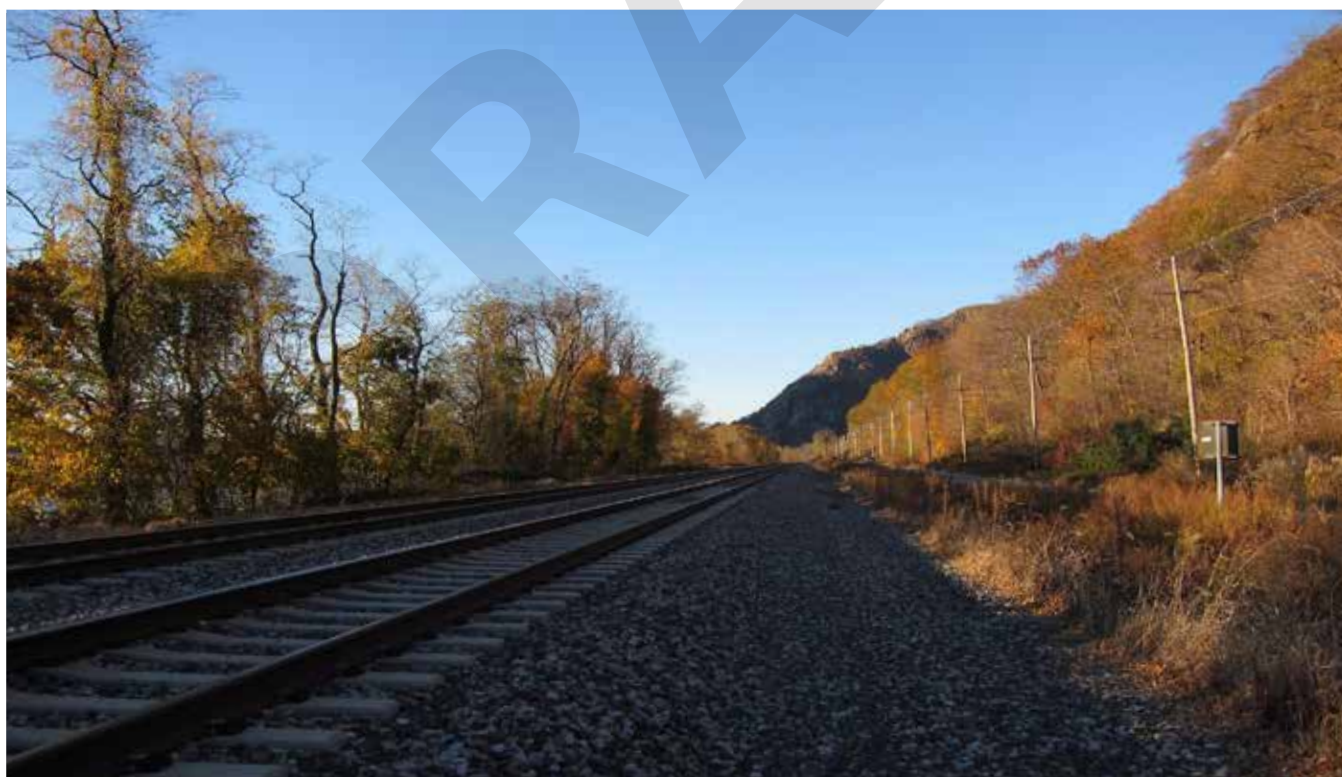
### SHORELINE HABITAT

An elevated trail will minimize disturbance of riverine habitat.





Metro-North Rail Corridor



#### **METRO-NORTH RAIL CORRIDOR**

*Considerations for views from the train will be analyzed in future design phases.*



## THE HIGHLANDS

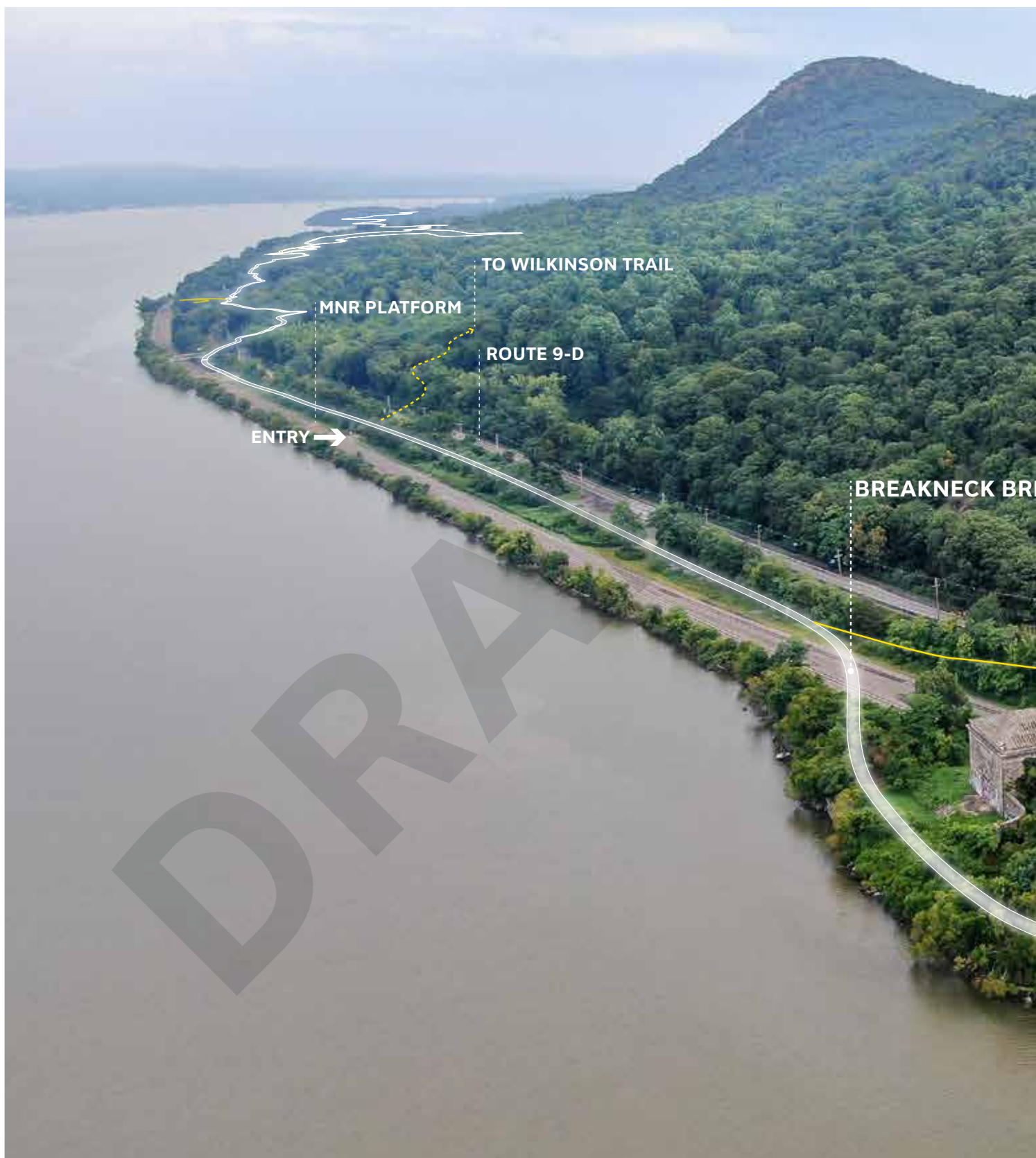
The activities and structures of the Highlands will support the many visitors to the region that come to hike Breakneck Ridge, while also amplifying the rocky nature of the place.











### **BREAKNECK**

*The Main Trail crosses the Metro-North Railroad at Breakneck and connects to the Breakneck Ridge trailhead.*







DRAFT

BREAKNECK

STEWARD STATION

UPPER OVERLOOK

LOWER OVERLOOK

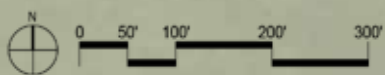
POTENTIAL WATER TRAIL ADA ACCESS

18

19

20

17

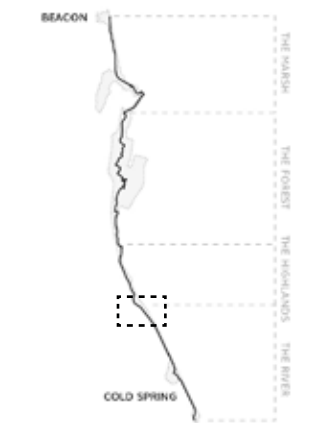






**MP106: BREAKNECK  
BRIDGE + OVERLOOK**

**KEY**



**PROPOSED**

- MAIN TRAIL**
  - ON GRADE MAIN TRAIL
  - ELEVATED MAIN TRAIL
  - SHORELINE TRAIL
  - ALTERNATIVE ALIGNMENT
- MEANDERS**
  - ON GRADE MEANDER
  - ELEVATED MEANDER
- TRAIL BANKS**  
ALL NUMBERS (5') REFER TO TRAIL BANK WIDTH
  - ENTRY BANK
  - INTERSECTION BANK
  - RIVER TRAIL BANK
  - HIGHLANDS TRAIL BANK
  - FOREST TRAIL BANK
  - MARSH TRAIL BANK
- DESTINATION**
  - CONNECTOR TRAILS
  - BRIDGES
  - STAIRS
  - SELECTIVE VEGETATION CLEARING FOR VIEWS
  - ENTRY CAIRN

**EXISTING**

- EXISTING TRAIL NETWORK
- 8' NAVD83 CONTOUR
- METRO NORTH RAILROAD W/ 25' BUFFER ZONE
- EXISTING WETLAND (NYDEC, NWI)
- EXISTING WATER BODY (NYDEC, NWI)
- SUBMERGED AQUATIC VEGETATION SAV (NYDEC)
- EXISTING LANDSCAPE FEATURE
- PARCEL BOUNDARIES (PUTNAM, DUTCHESS COUNTY)

**TRAFFIC + SAFETY**

- | EXISTING | PROPOSED |                         |
|----------|----------|-------------------------|
|          |          | YIELD SIGN              |
|          |          | STOP SIGN               |
|          |          | PEDESTRIAN WARNING SIGN |
|          |          | SPEED LIMIT SIGN        |
|          |          | CROSSWALK               |
|          |          | STREET LIGHT            |
|          |          | PARKING                 |
- 
- | EXISTING | PROPOSED | SPEED LIMIT |
|----------|----------|-------------|
|          |          | 15 MPH      |
|          |          | 25 MPH      |
|          |          | 30 MPH      |
|          |          | 40 MPH      |
|          |          | 45 MPH      |
|          |          | 55 MPH      |





27

ROCK OUTCROP

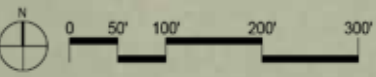
METRO NORTH STOP  
ENHANCED PLATFORM  
-BREAKNECK RIDGE

ROUTE 90

METRO NORTH STOP  
ENHANCED PLATFORM  
-BREAKNECK RIDGE

SCRAMBLE BANK

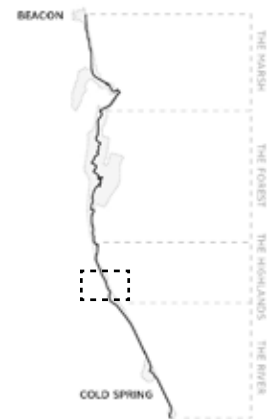
PICNIC GROVE





MP107: BREAKNECK CONNECTOR

KEY



PROPOSED



EXISTING



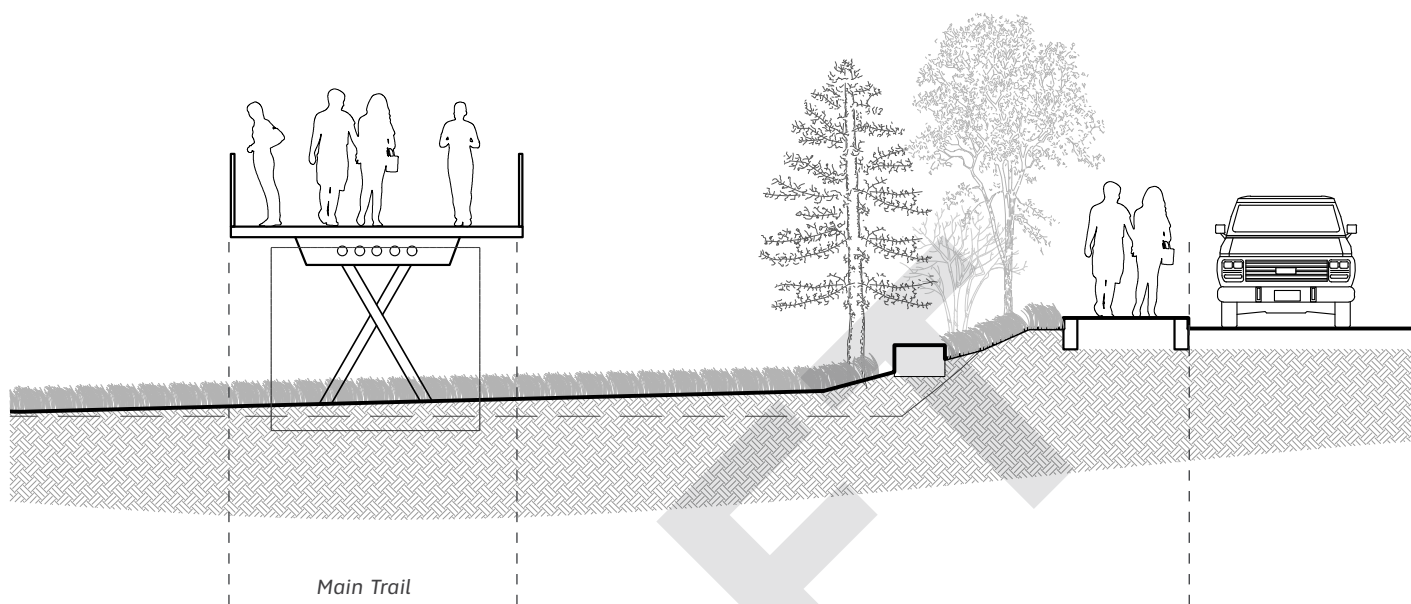
TRAFFIC + SAFETY





### **ELEVATED TRAIL**

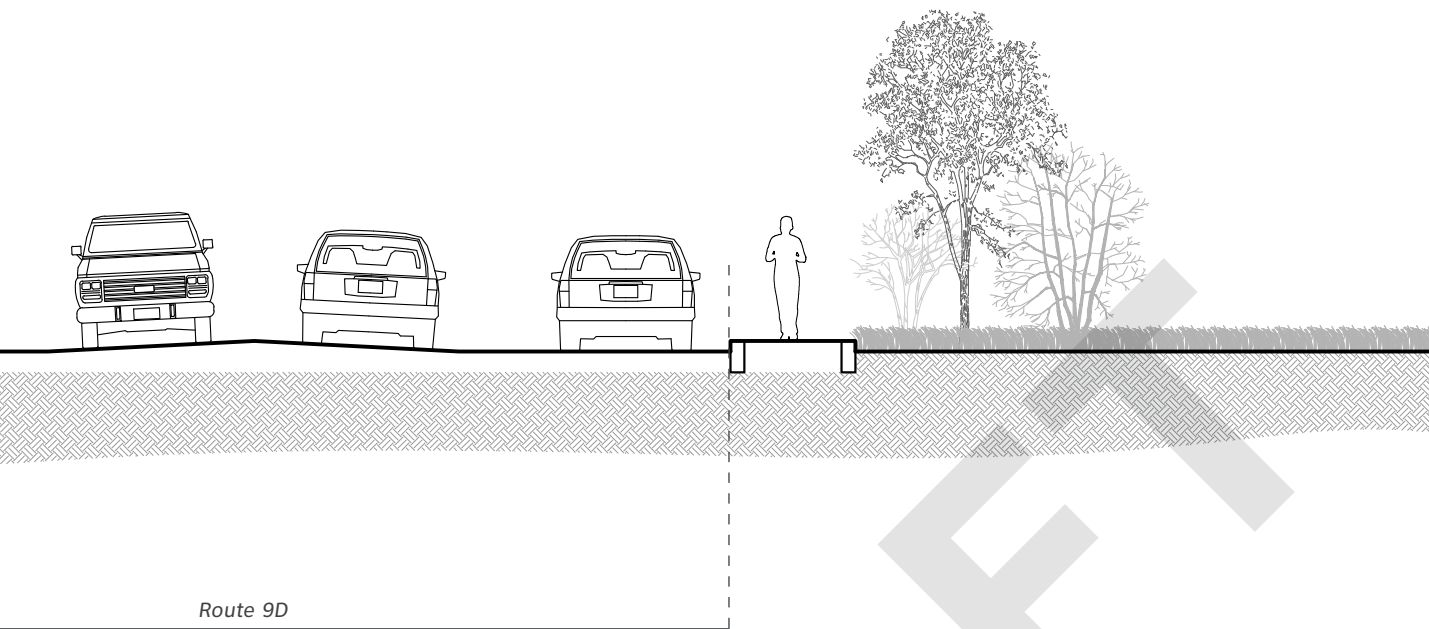
The challenging terrain of the Highlands sometimes creates the need for an elevated trail to establish an accessible route.



### **VEGETATED VIEWS**

Storm King Mountain is visible through the vegetation at Breakneck.



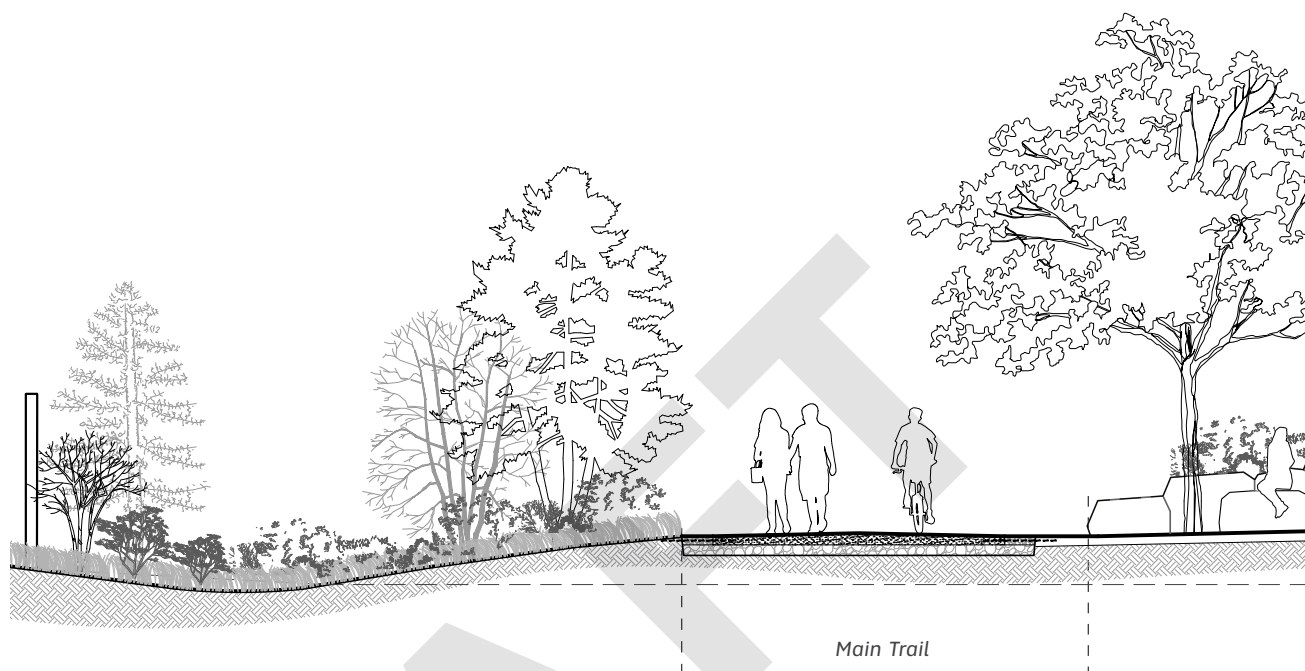


#### **ROUTE 9D**

*High speed traffic poses a safety issue to users of the Fjord Trail.*

### **HIGHLANDS TRAIL BANK**

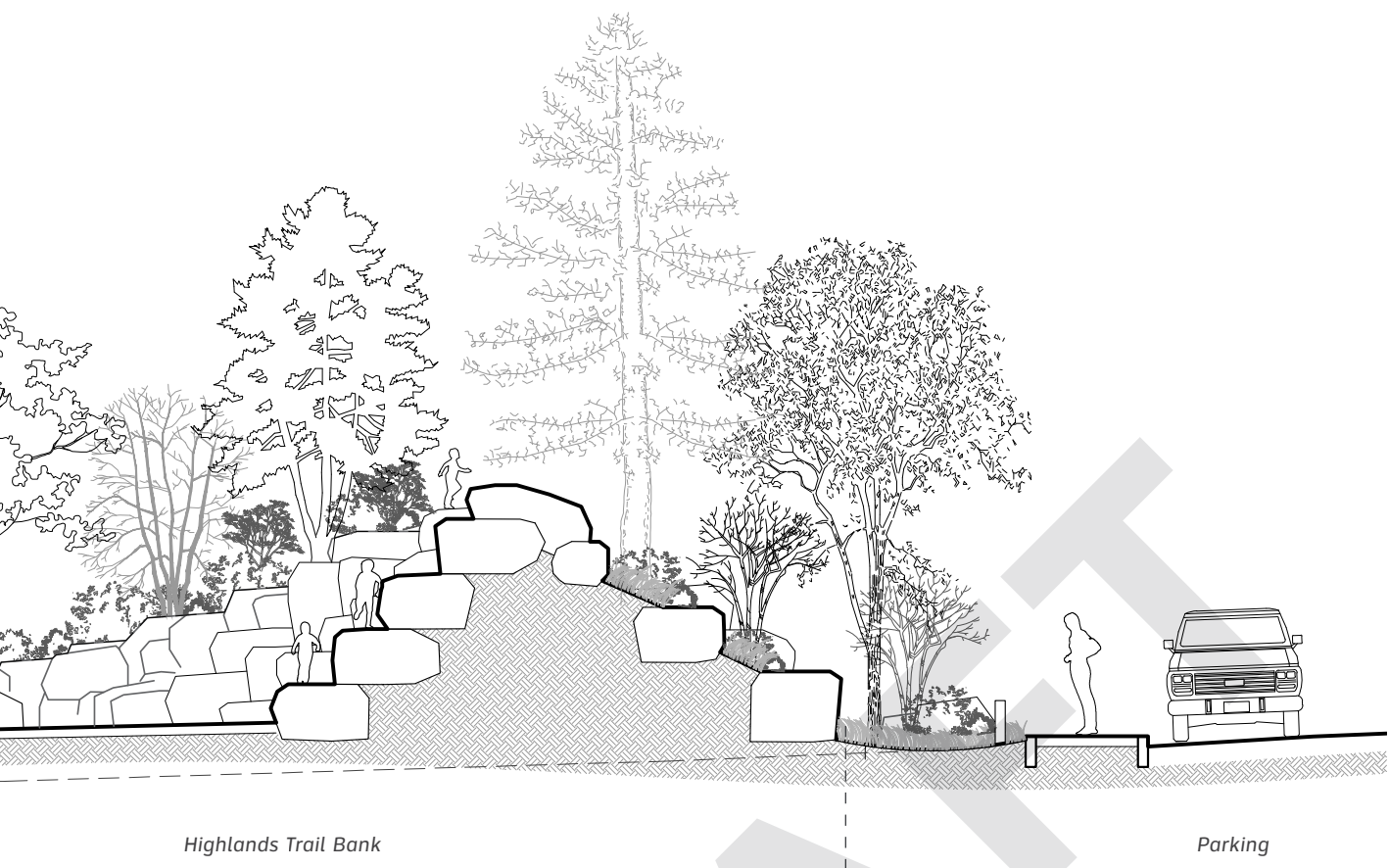
*Stacked boulder scrambles orient to key views and support playful activities and seating.*



### **STORM KING MOUNTAIN**

*View of Storm King from Breakneck.*





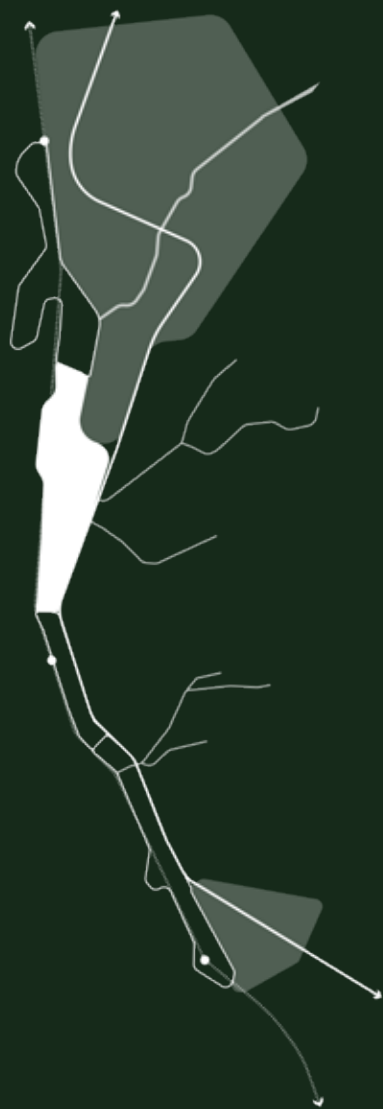
### **EXPOSED BEDROCK AND BOULDERS**

*The boulders and stone in the Highlands provide natural places for people to sit and rest.*



# THE FOREST

An immersive experience along the Fjord Trail, the areas of the forest are opportunities to experience something different and engage with diverse, deciduous landscapes.











### 1- SOUTH FOREST AND POLLEPEL ISLAND

The trail will increase in elevation as it approaches the forest, with views out to Pollepel Island



### 2- FOREST WETLAND NEAR DUTCHESS MANOR

The trail will be nested in the hillside above the existing wetlands





### 3- NOTCH AND BRICK BEACH

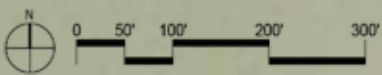
Near Notch, the Main Trail will be located at the base of the slope, with meanders to Brick Beach



### 4- NORTH FOREST AND WETLAND

At the north forest, the Main Trail will carefully navigate existing wetlands

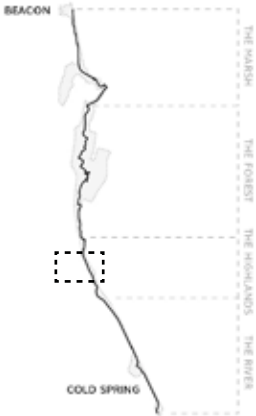
POLLEPEL OVERLOOK





MP108: POLLEPEL ISLAND

KEY



PROPOSED

- MAIN TRAIL**
  - ON GRADE MAIN TRAIL
  - ELEVATED MAIN TRAIL
  - SHORELINE TRAIL
  - ALTERNATIVE ALIGNMENT
- MEANDERS**
  - ON GRADE MEANDER
  - ELEVATED MEANDER
- TRAIL BANKS**  
ALL NUMBERS (5) REFER TO TRAIL BANK INDEX
  - ENTRY BANK
  - INTERSECTION BANK
  - RIVER TRAIL BANK
  - HIGHLANDS TRAIL BANK
  - FOREST TRAIL BANK
  - MARSH TRAIL BANK
- DESTINATION**
  - CONNECTOR TRAILS
  - BRIDGES
  - STAIRS
  - SELECTIVE VEGETATION CLEARING FOR VIEWS
  - ENTRY CAIRN

EXISTING

- EXISTING TRAIL NETWORK
- 8' NAVD83 CONTOUR
- METRO NORTH RAILROAD W/ 25' BUFFER ZONE
- EXISTING WETLAND (NYDEC, NWI)
- EXISTING WATER BODY (NYDEC, NWI)
- SUBMERGED AQUATIC VEGETATION SAV (NYDEC)
- EXISTING LANDSCAPE FEATURE
- PARCEL BOUNDARIES (PUTNAM, DUTCHESS COUNTY)

TRAFFIC + SAFETY

- | EXISTING | PROPOSED |                         |
|----------|----------|-------------------------|
|          |          | YIELD SIGN              |
|          |          | STOP SIGN               |
|          |          | PEDESTRIAN WARNING SIGN |
|          |          | SPEED LIMIT SIGN        |
|          |          | CROSSWALK               |
|          |          | STREET LIGHT            |
|          |          | PARKING                 |
- 
- | EXISTING | PROPOSED | SPEED LIMIT |
|----------|----------|-------------|
|          |          | 15 MPH      |
|          |          | 25 MPH      |
|          |          | 30 MPH      |
|          |          | 40 MPH      |
|          |          | 45 MPH      |
|          |          | 55 MPH      |









## MP109: DUTCHESS MANOR

### KEY



### PROPOSED

- MAIN TRAIL**
  - ON GRADE MAIN TRAIL
  - ELEVATED MAIN TRAIL
  - SHORELINE TRAIL
  - ALTERNATIVE ALIGNMENT
- MEANDERS**
  - ON GRADE MEANDER
  - ELEVATED MEANDER
- TRAIL BANKS**  
ALL NUMBERS (5) REFER TO TRAIL BANK INDEX
  - ENTRY BANK
  - INTERSECTION BANK
  - RIVER TRAIL BANK
  - HIGHLANDS TRAIL BANK
  - FOREST TRAIL BANK
  - MARSH TRAIL BANK
- DESTINATION**
  - CONNECTOR TRAILS
- BRIDGES**
- STAIRS**
- SELECTIVE VEGETATION CLEARING FOR VIEWS**
- ENTRY CAIRN**

### EXISTING

- EXISTING TRAIL NETWORK
- 8' NAVD83 CONTOUR
- METRO NORTH RAILROAD W/ 25' BUFFER ZONE
- EXISTING WETLAND (NYDEC, NWI)
- EXISTING WATER BODY (NYDEC, NWI)
- SUBMERGED AQUATIC VEGETATION SAV (NYDEC)
- EXISTING LANDSCAPE FEATURE
- PARCEL BOUNDARIES (PUTNAM, DUTCHESS COUNTY)

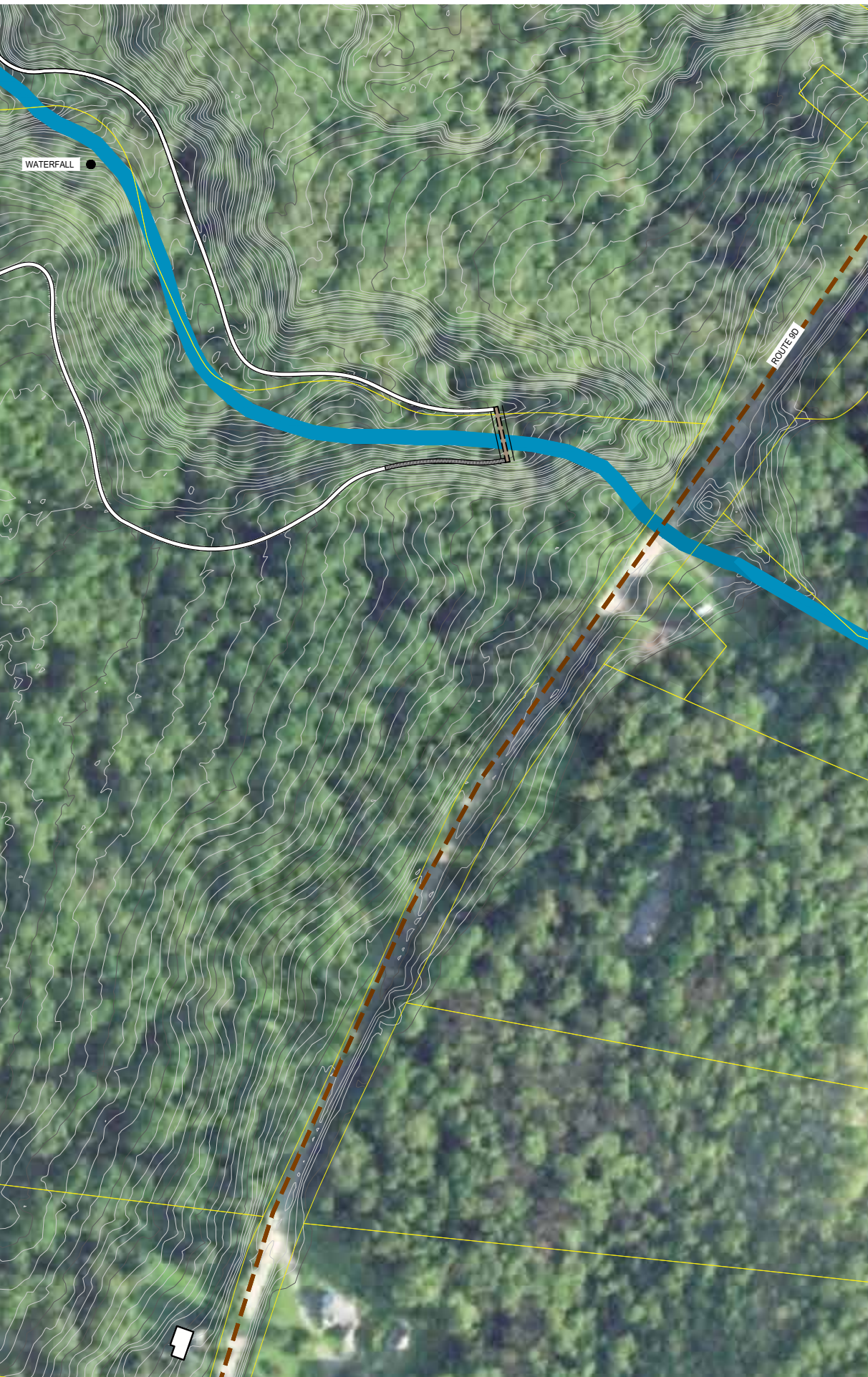
### TRAFFIC + SAFETY

- | EXISTING | PROPOSED |                         |
|----------|----------|-------------------------|
|          |          | YIELD SIGN              |
|          |          | STOP SIGN               |
|          |          | PEDESTRIAN WARNING SIGN |
|          |          | SPEED LIMIT SIGN        |
|          |          | CROSSWALK               |
|          |          | STREET LIGHT            |
|          |          | PARKING                 |
- 
- | EXISTING | PROPOSED | SPEED LIMIT |
|----------|----------|-------------|
|          |          | 15 MPH      |
|          |          | 25 MPH      |
|          |          | 30 MPH      |
|          |          | 40 MPH      |
|          |          | 45 MPH      |
|          |          | 55 MPH      |









## MP110: SOUTH FOREST

### KEY



### PROPOSED

- MAIN TRAIL**
  - ON GRADE MAIN TRAIL
  - ELEVATED MAIN TRAIL
  - SHORELINE TRAIL
  - ALTERNATIVE ALIGNMENT
- MEANDERS**
  - ON GRADE MEANDER
  - ELEVATED MEANDER
- TRAIL BANKS**  
ALL NUMBERS (5) REFER TO TRAIL BANK INDEX
  - ENTRY BANK
  - INTERSECTION BANK
  - RIVER TRAIL BANK
  - HIGHLANDS TRAIL BANK
  - FOREST TRAIL BANK
  - MARSH TRAIL BANK
- DESTINATION**
  - CONNECTOR TRAILS
  - BRIDGES
  - STAIRS
  - SELECTIVE VEGETATION CLEARING FOR VIEWS
  - ENTRY CAIRN

### EXISTING

- EXISTING TRAIL NETWORK
- 8' NAVD83 CONTOUR
- METRO NORTH RAILROAD W/ 25' BUFFER ZONE
- EXISTING WETLAND (NYDEC, NWI)
- EXISTING WATER BODY (NYDEC, NWI)
- SUBMERGED AQUATIC VEGETATION SAV (NYDEC)
- EXISTING LANDSCAPE FEATURE
- PARCEL BOUNDARIES (PUTNAM, DUTCHESS COUNTY)

### TRAFFIC + SAFETY

- | EXISTING | PROPOSED |                         |
|----------|----------|-------------------------|
|          |          | YIELD SIGN              |
|          |          | STOP SIGN               |
|          |          | PEDESTRIAN WARNING SIGN |
|          |          | SPEED LIMIT SIGN        |
|          |          | CROSSWALK               |
|          |          | STREET LIGHT            |
|          |          | PARKING                 |
- 
- | EXISTING | PROPOSED | SPEED LIMIT |
|----------|----------|-------------|
|          |          | 15 MPH      |
|          |          | 25 MPH      |
|          |          | 30 MPH      |
|          |          | 40 MPH      |
|          |          | 45 MPH      |
|          |          | 55 MPH      |









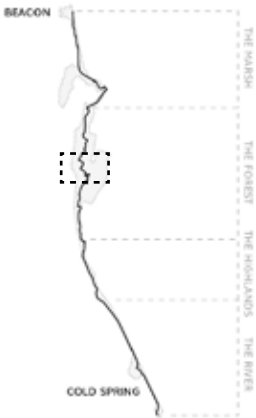






MP112: BRICK BEACH SOUTH

KEY



PROPOSED

- MAIN TRAIL**
  - ON GRADE MAIN TRAIL
  - ELEVATED MAIN TRAIL
  - SHORELINE TRAIL
  - ALTERNATIVE ALIGNMENT
- MEANDERS**
  - ON GRADE MEANDER
  - ELEVATED MEANDER
- TRAIL BANKS**  
ALL NUMBERS (5) REFER TO TRAIL BANK INDEX
  - ENTRY BANK
  - INTERSECTION BANK
  - RIVER TRAIL BANK
  - HIGHLANDS TRAIL BANK
  - FOREST TRAIL BANK
  - MARSH TRAIL BANK
- DESTINATION**
  - CONNECTOR TRAILS
  - BRIDGES
  - STAIRS
  - SELECTIVE VEGETATION CLEARING FOR VIEWS
  - ENTRY CAIRN

EXISTING

- EXISTING TRAIL NETWORK
- 8' NAVD83 CONTOUR
- METRO NORTH RAILROAD W/ 25' BUFFER ZONE
- EXISTING WETLAND (NYDEC, NWI)
- EXISTING WATER BODY (NYDEC, NWI)
- SUBMERGED AQUATIC VEGETATION SAV (NYDEC)
- EXISTING LANDSCAPE FEATURE
- PARCEL BOUNDARIES (PUTNAM, DUTCHESS COUNTY)

TRAFFIC + SAFETY

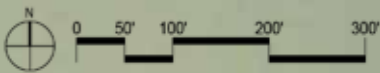
- | EXISTING | PROPOSED |                         |
|----------|----------|-------------------------|
|          |          | YIELD SIGN              |
|          |          | STOP SIGN               |
|          |          | PEDESTRIAN WARNING SIGN |
|          |          | SPEED LIMIT SIGN        |
|          |          | CROSSWALK               |
|          |          | STREET LIGHT            |
|          |          | PARKING                 |
- 
- | EXISTING | PROPOSED | SPEED LIMIT |
|----------|----------|-------------|
|          |          | 15 MPH      |
|          |          | 25 MPH      |
|          |          | 30 MPH      |
|          |          | 40 MPH      |
|          |          | 45 MPH      |
|          |          | 55 MPH      |



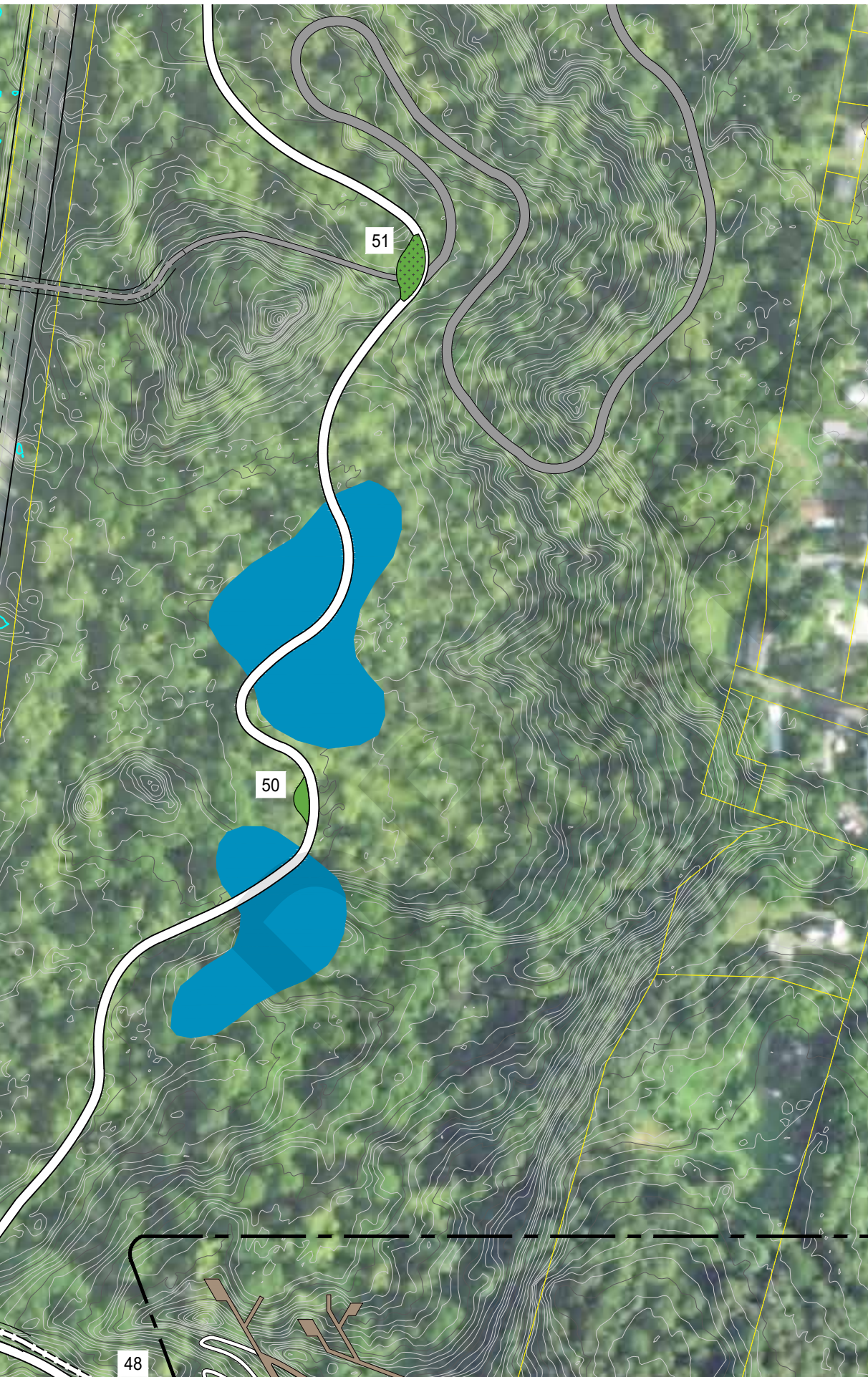




BRICK BEACH

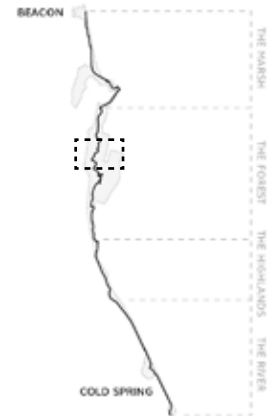






## MP113: BRICK BEACH NORTH

### KEY



### PROPOSED

- MAIN TRAIL**
  - ON GRADE MAIN TRAIL
  - ELEVATED MAIN TRAIL
  - SHORELINE TRAIL
  - ALTERNATIVE ALIGNMENT
- MEANDERS**
  - ON GRADE MEANDER
  - ELEVATED MEANDER
- TRAIL BANKS**  
ALL NUMBERS (5) REFER TO TRAIL BANK INDEX
  - ENTRY BANK
  - INTERSECTION BANK
  - RIVER TRAIL BANK
  - HIGHLANDS TRAIL BANK
  - FOREST TRAIL BANK
  - MARSH TRAIL BANK
- DESTINATION**
  - CONNECTOR TRAILS
  - BRIDGES
  - STAIRS
  - SELECTIVE VEGETATION CLEARING FOR VIEWS
  - ENTRY CAIRN

### EXISTING

- EXISTING TRAIL NETWORK
- 8' NAVD83 CONTOUR
- METRO NORTH RAILROAD W/ 25' BUFFER ZONE
- EXISTING WETLAND (NYDEC, NWI)
- EXISTING WATER BODY (NYDEC, NWI)
- SUBMERGED AQUATIC VEGETATION SAV (NYDEC)
- EXISTING LANDSCAPE FEATURE
- PARCEL BOUNDARIES (PUTNAM, DUTCHESS COUNTY)

### TRAFFIC + SAFETY

- | EXISTING | PROPOSED |                         |
|----------|----------|-------------------------|
|          |          | YIELD SIGN              |
|          |          | STOP SIGN               |
|          |          | PEDESTRIAN WARNING SIGN |
|          |          | SPEED LIMIT SIGN        |
|          |          | CROSSWALK               |
|          |          | STREET LIGHT            |
|          |          | PARKING                 |
- 
- | EXISTING | PROPOSED | SPEED LIMIT |
|----------|----------|-------------|
|          |          | 15 MPH      |
|          |          | 25 MPH      |
|          |          | 30 MPH      |
|          |          | 40 MPH      |
|          |          | 45 MPH      |
|          |          | 55 MPH      |









MP114: NORTH FOREST

**KEY**

BEACON  
THE MARSH  
THE FOREST  
THE HIGHLANDS  
THE RIVER  
COLD SPRING

**PROPOSED**

**MAIN TRAIL**

- ON GRADE MAIN TRAIL
- ELEVATED MAIN TRAIL
- SHORELINE TRAIL
- ALTERNATIVE ALIGNMENT

**MEANDERS**

- ON GRADE MEANDER
- ELEVATED MEANDER

**TRAIL BANKS**  
ALL NUMBERS (5') REFER TO TRAIL BANK WIDTH

- ENTRY BANK
- INTERSECTION BANK
- RIVER TRAIL BANK
- HIGHLANDS TRAIL BANK
- FOREST TRAIL BANK
- MARSH TRAIL BANK

**DESTINATION**

- CONNECTOR TRAILS
- BRIDGES
- STAIRS
- SELECTIVE VEGETATION CLEARING FOR VIEWS
- ENTRY CAIRN

**EXISTING**

- EXISTING TRAIL NETWORK
- 8' NAVD83 CONTOUR
- METRO NORTH RAILROAD W/ 25' BUFFER ZONE
- EXISTING WETLAND (NYDEC, NWI)
- EXISTING WATER BODY (NYDEC, NWI)
- SUBMERGED AQUATIC VEGETATION SAV (NYDEC)
- EXISTING LANDSCAPE FEATURE
- PARCEL BOUNDARIES (PUTNAM, DUTCHESS COUNTY)

**TRAFFIC + SAFETY**

EXISTING	PROPOSED	
		YIELD SIGN
		STOP SIGN
		PEDESTRIAN WARNING SIGN
		SPEED LIMIT SIGN
		CROSSWALK
		STREET LIGHT
		PARKING

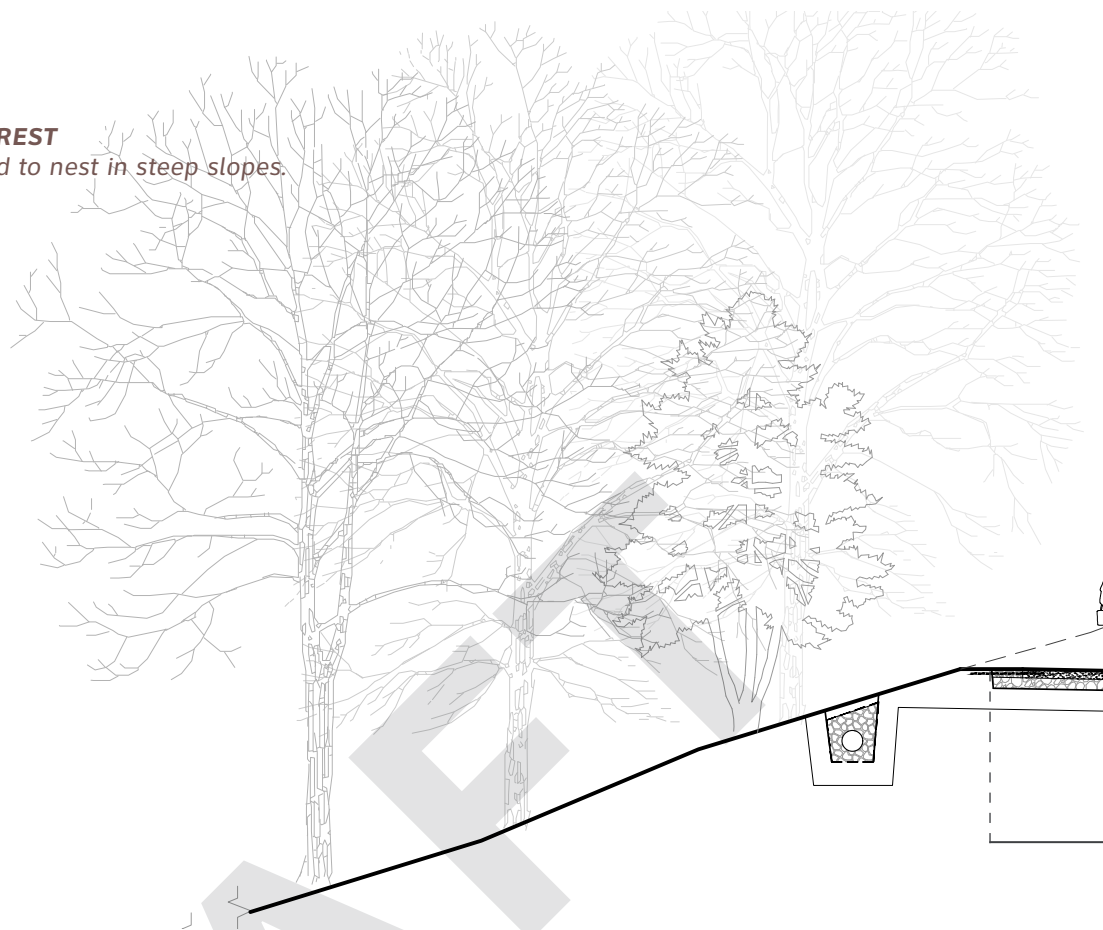
**SPEED LIMIT**

EXISTING	PROPOSED	
		15 MPH
		25 MPH
		30 MPH
		40 MPH
		45 MPH
		55 MPH



### **MAIN TRAIL THROUGH THE FOREST**

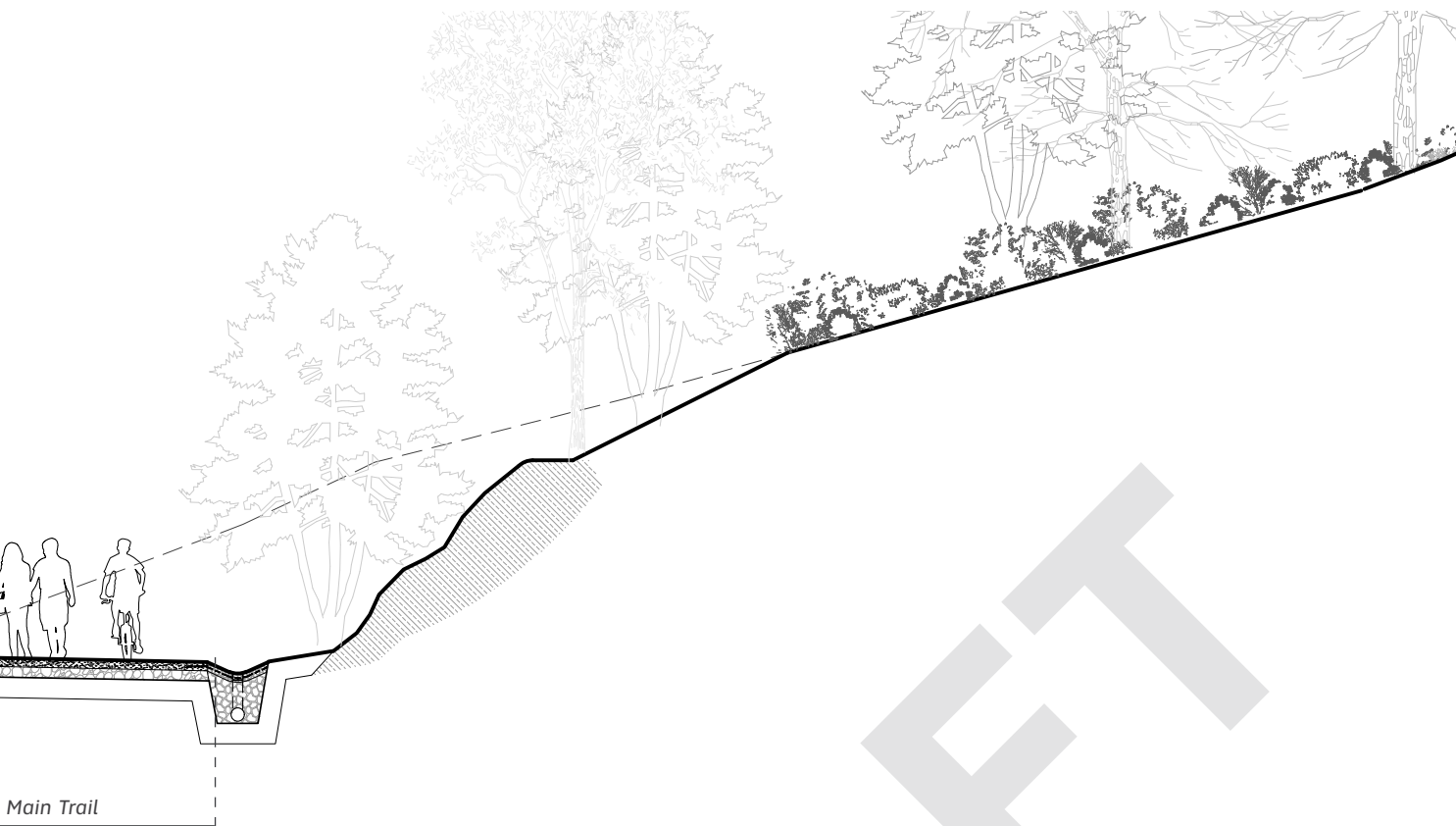
At times, the main trail may need to nest in steep slopes.



### **FOREST VIEWS**

Throughout the Forest zone, users can catch glimpses of the Hudson.





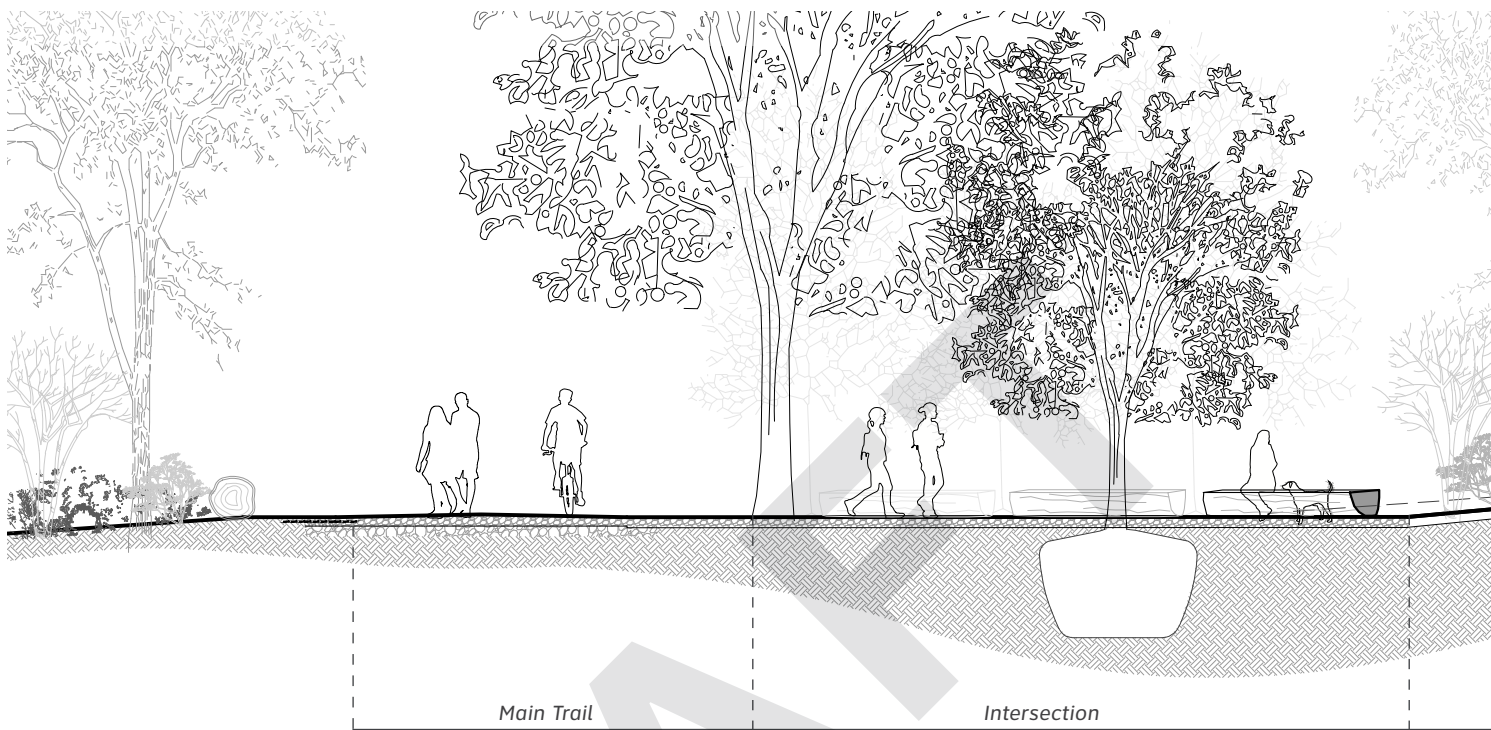
### **CHALLENGING TERRAIN**

*Steep woodland slopes occur throughout the Forest zone.*



## INTERSECTIONS

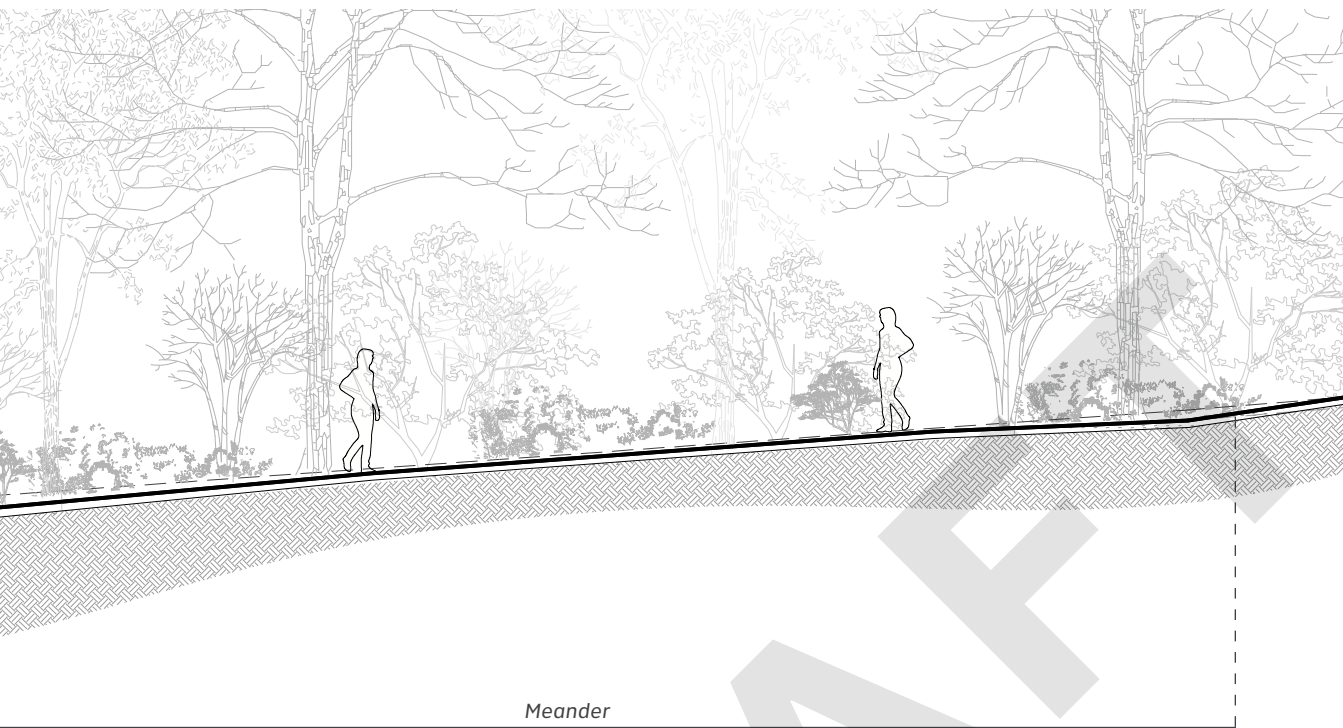
Where meanders intersect the Main Trail, expanded areas provide places for people to meet and orient prior to hiking a meander.



## DENSE FOREST CANOPY

The Forest area pulls away from the river and moves beneath a dense forest canopy.





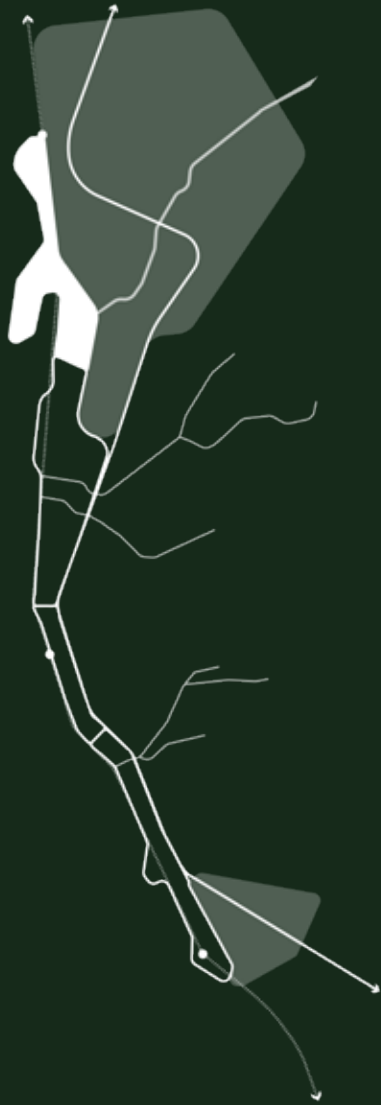
#### **HISTORIC ROAD ALIGNMENTS**

*Where possible, the Fjord Trail alignment follows the alignment of old carriage roads.*



# THE MARSH

As the Fjord Trail descends to lower ground, the activities and structures along this stretch of the trail will accentuate the views, smells, and sounds of the marshland.











## 1- FISHKILL MARSH TO MADAM BRETT PARK

*Fishkill Marsh and Madam Brett Park, with the City of Beacon in the background.*



## 2- MADAM BRETT PARK

*The trail crosses Fishkill Creek into Madam Brett Park, using the existing paths in the park.*





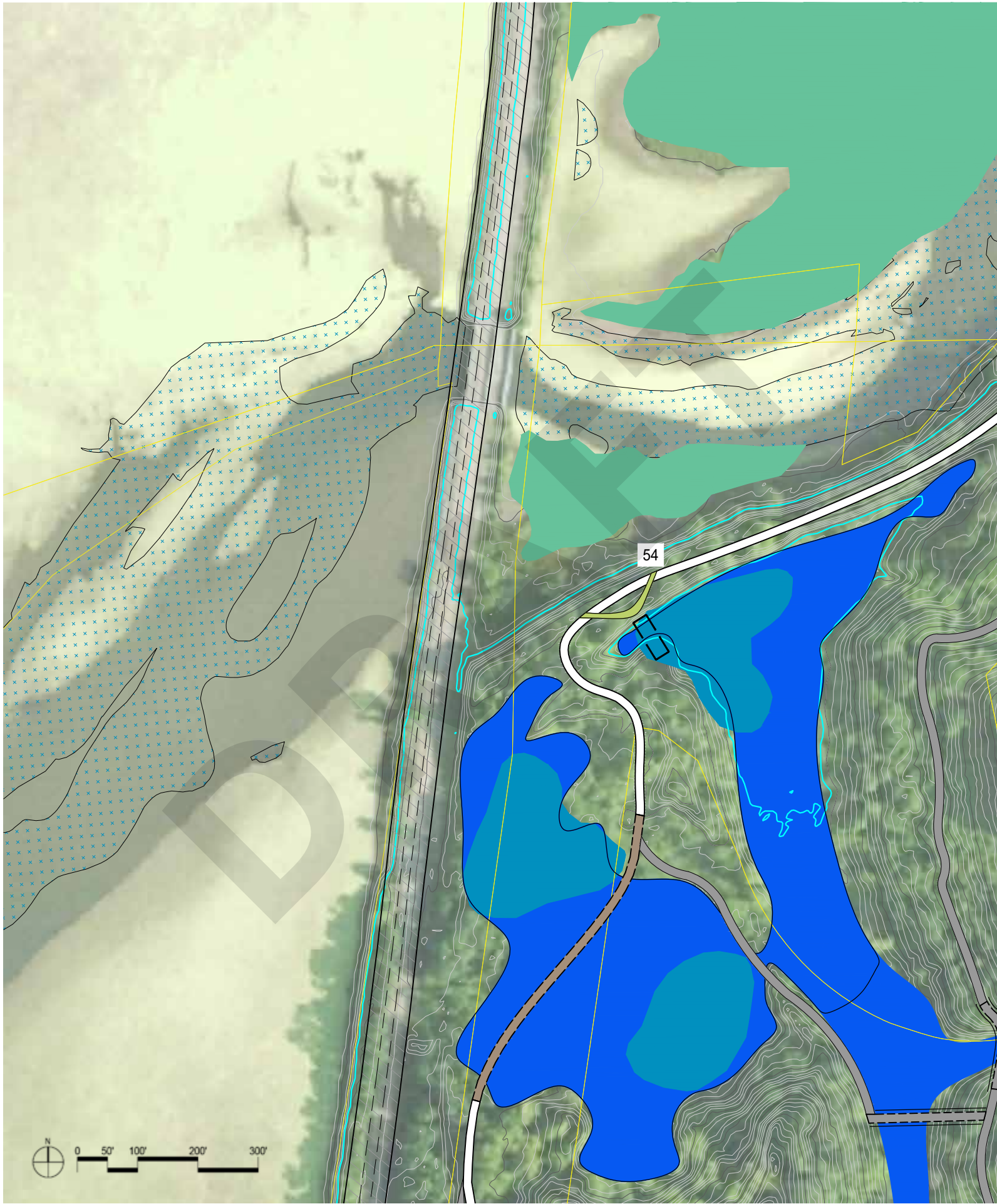
### 3 - KLARA SAUER TRAIL

The trail follows the alignment of the Klara Sauer Trail.

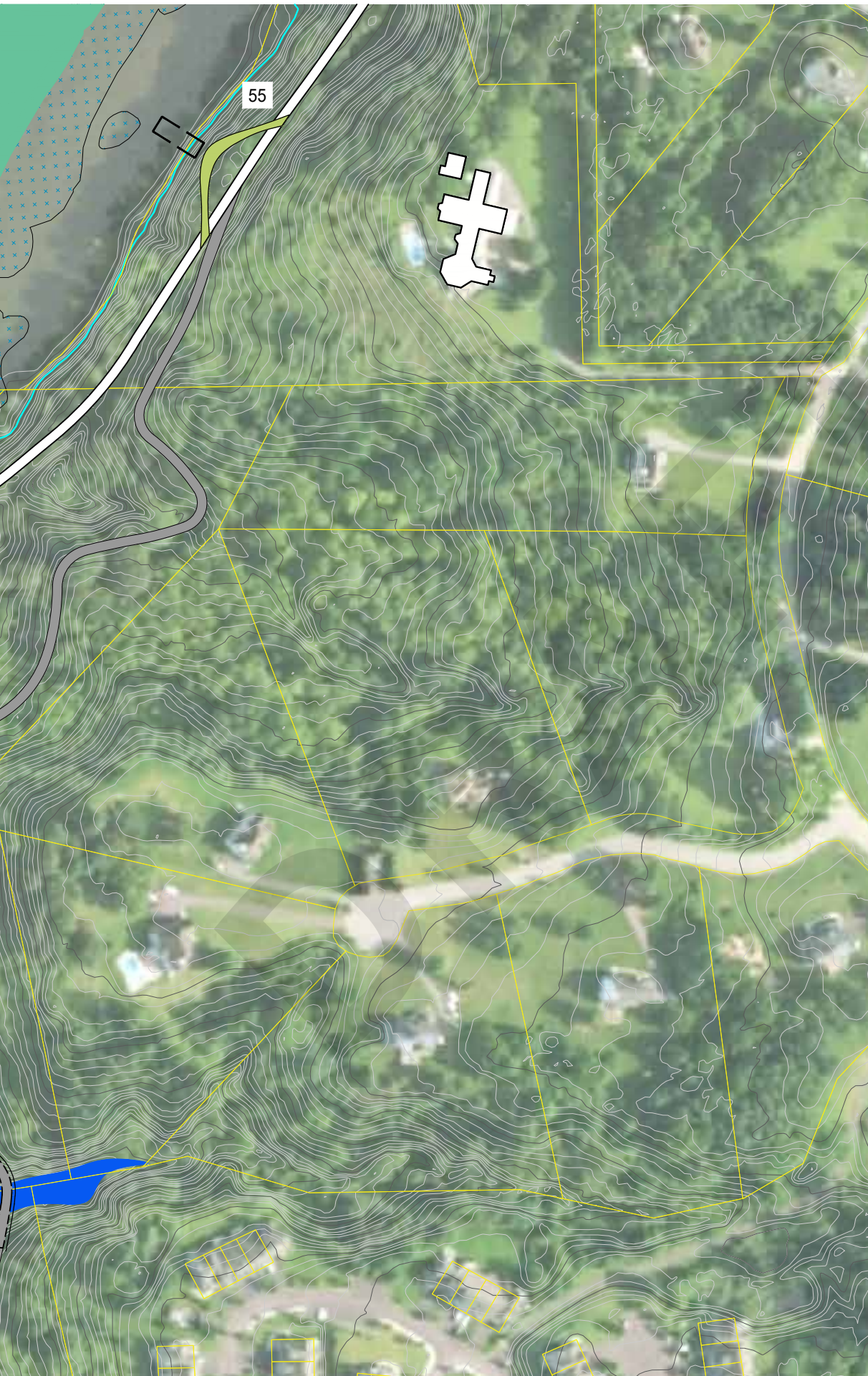


### 4- LONG DOCK PARK

Long Dock Park in Beacon is the north terminus of the Fjord Trail.







## MP115: FISHKILL WETLAND

### KEY



### PROPOSED

- MAIN TRAIL**
  - ON GRADE MAIN TRAIL
  - ELEVATED MAIN TRAIL
  - SHORELINE TRAIL
  - ALTERNATIVE ALIGNMENT
- MEANDERS**
  - ON GRADE MEANDER
  - ELEVATED MEANDER
- TRAIL BANKS**  
ALL NUMBERS (5) REFER TO TRAIL BANK INDEX
  - ENTRY BANK
  - INTERSECTION BANK
  - RIVER TRAIL BANK
  - HIGHLANDS TRAIL BANK
  - FOREST TRAIL BANK
  - MARSH TRAIL BANK
- DESTINATION**
  - CONNECTOR TRAILS
  - BRIDGES
  - STAIRS
  - SELECTIVE VEGETATION CLEARING FOR VIEWS
  - ENTRY CAIRN

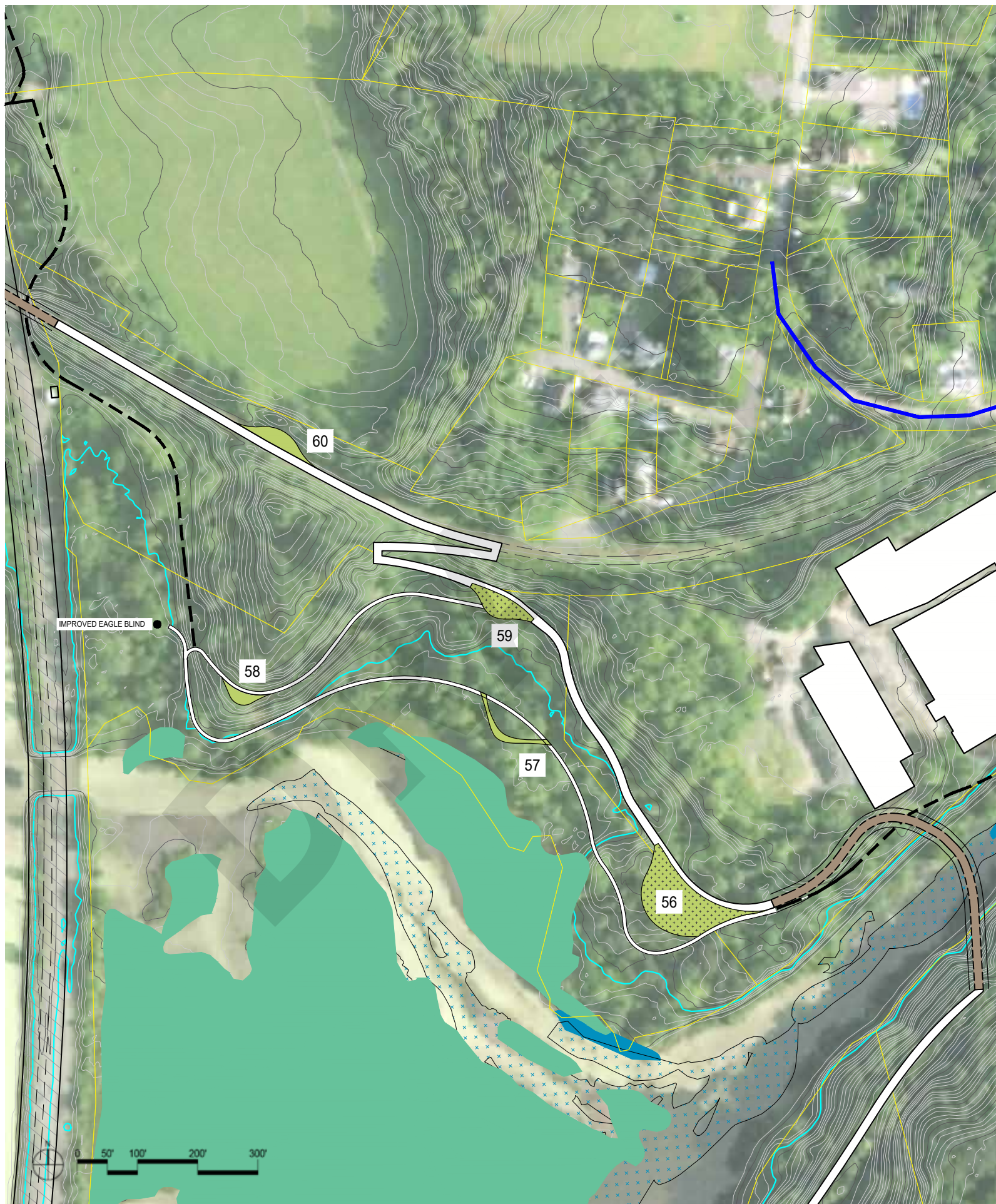
### EXISTING

- EXISTING TRAIL NETWORK
- 8' NAVD83 CONTOUR
- METRO NORTH RAILROAD W/ 25' BUFFER ZONE
- EXISTING WETLAND (NYDEC, NWI)
- EXISTING WATER BODY (NYDEC, NWI)
- SUBMERGED AQUATIC VEGETATION SAV (NYDEC)
- EXISTING LANDSCAPE FEATURE
- PARCEL BOUNDARIES (PUTNAM, DUTCHESS COUNTY)

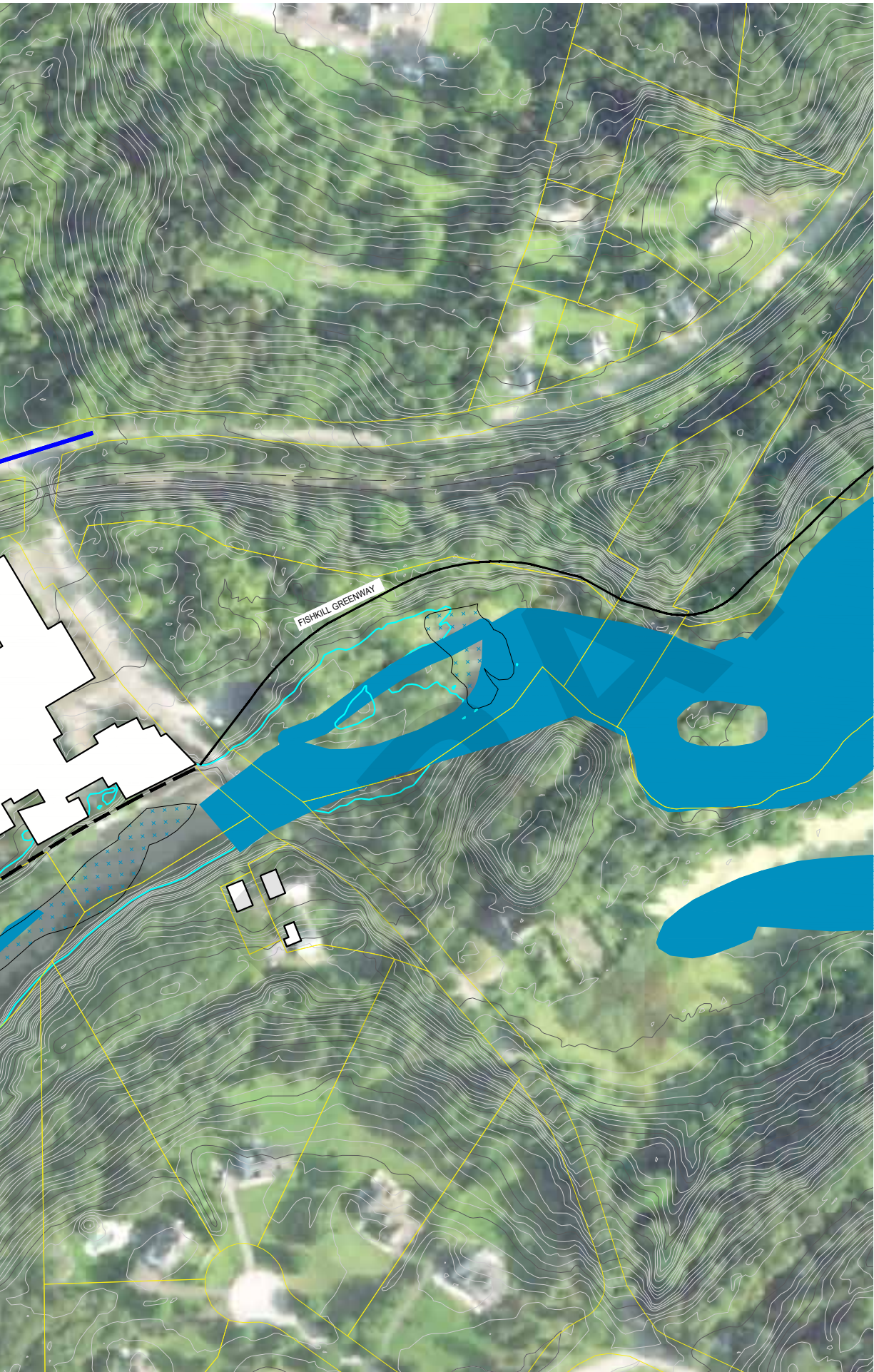
### TRAFFIC + SAFETY

- | EXISTING | PROPOSED |                         |
|----------|----------|-------------------------|
|          |          | YIELD SIGN              |
|          |          | STOP SIGN               |
|          |          | PEDESTRIAN WARNING SIGN |
|          |          | SPEED LIMIT SIGN        |
|          |          | CROSSWALK               |
|          |          | STREET LIGHT            |
|          |          | PARKING                 |
- 
- | SPEED LIMIT |          |        |
|-------------|----------|--------|
| EXISTING    | PROPOSED |        |
|             |          | 15 MPH |
|             |          | 25 MPH |
|             |          | 30 MPH |
|             |          | 40 MPH |
|             |          | 45 MPH |
|             |          | 55 MPH |



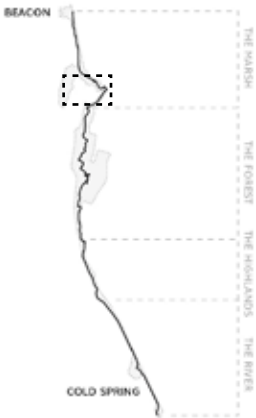






MP116: MADAM  
BRETT PARK

KEY



PROPOSED

- MAIN TRAIL
  - ON GRADE MAIN TRAIL
  - ELEVATED MAIN TRAIL
  - SHORELINE TRAIL
  - ALTERNATIVE ALIGNMENT
- MEANDERS
  - ON GRADE MEANDER
  - ELEVATED MEANDER
- TRAIL BANKS
  - ALL NUMBERS (5') REFER TO TRAIL BANK WIDTH
  - ENTRY BANK
  - INTERSECTION BANK
  - RIVER TRAIL BANK
  - HIGHLANDS TRAIL BANK
  - FOREST TRAIL BANK
  - MARSH TRAIL BANK
- DESTINATION
  - CONNECTOR TRAILS
- BRIDGES
- STAIRS
- SELECTIVE VEGETATION CLEARING FOR VIEWS
- ENTRY CAIRN

EXISTING

- EXISTING TRAIL NETWORK
- 8' NAVD83 CONTOUR
- METRO NORTH RAILROAD W/ 25' BUFFER ZONE
- EXISTING WETLAND (NYDEC, NWI)
- EXISTING WATER BODY (NYDEC, NWI)
- SUBMERGED AQUATIC VEGETATION SAV (NYDEC)
- EXISTING LANDSCAPE FEATURE
- PARCEL BOUNDARIES (PUTNAM, DUTCHESS COUNTY)

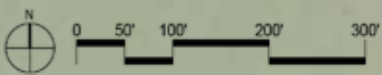
TRAFFIC + SAFETY

- | EXISTING | PROPOSED |                         |
|----------|----------|-------------------------|
|          |          | YIELD SIGN              |
|          |          | STOP SIGN               |
|          |          | PEDESTRIAN WARNING SIGN |
|          |          | SPEED LIMIT SIGN        |
|          |          | CROSSWALK               |
|          |          | STREET LIGHT            |
|          |          | PARKING                 |
- 
- | EXISTING | PROPOSED | SPEED LIMIT |
|----------|----------|-------------|
|          |          | 15 MPH      |
|          |          | 25 MPH      |
|          |          | 30 MPH      |
|          |          | 40 MPH      |
|          |          | 45 MPH      |
|          |          | 55 MPH      |

DRAFT



EXISTING WATER TRAIL ACCESS

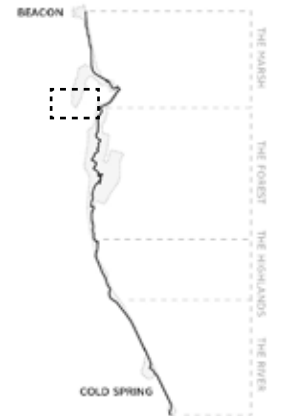






## MP117: DENNINGS POINT SOUTH

### KEY



### PROPOSED

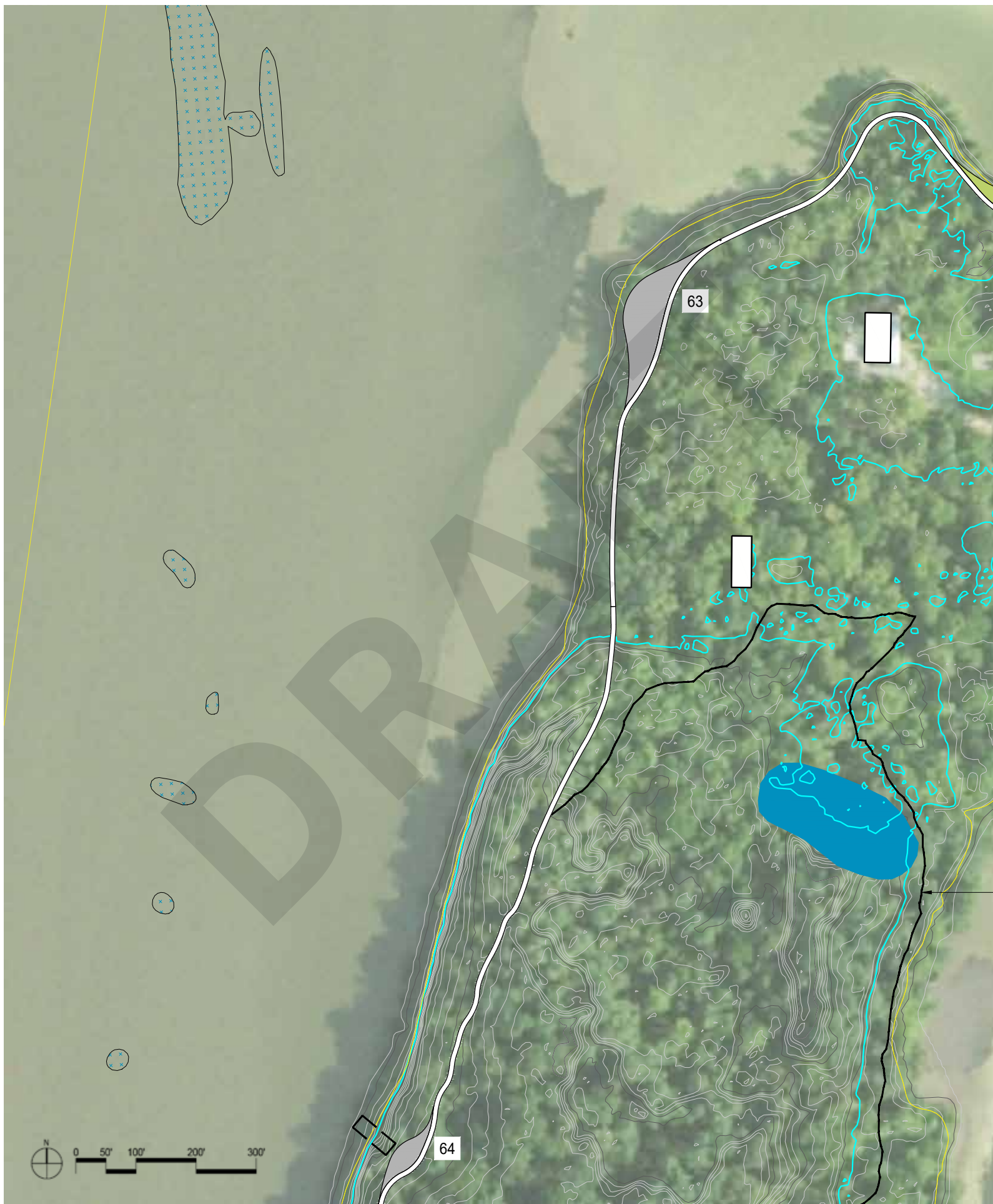


### EXISTING



### TRAFFIC + SAFETY









## MP118: DENNINGS POINT NORTH

### KEY



### PROPOSED

- MAIN TRAIL**
  - ON GRADE MAIN TRAIL
  - ELEVATED MAIN TRAIL
  - SHORELINE TRAIL
  - ALTERNATIVE ALIGNMENT
- MEANDERS**
  - ON GRADE MEANDER
  - ELEVATED MEANDER
- TRAIL BANKS**  
ALL NUMBERS (5) REFER TO TRAIL BANK INDEX
  - ENTRY BANK
  - INTERSECTION BANK
  - RIVER TRAIL BANK
  - HIGHLANDS TRAIL BANK
  - FOREST TRAIL BANK
  - MARSH TRAIL BANK
- DESTINATION**
  - CONNECTOR TRAILS
  - BRIDGES
  - STAIRS
  - SELECTIVE VEGETATION CLEARING FOR VIEWS
  - ENTRY CAIRN

### EXISTING

- EXISTING TRAIL NETWORK
- 8' NAVD83 CONTOUR
- METRO NORTH RAILROAD W/ 25' BUFFER ZONE
- EXISTING WETLAND (NYDEC, NWI)
- EXISTING WATER BODY (NYDEC, NWI)
- SUBMERGED AQUATIC VEGETATION SAV (NYDEC)
- EXISTING LANDSCAPE FEATURE
- PARCEL BOUNDARIES (PUTNAM, DUTCHESS COUNTY)

### TRAFFIC + SAFETY

- | EXISTING | PROPOSED |                         |
|----------|----------|-------------------------|
|          |          | YIELD SIGN              |
|          |          | STOP SIGN               |
|          |          | PEDESTRIAN WARNING SIGN |
|          |          | SPEED LIMIT SIGN        |
|          |          | CROSSWALK               |
|          |          | STREET LIGHT            |
|          |          | PARKING                 |
- 
- | EXISTING | PROPOSED | SPEED LIMIT |
|----------|----------|-------------|
|          |          | 15 MPH      |
|          |          | 25 MPH      |
|          |          | 30 MPH      |
|          |          | 40 MPH      |
|          |          | 45 MPH      |
|          |          | 55 MPH      |













### MP120: KLARA SAUER NORTH

#### KEY

#### PROPOSED

**MAIN TRAIL**

- ON GRADE MAIN TRAIL
- ELEVATED MAIN TRAIL
- SHORELINE TRAIL
- ALTERNATIVE ALIGNMENT

**MEANDERS**

- ON GRADE MEANDER
- ELEVATED MEANDER

**TRAIL BANKS**  
ALL NUMBERS (5) REFER TO TRAIL BANK INCH

- ENTRY BANK
- INTERSECTION BANK
- RIVER TRAIL BANK
- HIGHLANDS TRAIL BANK
- FOREST TRAIL BANK
- MARSH TRAIL BANK

**DESTINATION**

- CONNECTOR TRAILS
- BRIDGES
- STAIRS
- SELECTIVE VEGETATION CLEARING FOR VIEWS
- ENTRY CAIRN

#### EXISTING

- EXISTING TRAIL NETWORK
- 8' NAVD83 CONTOUR
- METRO NORTH RAILROAD W/ 25' BUFFER ZONE
- EXISTING WETLAND (NYDEC, NWI)
- EXISTING WATER BODY (NYDEC, NWI)
- SUBMERGED AQUATIC VEGETATION SAV (NYDEC)
- EXISTING LANDSCAPE FEATURE
- PARCEL BOUNDARIES (PUTNAM, DUTCHESS COUNTY)

#### TRAFFIC + SAFETY

**EXISTING**

**PROPOSED**

**YIELD SIGN**

**STOP SIGN**

**PEDESTRIAN WARNING SIGN**

**SPEED LIMIT SIGN**

**CROSSWALK**

**STREET LIGHT**

**PARKING**

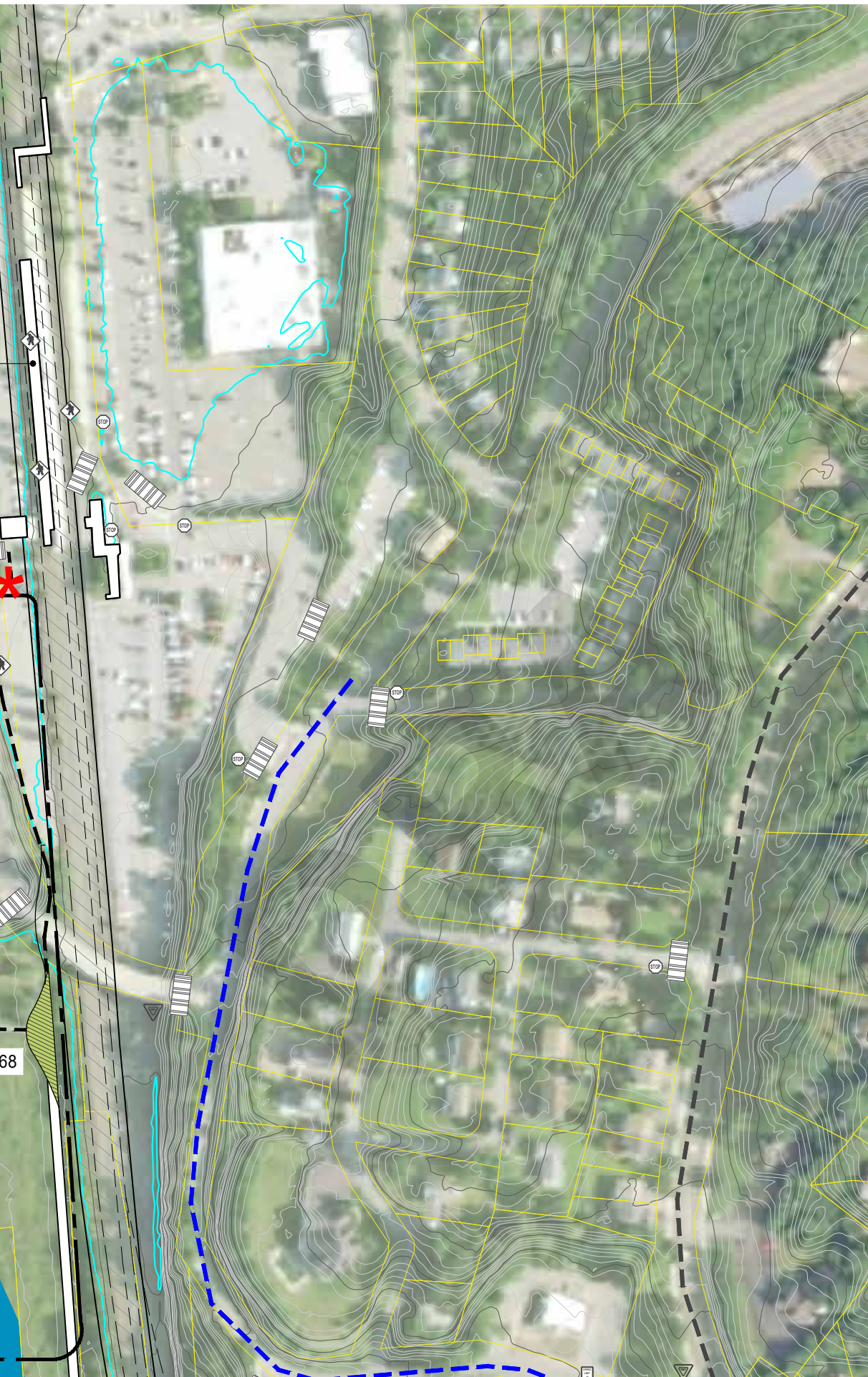
**SPEED LIMIT**

EXISTING	PROPOSED	
		15 MPH
		25 MPH
		30 MPH
		40 MPH
		45 MPH
		55 MPH









## MP121: LONGDOCK PARK

### KEY



### PROPOSED

- MAIN TRAIL**
  - ON GRADE MAIN TRAIL
  - ELEVATED MAIN TRAIL
  - SHORELINE TRAIL
  - ALTERNATIVE ALIGNMENT
- MEANDERS**
  - ON GRADE MEANDER
  - ELEVATED MEANDER
- TRAIL BANKS**  
ALL NUMBERS (5) REFER TO TRAIL BANK INDEX
  - ENTRY BANK
  - INTERSECTION BANK
  - RIVER TRAIL BANK
  - HIGHLANDS TRAIL BANK
  - FOREST TRAIL BANK
  - MARSH TRAIL BANK
- DESTINATION**
  - CONNECTOR TRAILS
  - BRIDGES
  - STAIRS
  - SELECTIVE VEGETATION CLEARING FOR VIEWS
- ENTRY CAIRN**

### EXISTING

- EXISTING TRAIL NETWORK
- 8' NAVD83 CONTOUR
- METRO NORTH RAILROAD W/ 25' BUFFER ZONE
- EXISTING WETLAND (NYDEC, NWI)
- EXISTING WATER BODY (NYDEC, NWI)
- SUBMERGED AQUATIC VEGETATION SAV (NYDEC)
- EXISTING LANDSCAPE FEATURE
- PARCEL BOUNDARIES (PUTNAM, DUTCHESS COUNTY)

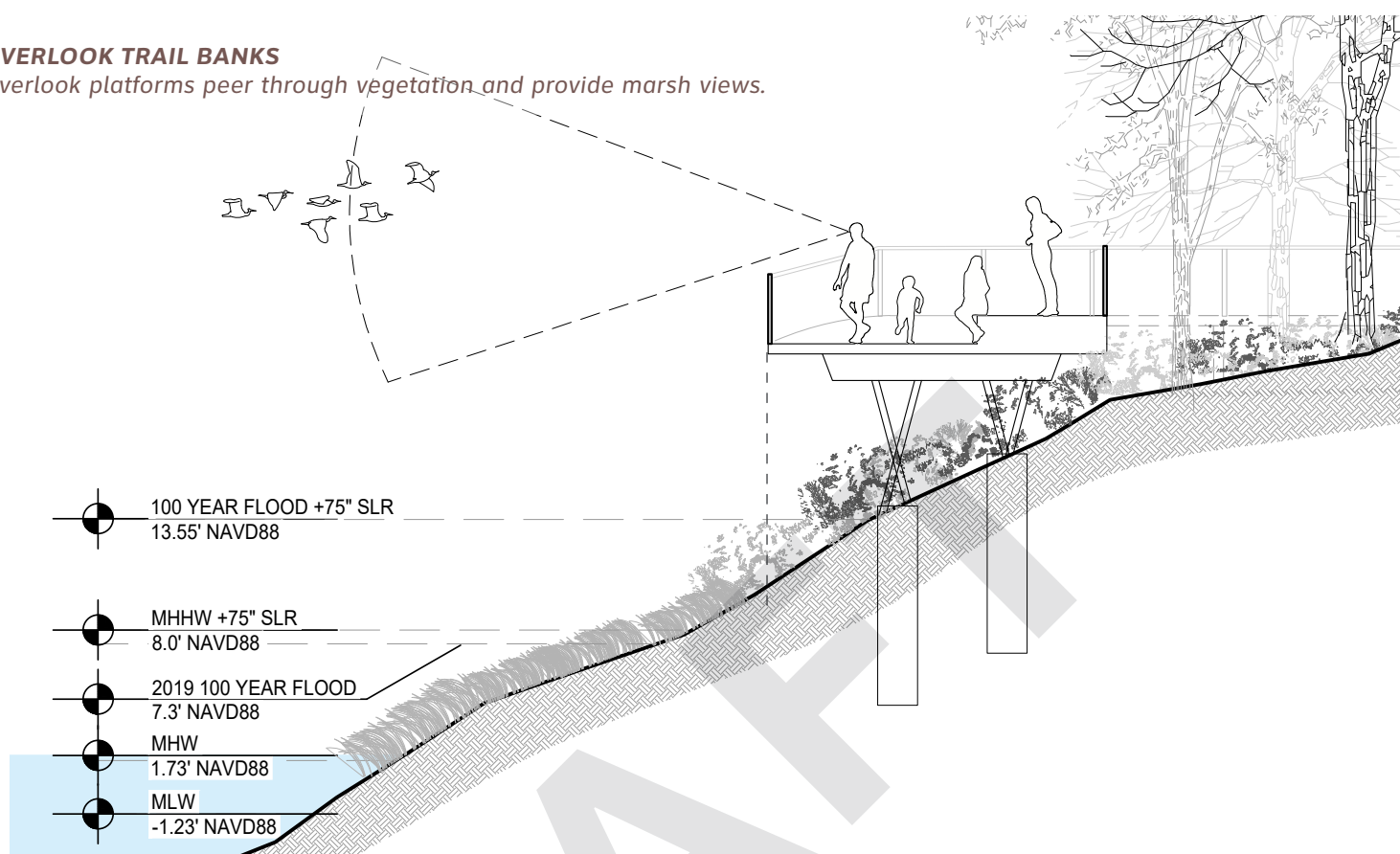
### TRAFFIC + SAFETY

- | EXISTING | PROPOSED |                         |
|----------|----------|-------------------------|
|          |          | YIELD SIGN              |
|          |          | STOP SIGN               |
|          |          | PEDESTRIAN WARNING SIGN |
|          |          | SPEED LIMIT SIGN        |
|          |          | CROSSWALK               |
|          |          | STREET LIGHT            |
|          |          | PARKING                 |
- 
- | EXISTING | PROPOSED | SPEED LIMIT |
|----------|----------|-------------|
|          |          | 15 MPH      |
|          |          | 25 MPH      |
|          |          | 30 MPH      |
|          |          | 40 MPH      |
|          |          | 45 MPH      |
|          |          | 55 MPH      |



## OVERLOOK TRAIL BANKS

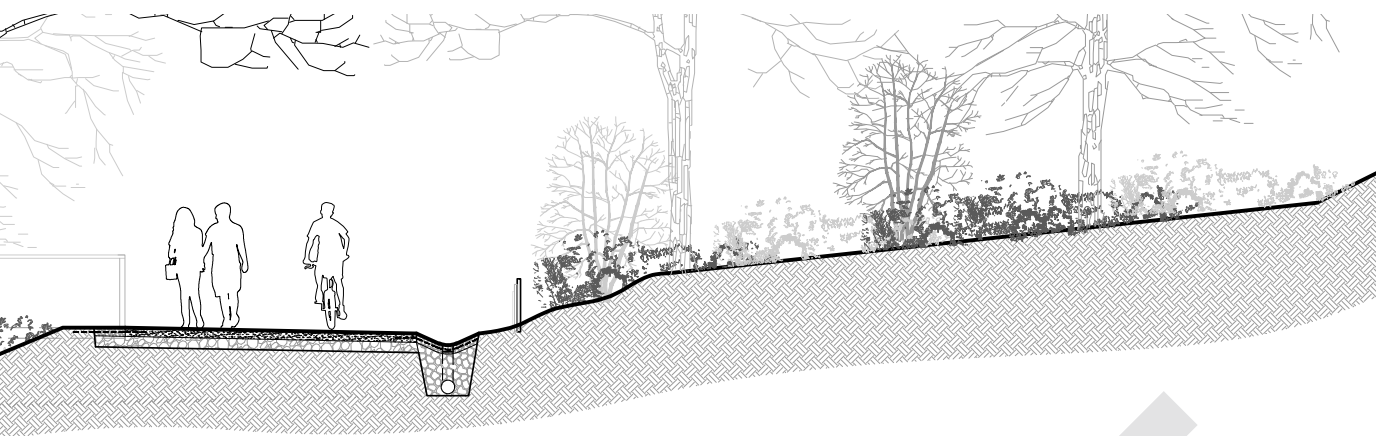
Overlook platforms peer through vegetation and provide marsh views.



## VIEW FROM SOUTH SIDE OF FISHKILL

View along the utility corridor, on the south side of Fishkill Marsh.





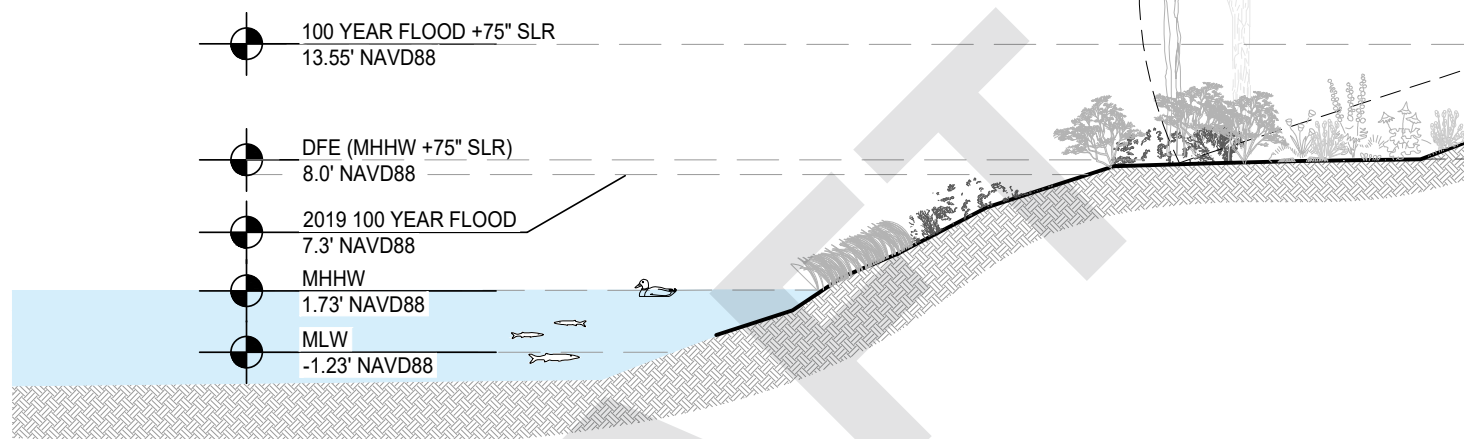
#### **UTILITY CORRIDOR**

*Trees are cleared through an old utility corridor, the site of the Main Trail alignment.*



### KLARA SAUER TRAIL

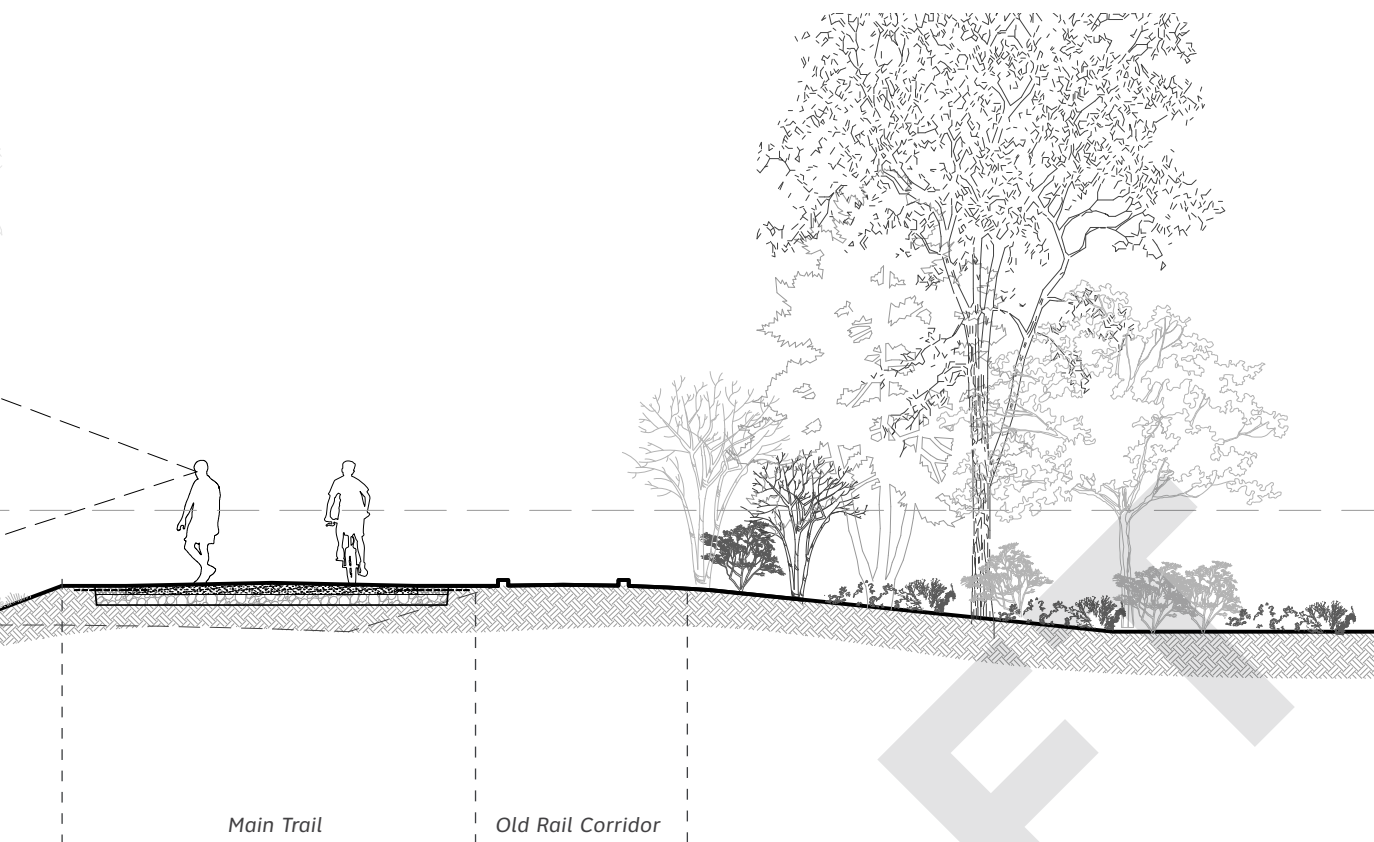
To elevate above sea level rise, some portions of the trail will require elevation on a berm.



### VEGETATED EDGES

The shoreline of the Klara Sauer Trail is heavily vegetated and lined with driftwood.





#### **DECOMMISSIONED RAIL CORRIDOR**

A decommissioned rail corridor runs adjacent to the Klara Sauer Trail - connecting it to Madam Brett Park. The Main Trail may run along this corridor.









## TRAFFIC & SAFETY

Based on the existing conditions and transportation data collected to date, the traffic design for the trail and the associated improvements to the adjacent roadway network consist predominantly of parking improvements and the implementation of traffic calming measures.

This section explains traffic and safety techniques incorporated into the Fjord Trail design. For specific locations – refer to the plans in the **Draft Alignment Section**.

# PARKING IMPROVEMENTS

There are several parking lots that currently serve trail and other park preserve assets. Parking improvements entail modifications to the pavement and striping of the existing on-street parking facilities, as well as new parking lot and existing parking lot paving and expansion. The following is a summary of the primary existing and proposed parking areas.

## ***Little Stony Point / Washburn Trail***

The Washburn parking lot was recently improved and expanded from a 20+/- dirt lot into an expanded paved lot with permeable parking spaces to accommodate approximately 45 +/- vehicles. The improvement project also moved the entrance, created a new stairwell and ADA ramp to the crosswalk to Little Stony Point and added a new Trailhead kiosk for the Washburn Trail. The parking lot may be extended south, however would require extensive clearing of mature trees. Given the topography and vegetation cover, the extent of the enlargement may only be able to accommodate 15 additional spaces.

## ***Breakneck***

The Breakneck Lot, currently a dirt lot area west of 9D just north of the guard rail, can accommodate approximately 50 cars. Additionally, people park as they can fit on either side of the road north of the tunnel. This poses numerous safety challenges and so will be modified and formalized in the Breakneck Connector improvement project. Per current planning and design, a total of approximately 120 parking spaces will be provided between two separate paved surface lots on the west side of Route 9D and formalized parallel on-street parking on both sides of Route 9D. The two lots contain approximately 21 and 16 angled parking spaces, while approximately 83 parallel on-street parking spaces are provided along Route 9D (with 60 and 23 spaces on the west and east sides of Route 9D, respectively). In addition, designated pedestrian paths and crosswalks provide safe routes from parking to the Main Trail, Wilkinson Trailhead, and Breakneck Ridge Trailhead.

## ***Notch Parking***

At Notch Trailhead, current parking accommodation is a small pull-off area that can hold approximately four vehicles. The former Dutchess Junction Park across the street from the trailhead could be repurposed to offer additional parking capacity for Fjord Trail users as well as Notch Trail hikers. A new parking facility in this area could provide between 60-150 parking spaces, depending on needs and future site-specific study and design. The new entry to the parking lot is directly off Route 9D. New, proposed traffic signals at the intersection reduce safety hazards for vehicles entering and exiting Notch.

## ***Other Existing Entry Parking Areas***

In addition to those listed above, parking areas at Dennings Point, Madam Brett Park, Beacon, and Cold Spring also provide parking in the area. At Dennings Point, a small parking lot provides 8 +/- designated parking spaces, with some additional space for parallel parking. Although it does not function as a designated entry to the Fjord Trail, a small parking lot at Madam Brett Park provides 20 +/- spaces. Additionally, Long Dock Park provides approximately 85 +/- parking spaces for park users. NYS OPRHP has also discussed additional parking capacity for the Hudson Highlands State Park Preserve at the Woodall House along Route 9D, with a capacity for 60 +/- spaces.

## ***The Fjord Trail Shuttle***

To alleviate the need for existing parking capacity and to reduce the pedestrian – vehicle conflicts on Route 9D, a shuttle may be incorporated into the operations of the Fjord Trail park. To determine the exact route of the shuttle, further analysis and discussion is required with the Fjord Trail operating entity. Potential stops may include:

- Dockside Park
- Little Stony Point (WashburnLot / OPRHP Offices)
- Breakneck
- Dutchess Manor
- Notch
- Dennings Point
- Long Dock Park



# TRAFFIC, SAFETY, & EMERGENCY RESPONSE

The Fjord Trail, at times, will be close to Route 9D and require crossings. Currently, Route 9D has a maximum speed limit of 55 mph. There are several traffic calming measures that could be implemented as part of this project, per NYSDOT standards. It is expected that a reduction in speed limit from 55 mph to 40 mph could be implemented as part of this project once a suite of traffic calming measures are completed through the area. All proposed traffic calming measures will require future coordination with NYSDOT in future design and implementation phases.

## ***Enhanced Crossings***

Several existing 9D crossings between parking areas and destinations will be updated, along with new crossings at select areas. To facilitate safe pedestrian crossings on Route 9D, at-grade crosswalks will be supplemented with rectangular rapid flashing beacons. In addition, at the main driveway entry to the Notch parking lot, a potential traffic signal is proposed to address expected traffic volumes accessing the site. It is envisioned that the new traffic signal may be on a sensor so it would only be activated when vehicles are queuing at the entrance. This also has pedestrian crossing signals to enable pedestrians to safely cross Route 9D to access the Notch Trailhead.

## ***Side Friction***

Two improvements in the Breakneck Connector design will create safe and regulated side friction supportive of lower speed travel. This includes formalized parallel parking spaces with a sidewalk to ensure pedestrians walk out of the travel lanes to a designated crosswalk. A second aspect is vegetation along the roadway to visually narrow the space and enhanced bump-outs to narrow the travel lane and create a shorter crossing distance for pedestrians.

## ***Signage***

The entire Fjord Trail Main Trail and meanders will have a comprehensive wayfinding system. This will include navigation into the system from entries and train stations. The addition of the Main Trail as pedestrian and bike facility will improve safety by reducing human-vehicle interactions in the

corridor and prohibiting people from accessing the train tracks. On-street signs including pedestrian crossing signs and a gateway sign to signal to motorists they are entering a park area where pedestrian traffic should be anticipated, are part of the traffic calming suite of improvements that will enable a speed limit reduction.

## ***Emergency Response***

Emergency access points to the Fjord Trail will be provided at major parking areas and trailheads. Sections of trail that can support vehicle loading can also serve as emergency access paths. More remote sections of trails or meanders can be accessed by ATVs, as appropriate. Call boxes should be placed at major parking areas, trailheads, and strategic locations along the trail, which shall be coordinated with the Fjord Trail operating entity. Emergency signage should be incorporated into overall Fjord Trail signage to indicate the locations of call boxes and emergency access points.







# PROGRAM

Carefully curated programmed elements, informed by detailed analysis and alignment studies, have been integrated into the Fjord Trail design. This section describes the Fjord's Trail program framework. Refer to the plans in the **Draft Alignment Section** for location of numbered trail banks that correspond to the **Trail Bank Index** in this section.

## FJORD TRAIL PROGRAM

Trail banks and destinations provide defined areas for specific programs to occur along the Fjord Trail.





Programs enable a wider range of users, stewards, and groups to enjoy the Fjord Trail and expand the activities beyond hiking and biking. The various built elements, such as comfort stations and trail banks, are carefully designed to nest within restored and living landscapes sculpted by natural processes. Lighter touch programmatic elements occur regularly along the trail (places to sit or take in a view), while more distinctive signature elements are carefully sited at destinations to serve larger groups.

The map (left) is a high-level illustration of the various programmed locations along the Fjord Trail. While the majority of these are light touch programs, like seating and viewing, destinations and other trail banks provide more programmed elements. The plans in the **Draft Alignment Section** illustrate potential locations of trail banks, and each trail bank is numbered to correspond with the **Trail Bank Index** on the following pages. Exact location of trail banks and the programs within them will be refined through the environmental review process, future design and implementation phases, and future coordination with project stakeholders and state agencies.

## PROGRAM: TRAIL BANK INDEX

RIVER'S EDGE					
#	TRAIL BANK NAME	LOCATION	MATERIAL PALETTE	TYPE	SIZE
DOCKSIDE					
1	DOCKSIDE ENTRY	Dockside	River's Edge	Entry	Entry
2	TREE GROVE PENINSULA	Dockside - Metro-North Railroad (MNRR)	River's Edge	Trail Bank	Med
3	DOCKSIDE MNRR GET DOWN	Dockside - MNRR	River's Edge	Trail Bank	Small
LITTLE STONY POINT					
4	DRIFTWOOD POCKET BEACH	LSP	River's Edge	Trail Bank	Med
5	ROCK FACE AND CAVE	LSP	River's Edge	Trail Bank	Small / Med
6	SHORELINE OVERLOOK	LSP	River's Edge	Trail Bank	Small
7	QUARRY COMMONS	LSP	Highlands	Destination	Major/Large
8	SERENE BEACH	LSP	River's Edge	Trail Bank	Large
9	DRIFTWOOD PLAY ZONE	LSP	River's Edge	Destination	Major/Large
10	OVERLOOK INTERSECTION	LSP	Highlands	Intersection	Small
11	ENTRY OPT 1	LSP	River's Edge	Entry	Med
12	ENTRY OPT 2	LSP	River's Edge	Entry	Med
13	OVERLOOK	LSP	Highlands	Trail Bank	Med
14	SHORELINE TRAIL SOUTH GET-DOWN	Shoreline (LSP to Breakneck)	River's Edge	Trail Bank	Small
15	SHORELINE TRAIL BEACH	Shoreline (LSP to Breakneck)	River's Edge	Trail Bank	Large



PROGRAM / ACTIVITIES	BUILDING(S)	SIGNAGE & WAYFINDING	SHEET #
<b>Comfort Stations, Steward Station, Maintenance Facilities, Bike Repair Station, Bike Rental, Water Trail Access, ADA Kayak Launch, Kayak Storage (Not Rental), Potential Event Space (Weddings/ Rental)</b>	<b>Bathrooms (6-8 unisex); Maintenance Storage; Steward Station</b>	<b>Entry Cairn, Gateway Sign, Interpretive, Water</b>	<b>MP-101</b>
Wildlife Views, Potential Shelter / Blind / Screen, Seating			MP-102
Get Down, Toes in Water, Seating, River Views		Water	MP-102
Toes in Water, Seating		Water	MP-103
Seating, River and Rock Face Views			MP-103
Seating, River Views			MP-103
<b>Seating, performance / meditative platform, outdoor classroom / education, supports occasional larger events</b>	<b>Potential shelter / cover for shade</b>	<b>Interpretive</b>	<b>MP-103</b>
Toes in Water, River and Fjord Views, Wildlife Viewing, Seating, Fishing		Interpretive, Water	MP-103
<b>Driftwood Free Play Area, Beach, Toes in Water, ADA Kayak Launch, Water Trail Access, Potential Dog Run, Seating, Fishing</b>		<b>Interpretive, Water</b>	<b>MP-103</b>
Seating		Entry Cairn, Meander Intersection	MP-103
<b>Comfort Stations, Maintenance Facilities, Seating</b>	<b>Bathrooms (8-10 unisex); Storage</b>	<b>Gateway</b>	<b>MP-103</b>
<b>Comfort Stations, Maintenance Facilities, Seating</b>	<b>Bathrooms (8-10 unisex); Storage</b>	<b>Gateway</b>	<b>MP-103</b>
Fjord Views, Wildlife Views, Seating			MP-103
Seating, Potential Shelter / Screen, Fishing			MP-104
Toes in Water, Seating, Emergency Service Turn-Around, Water Trail Access		Water	MP-104

## PROGRAM: TRAIL BANK INDEX (CONT.)

<b>16</b>	SHORELINE TRAIL NORTH GET-DOWN	Shoreline (LSP to Breakneck)	River's Edge	Trail Bank	Small
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### HIGHLANDS

#	TRAIL BANK NAME	LOCATION	MATERIAL PALETTE	TYPE	SIZE
<b>BREAKNECK</b>					
<b>17</b>	<b>BREAKNECK LOWER OVERLOOK</b>	<b>Breakneck Bridge &amp; Overlook</b>	<b>Highlands</b>	<b>Destination</b>	<b>Major/Large</b>
<b>18</b>	BREAKNECK BRIDGE LANDING	Breakneck Bridge & Overlook	Highlands	Trail Bank Intersection	Med
<b>19</b>	PORCH (BN RIDGE TRAILHEAD)	Breakneck Bridge & Overlook	Highlands	Trail Bank	Med
<b>20</b>	BREAKNECK UPPER OVERLOOK	Breakneck Bridge & Overlook	Highlands	Trail Bank	Large
<b>21</b>	MINOR ENTRY	Breakneck Connector	Highlands	Trail Bank	Med
<b>22</b>	WETLAND GET DOWN	Breakneck Connector	Highlands	Trail Bank	Med
<b>23</b>	ROCK SCRAMBLE	Breakneck Connector	Highlands	Trail Bank	Large
<b>24</b>	WETLAND GET-DOWN 2	Breakneck Connector	Highlands	Trail Bank	Med
<b>25</b>	<b>BREAKNECK ENTRY</b>	<b>Breakneck Connector</b>	<b>Highlands</b>	<b>Entry</b>	<b>Med</b>
<b>26</b>	WILKINSON PICNIC GROVE	Breakneck Connector	Highlands	Trail Bank	Med
<b>27</b>	ROCK OUTCROP	Breakneck Connector	Highlands	Trail Bank	Small

### FOREST

#	TRAIL BANK NAME	LOCATION	MATERIAL PALETTE	TYPE	SIZE
<b>28</b>	WETLAND OVERLOOK	Pollepel Island	Forest	Trail Bank	Med
<b>29</b>	BEAR ROCK OUTCROP	Pollepel Island	Highlands	Trail Bank	Small
<b>30</b>	POLLEPEL OVERLOOK INTERSECTION	Pollepel Island	Highlands	Intersection	Small



Potential Toes in Water, Seating, Potential Shelter / Screen, Fishing	Water	MP-105
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PROGRAM / ACTIVITIES	BUILDING(S)	SIGNAGE & WAYFINDING	SHEET #
<b>Fjord View, Seating, Toes in Water, Get-Down to River, Water Trail Access</b>		<b>Interpretive, Water</b>	<b>MP-106</b>
Fjord View, Emergency Service Access, DEP Access		Entry Cairn, Meander Intersection	MP-106
Seating, Storage			MP-106
Fjord View, Steward Station, Seating, Queuing Area for Breakneck Hikers	Steward Station; Storage	Interpretive	MP-106
Seating, Comfort Stations	Bathrooms (4 unisex)	Gateway	MP-107
Seating, Wetland Get Down, Environmental Education, Restoration		Interpretive	MP-107
Seating, Fjord View, Informal Play, Educational		Interpretive	MP-107
Seating, Wetland Get Down,, Environmental Education, Restoration			MP-107
<b>Comfort Stations, Bike Repair Station, Maintenance Facilities; Information</b>	<b>Bathrooms (12 unisex); Storage</b>	<b>Entry Cairn, Gateway</b>	<b>MP-107</b>
Picnic Tables, Seating			MP-107
Pollepel Island View, Seating			MP-107



PROGRAM / ACTIVITIES	BUILDING(S)	SIGNAGE & WAYFINDING	SHEET #
Wildlife and Habitat Views, Education/ Interpretive Information		Interpretive	MP-108
Seating			MP-108
Seating		Meander Intersection	MP-108

## PROGRAM: TRAIL BANK INDEX (CONT.)

<b>31</b>	POLLEPEL OVERLOOK	Pollepel Island	Highlands	Trail Bank	Large
<b>32</b>	RAVINE WALK TRAILBANK	Dutchess Manor	Forest	Trail Bank	Small
<b>33</b>	BLUFF WALK INTERSECTION	Dutchess Manor	Forest	Intersection	Small
<b>34</b>	BLUFF WALK SOUTH OVERLOOK	South Forest	Forest	Trail Bank	Small
<b>35</b>	BLUFF WALK NORTH OVERLOOK	South Forest	Forest	Trail Bank	Med
<b>36</b>	BLUFF WALK INTERSECTION	South Forest	Forest	Intersection	Small
<b>37</b>	BROOK WALK ROCK SCRAMBLE INTERSECTION	South Forest	Forest	Intersection	Small
<b>38</b>	LEDGE WALK	South Forest	Forest	Trail Bank	Med
<b>39</b>	RIVER OVERLOOK	South Forest	Forest	Trail Bank	Med
<b>40</b>	WADES BROOK CROSSING	South Forest	Forest	Intersection	Small
<b>41</b>	BUILDING RUINS	Notch	Forest	Trail Bank	Small
<b>42</b>	WALNUT GROVE INTERSECTION	Notch	Forest	Intersection	Small
<b>NOTCH</b>					
<b>43</b>	<b>NOTCH ENTRY</b>	<b>Notch</b>	<b>Forest</b>	<b>Trail Bank</b>	<b>Major / Large</b>
<b>44</b>	EXPLORATION FOREST	Notch	Forest	Trail Bank	Med
<b>45</b>	OUTDOOR CLASSROOM	Notch	Forest	Trail Bank	Large
<b>46</b>	<b>FOREST NETS</b>	<b>Notch</b>	<b>Forest</b>	<b>Destination</b>	<b>Major/Large</b>
<b>47</b>	NOTCH MEANDER INTERSECTION	Notch	Forest	Intersection	Small
<b>48</b>	BRICK BEACH SOUTH INTERSECTION	North Forest	Forest	Intersection	Small
<b>49</b>	SOUTH COVE	Brick Beach South	Forest	Trail Bank	Large
<b>50</b>	FOREST WETLAND	North Forest	Forest	Trail Bank	Small
<b>51</b>	BRICK BEACH NORTH INTERSECTION	North Forest	Forest	Intersection	Small
<b>52</b>	FOREST HILLSIDE	North Forest	Forest	Trail Bank	Small
<b>53</b>	NORTH COVE VIEW	North Forest	Forest	Trail Bank	Small



Pollepel Island View, Seating, Shade Structure		MP-108
Seating		MP-109
Seating		MP-110
Seating, River View	Meander Intersection	MP-110
Seating, River View		MP-110
Seating	Meander Intersection	MP-110
Seating, Rock Scamble	Meander Intersection	MP-110
Forest/River View, Seating, Wildlife Viewing, Education		MP-110
Wildlife and Habitat Views, Seating, River Views	Interpretive	MP-110
Seating	Meander Intersection	MP-110
Seating, Cultural Education	Interpretive	MP-111
Seating	Meander Intersection	MP-111
<b>Comfort Stations, Parking Facilities, Bike Repair Station, Maintenance Facilities, Special Events</b>	<b>Bathrooms (8-10 unisex); Storage; Maintenance Shed</b>	<b>Entry Cairn, Gateway MP-111</b>
Special Events, Educational Area		Interpretive MP-111
Outdoor Classroom, Seating, Covered Structure / Stage, Event Space	Covered Structure / Stage	MP-111
<b>Tree Nets, Elevated Structure, Forest Views, Educational</b>		<b>Interpretive MP-111</b>
Seating	Meander Intersection	MP-111
Seating	Meander Intersection	MP-112
Seating, Water Trail Access, Fishing, River Views, Wildlife Viewing	Water, Interpretive	MP-112
Seating, Wildlife Viewing		MP-113
Seating	Meander Intersection	MP-113
Seating		MP-114
Seating, Wildlife Viewing	Interpretive	MP-114

## PROGRAM: TRAIL BANK INDEX (CONT.)

MARSH					
#	TRAIL BANK NAME	LOCATION	MATERIAL PALETTE	TYPE	SIZE
54	WETLAND BANK	Fishkill Wetland	Marsh	Trail Bank	Med
55	MARSH OVERLOOK	Fishkill Wetland	Marsh	Trail Bank	Med
56	MARSH PICNIC TERRACE	Madam Brett Park	Marsh	Intersection	Large
57	HABITAT HOLLOW BANK	Madam Brett Park	Marsh	Trail Bank	Med
58	MARSH OVERLOOK	Madam Brett Park	Marsh	Trail Bank	Small
59	RAIL RAMP INTERSECTION	Madam Brett Park	Marsh	Intersection	Small
60	SEATING BANK	Madam Brett Park	Marsh	Trail Bank	Small
61	DENNINGS POINT ENTRY	Dennings Point North	Marsh	Entry	Large
62	DENNINGS COVE	Dennings Point North	Marsh	Trail Bank	Med
63	FISHING BANK	Dennings Point North	River's Edge	Trail Bank	Med
64	EAST OVERLOOK	Dennings Point South	River's Edge	Trail Bank	Small
65	DENNINGS LANDING	Dennings Point South	River's Edge	Trail Bank	Large
66	DENNINGS POINT OUTCROP	Dennings Point South	River's Edge	Trail Bank	Small
67	KLARA SAUER ELEVATED OVERLOOK	Klara Saur Trail North	Marsh	Trail Bank	Med
LONG DOCK					
68	LONG DOCK PARK ENTRY	Long Dock Park	Marsh	Entry	Med
69	FERRY STOP	Long Dock Park	River's Edge	Trail Bank	Small



PROGRAM / ACTIVITIES	BUILDING(S)	SIGNAGE & WAYFINDING	SHEET #
Wildlife Viewing, Seating, Education/ Interpretive Information, Screen / Blind		Interpretive	MP-115
Seating, Marsh Views, Wildlife Viewing, Fishing			MP-115
Picnicing/ Picnic Tables, Seating		Gateway, Meander Intersection	MP-116
Outdoor Classroom, Seating, Wildlife Viewing, Educational		Interpretive	MP-116
Seating, Scenic View, Wildlife Views			MP-116
Seating		Intersection Wayfinding	MP-116
Seating			MP-116
<b>Comfort Stations, Seating, Bike Repair Stations</b>	<b>Bathrooms (6-8 unisex); Storage</b>	<b>Entry Cairn, Gateway Sign</b>	<b>MP-118</b>
Beach, Toes in Water, Seating			MP-118
Seating, Fishing			MP-118
Seating, River Views, Wildlife Viewing			MP-117
Beach, Kayak/Boat Stop, Toes in Water, Seating, Water Trail Access			MP-117
Seating, River View, Fishing			MP-117
River View, Fishing, Wildlife Viewing		Interpretive	MP-120
Comfort Stations, Bike Repair Station, Bike Rental, Seating	Bathrooms (6-8 unisex); Storage	Entry Cairn, Gateway	MP-121
Seating			MP-121







# **DESTINATIONS & ENTRIES**

**DOCKSIDE PARK**

**LITTLE STONY POINT**

**BREAKNECK**

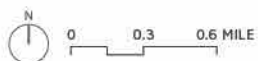
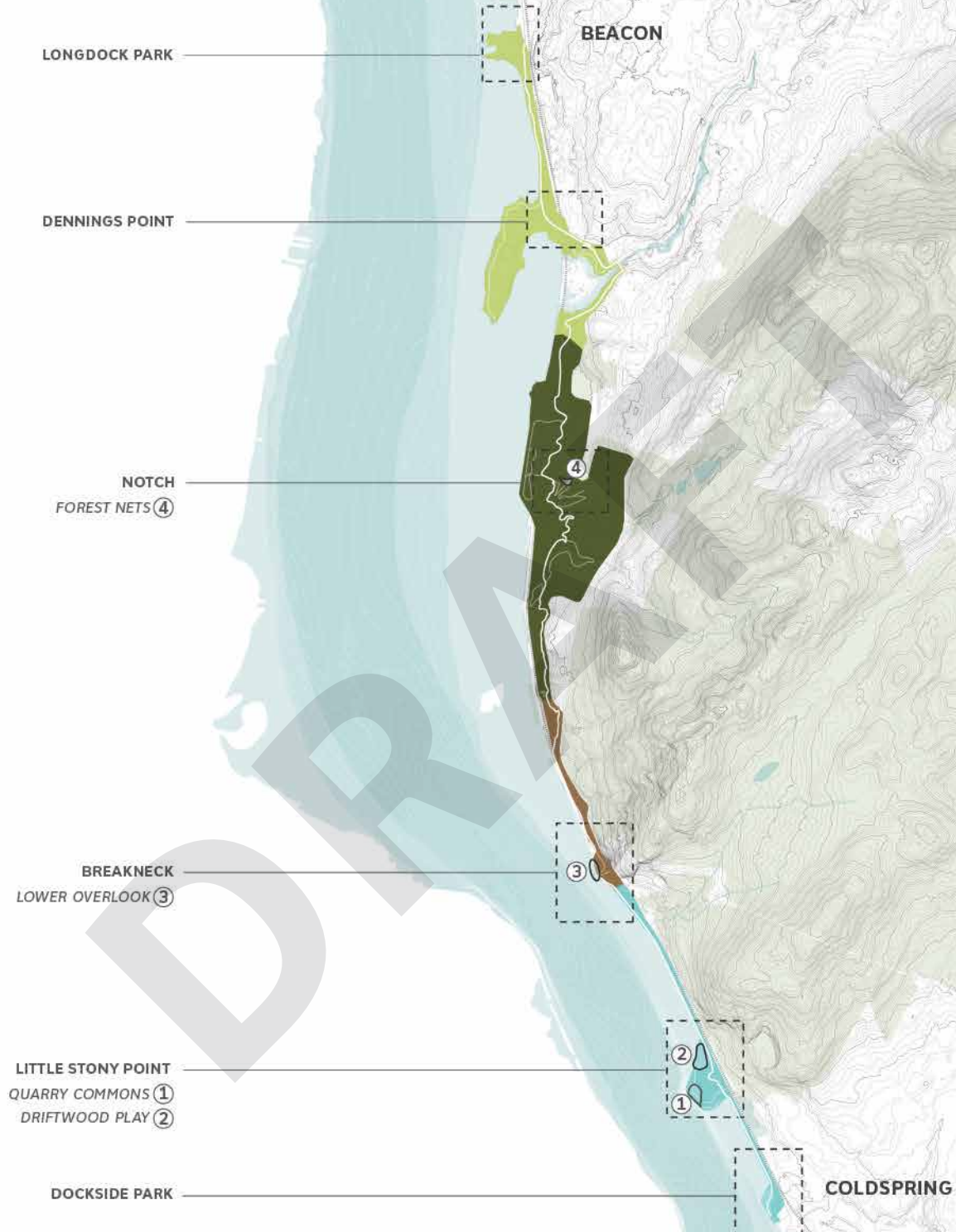
**NOTCH**

**DENNINGS POINT**

**LONG DOCK PARK**

## DESTINATIONS & ENTRIES MAP

Each destination along the Fjord Trail, shown in the dashed boxes, contains an entry to the Main Trail.





Entries and destinations are key gateways connecting the Fjord Trail to the greater region. These critical nodes both provide access to the Fjord Trail but also serve as destinations for area residents and visitors. It is likely that a family, a first-time visitor to the area, or an educational group may arrive at one of the destinations along the Fjord Trail and not venture out along the Main Trail and its meanders.

A **destination** is an area or node that contains one or more signature programmatic elements that distinguishes it from the rest of the Fjord Trail. Each destination has unique landscape qualities and contains a series of trail banks or programmed spaces functioning as a park or place within the larger Fjord Trail linear park system. Each destination has its own identity, landscape character, and signature spaces that make them unique. Some destinations are already well-known parks, to which this plan proposes modest enhancements; others are completely new, with significant improvements proposed. The destinations along the Fjord Trail are:

- Dockside Park
- Little Stony Point
- Breakneck
- Notch
- Dennings Point
- Long Dock Park

**Entries** provide direct access to the Fjord Trail, and people who are coming to hike, jog, bike, and enjoy this landscape enter *through* the entry at a *destination*. Each of the above destinations include an entry. Entries link the Metro-North train system, existing and proposed parking lots, ferry routes, and regional greenway networks to the Main Trail. In addition, the design for entries respond to their direct landscape surroundings. Each entry contains:

- A welcoming cairn
- Comfort stations
- A gateway map sign
- Bike facilities (racks and repair stations)
- Seating

This section describes the program and conceptual design for each destination. The general siting and design strategies are included, but each destination requires further exploration, study, and design in future project phases.







## DOCKSIDE PARK

Located at the southern terminus, Dockside Park is the gateway to access the Fjord Trail from Cold Spring. The park is known for its iconic and breathtaking views of the Hudson Highlands Fjord and is a popular destination for both Cold Spring residents and area visitors, due largely to its proximity to the river, downtown Cold Spring, and the Metro-North Station.



- 
- ① ENTRY CAIRN
  - ② PROPOSED LIVING SHORELINE
  - ③ COMFORT STATIONS
  - ④ ENTRY BANK
  - ⑤ MEANDER
  - ⑥ MAIN TRAIL
  - ⑦ LAWN
  - ⑧ ADA KAYAK LAUNCH
  - ⑨ SEAT STEPS
  - ⑩ MEANDER BRIDGE





## DOCKSIDE DESIGN FEATURES

The plan proposes modest improvements to the design of the park to elevate the overall experience of the park and provide a southern anchor and entry to the Fjord Trail. Five elements comprise the park design: the living shoreline, the boardwalk, the entry, the lawn, and stepped trail bank.

### ***The Entry***

As with all entries, a cairn announces the entrance to the Fjord Trail. The entry area also contains comfort stations, information and wayfinding, and bike rental and repair facilities.

### ***Living Shoreline Pilot Project***

Currently, a Sustainable Shorelines Demonstration Site has been designed for Dockside Park. The design of the park does not propose this is altered, but rather builds on the proposal to provide more public access to the water.

### ***Boardwalk & Water Access***

Because of Dockside's vulnerability to sea level rise, the main trail is sited further from the water's edge, and an elevated wood boardwalk (a meander) allows people to get closer to the water. An ADA kayak launch provides access to the Hudson River Water Trail.

### ***Lawn***

Currently, the park has a large lawn for people to gather, lounge, picnic, or walk their dog. The design proposes maintaining this lawn as a flexible space for the community and visitors.

### ***Stepped Trail Bank***

The stepped trail bank is a set of seat walls nested into the hillside to form a "mini-amphitheater". This space is ideal for sitting and taking in the majestic view, or at times, it may function as a small performance space.



### ***BIRD'S EYE PERSPECTIVE***

*The large lawn, living shoreline, entry, and stepped trail bank.*







## LITTLE STONY POINT

An already popular regional destination, Little Stony Point is a rock outcrop protruding into the Hudson River. The site of a former quarrying operation, this area is most known for its striking rock face and beaches. Currently, it is one of the very few places between Cold Spring and Beacon where people can access the river and dip their toes in the water, while just a short hike away, travel to the top of the rock face and take in an incredible view.


# LITTLE STONY POINT DESIGN FEATURES

The design for Little Stony Point consists of meanders providing access to the shoreline, small pocket beaches, trail banks along the rock face, a post-industrial meadow landscape, an enhanced overlook, an entry, and most notably, the Quarry Commons and the Driftwood Play Zone. The area also serves as the headquarters for the Hudson Highlands State Park Preserve offices of OPRHP and across Route 9D, the Washburn parking lot provides a limited amount of parking and a connection to the Washburn and Cornish trails.

- ① DRIFTWOOD PLAY
- ② ACTIVE BEACH
- ③ SERENE BEACH
- ④ THE QUARRY COMMONS
- ⑤ CAVE
- ⑥ MEANDER
- ⑦ MAIN TRAIL
- ⑧ LITTLE STONY POINT BRIDGE
- ⑨ POCKET BEACH
- ⑩ PARKING
- ⑪ OPRHP OFFICES
- ⑫ COMFORT STATION  
LOCATION ALTERNATIVES







DRIFTWOOD PLAY  
ZONE

LITTLE STONY POINT BRIDGE ALTERNATIVES





- ① ENHANCED OVERLOOK
- ② STEPPED TRAIL BANK
- ③ ENHANCED MEADOW
- ④ MEANDER
- ⑤ THE BERM
- ⑥ SEATING STEPS
- ⑦ THE SLAB
- ⑧ RIPARIAN FOREST





## THE QUARRY COMMONS

At the base of the rock face, within a post-industrial meadow landscape, The Quarry Commons is a shaded gathering space for contemplation and meditation. The major elements forming the space are the berm, the slab, and the stepped trail bank.

### **The Berm**

A sculptural berm rises out of the meadow with terraced seat steps. The ground of the back side of the berm is gravel, like the ground surface of the meadow landscape today, to reference the former industrial landscape and “piling” of the quarried aggregates. On the slope of the berm facing the rock face, terraced seat steps form places to sit in a shady area. The seating terraces are retained with stone block and planted with lawn or native plant communities to support educational programming. Trees are planted in the terraces to provide shade for seated groups of people.

### **The Slab**

Emerging from the rock face, the slab is formed with large stone set slightly above grade, forming a plinth of stone for yoga, educational lessons, or occasional performances. The stone of the slab matches the appearance of the rock face that serves as its backdrop. A shade structure (temporary or permanent) could potentially provide shelter from the elements for larger groups of people.

### **Stepped Trail Bank**

Just south of the berm and slab, a smaller, stepped trail bank nests into the rock face. At this location, the rock face is not sheer, and stone blocks are set into the rock to form a seating area. Although a bit more exposed to the elements, this area provides epic views out over the river, so while the berm and the slab are more nested, sheltered, and inward facing to rock, the stepped trail bank is exposed and faces the river.

### **Program**

The shaded steps of the berm provide a space for contemplation for Fjord Trail users and visitors to Little Stony Point. The valley formed between the berm and the rock face focuses attention inward – a respite from the expansive views of the Hudson River and Fjord. The space also has the flexibility to host smaller educational groups, yoga classes or retreats, or even occasionally, the area can support larger events that groups like the Little Stony Point Citizen’s Association host. No utility services will be provided on site, but comfort stations are proposed in proximity (see Little Stony Point site plan for alternatives). Further coordination with state agencies and stakeholders will be required in future design phases to determine the appropriate square footage and capacity of this area.



### **THE BERM**

*The slope of the berm facing the rock face is terraced with stone seat steps.*



**AN OUTDOOR CLASSROOM**

*The Quarry Commons is a destination for educational groups to host lectures or lessons.*









**A LARGE EVENT**

*Seasonally, large events already occur on Little Stony Point. The Quarry Commons provides space for these programs.*









- ① DRIFTWOOD PLAY
- ② WOVEN WRACK LINE
- ③ DRIFTWOOD PLAY
- ④ ACTIVE BEACH
- ⑤ THE NEST
- ⑥ MEANDER
- ⑦ MAIN TRAIL
- ⑧ ADA KAYAK LAUNCH / SMALL DOCK





## DRIFTWOOD PLAY ZONE

Located at the northern tip along the beach at Little Stony Point, the Driftwood Play is a place to explore, learn, discover, and play. These five elements: the play zone, the nest, the woven wrack line, the fishing, and an accessible kayak launch form this larger, signature destination space.

### ***Play Zone***

Rather than traditional play structures, this area introduces the notion of unstructured, free form occupation with a simple range of driftwood elements. Vertical and horizontal stumps, massive driftwood pieces, smaller twigs and sticks are scattered throughout the site for children to climb on, stack, and pile. These flexible elements allow Fjord Trail users to define their own play experience, or perhaps even explore their inner child.

### ***Nest***

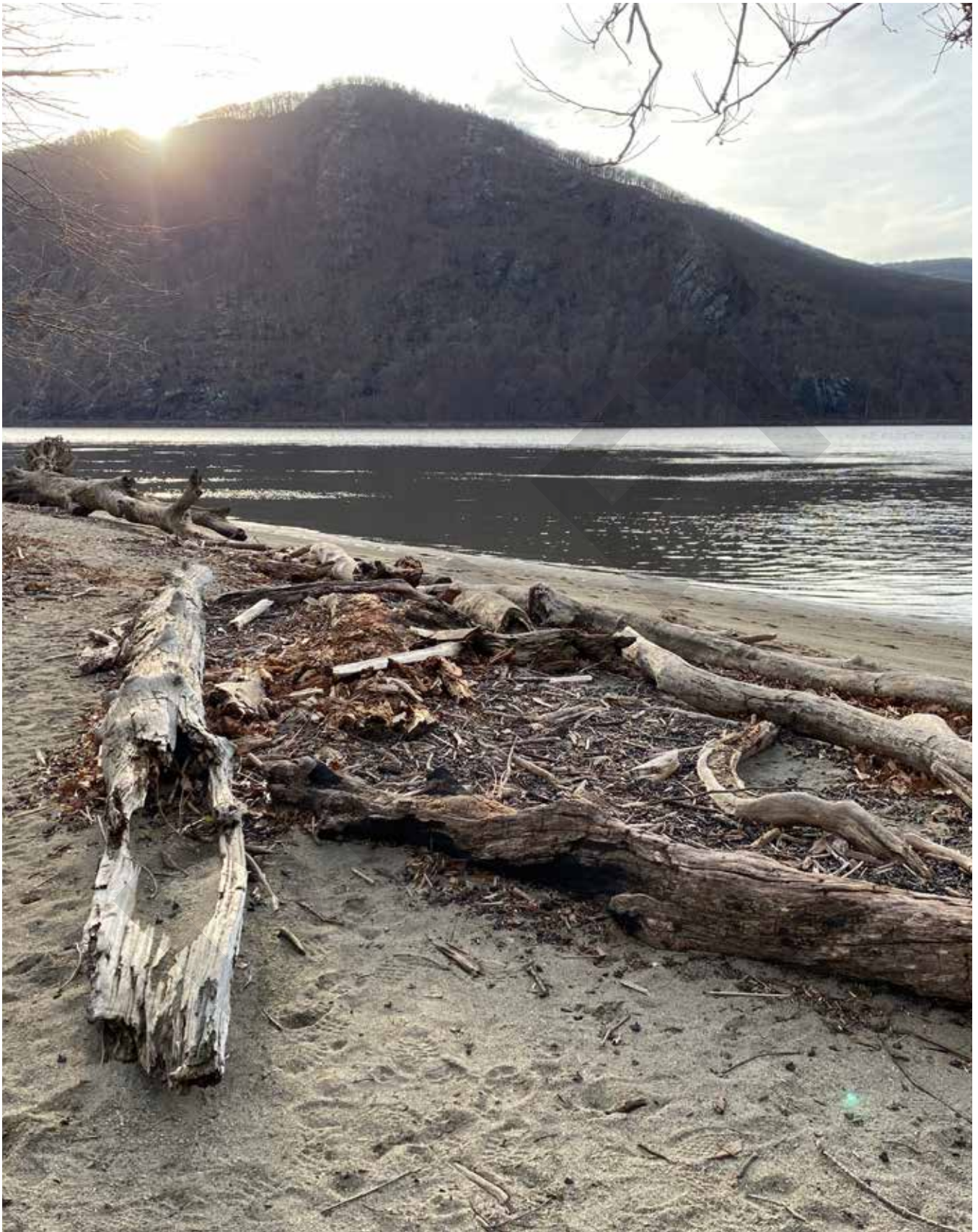
Formed with woven driftwood pieces gathered from the site, the nest is a special fort hidden atop a planted berm. Its location allows a safer place for children to get a little higher and lookout over the Hudson River Fjord.

### ***Woven Wrack Line***

The woven wrack line draws a separation between the play zone and the adjacent beach. Like the nest, the woven wrack line is formed with driftwood pieces gathered from the site. Where needed, the woven wrack line is taller, to form a necessary separation between the play zone and the beach. In other areas, the woven wrack line is shorter, composed of horizontal driftwood logs, that frame the beach and provide a place for beach goers to sit.

### ***Fishing Beach and ADA Kayak Launch***

Fishing is popular on this northern stretch of beach. The design of the Driftwood Play Zone strategically clears invasive understory vegetation, providing access to this large stretch of beach that is currently not accessible. In addition, an ADA kayak launch provides direct water access for kayakers and serves as a stop along Hudson River Water Trail.



*DRIFTWOOD AT LITTLE STONY POINT*





### **THE NEST**

*Woven driftwood logs collected on site stitch together to form the nest structure.*



### **DRIFTWOOD PLAY**

*Large logs provide ideal play structures for children and adults alike.*



## LITTLE STONY POINT BRIDGE ALTERNATIVES

Little Stony Point is on higher ground than the trail along the shoreline at the Metro-North Railroad. In order for the Main Trail to maintain an accessible route, a bridge is required to transition from low ground to high ground at the south end of Little Stony Point.



### **BRIDGE OPTION 1**

*A straighter alignment running parallel with 9D*





**BRIDGE OPTION 2**  
*An elevated switchback*







## BREAKNECK

Located on the eastern bank of the signature Hudson Fjord, Breakneck Ridge is among the most popular hiking destinations in the country owing to its challenging rock scrambles and panoramic views across the Hudson River and Highlands. The draw of the existing trails and the intermediate Metro-North Railroad stop, which operates on the weekends, make the ridge and the landscape to the north key destinations along the Fjord Trail.



### THE UPPER OVERLOOK

*Proposed alignment of Breakneck Ridge Walk*



### THE LANDING AT THE UPPER OVERLOOK

*Fjord Trail users have a choice to continue on to Fjord Trail or hike to Breakneck.*



## BREAKNECK DESIGN FEATURES

The design calls for an improved entry for visitors arriving by rail and car, a reorganization of the existing parking areas, a picnic grove, an upper overlook, and a lower overlook.

### **Entry**

The entry at Breakneck links the Fjord Trail to the northbound Metro-North rail stop, several small parking areas along NYS Route 9D, improved comfort stations, and the Wilkinson Trailhead. The entry joins the disparate paths into a small plaza where seating, the comfort stations, and an info point provide an opportunity for visitors to either orient themselves or pause to rest. Immediately to the south, the scramble trail bank provides additional seating space.

### **Picnic Grove**

Located at the Wilkinson Trailhead, where many visitors to Breakneck end their hike, the Picnic Grove is a social space allowing visitors to linger away from the flow of the Fjord Trail. The clearing of an existing patch of brambles makes room for leveled chip stone terraces

covered by a restored forest canopy, while a low meadow berm conceals Route 9D and frames views of Storm King and the Hudson.

### **Upper Overlook**

The Upper Overlook is the initial promontory of Breakneck Ridge which will contain a short loop trail, scenic overlooks providing full panoramas up and down the river, and the relocated trail steward's station. The Upper Overlook affords an opportunity to experience a condensed and less strenuous experience of the famous hike, and the character is that of the surrounding Hudson Highlands wilderness.

### **Lower Overlook**

Located at the base of Breakneck's rocky cliffs, the Lower Overlook is the dramatic juncture of the shoreline and the highlands environments. Stone rock faces and boulders surround the visitor and are punctuated by shoreline vegetation and large snags. Seating steps provide access to the river for views both across to Storm King and down the water.



### **ENTRY**

*Comfort stations at the entry plaza at Breakneck.*

**BREAKNECK BRIDGE**

*The Breakneck Bridge crosses Metro-North, linking the trailhead of Breakneck Ridge to the shoreline.*





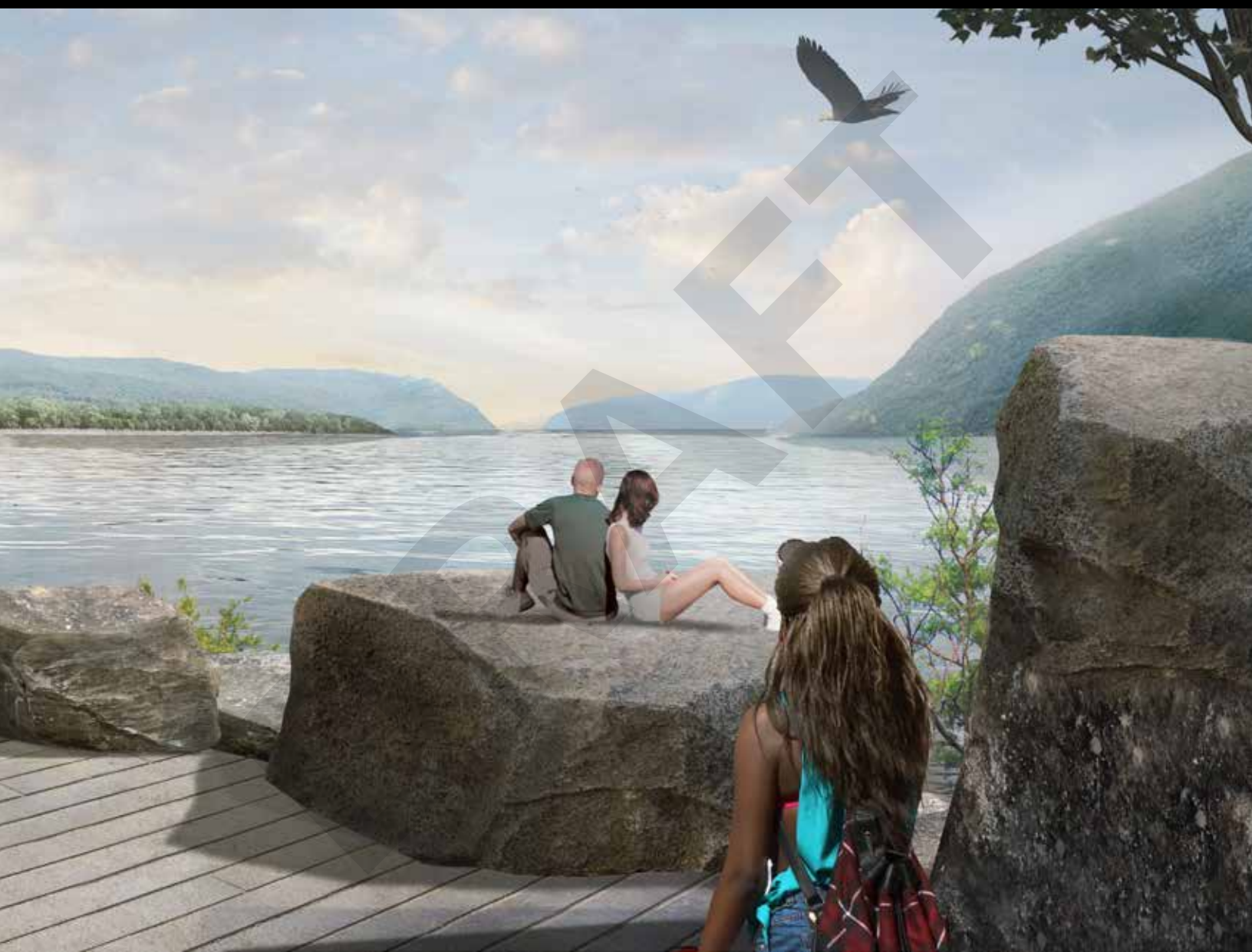


### **THE LOWER OVERLOOK**

*As the threshold between the Shoreline Trail and Breakneck, the lower overlook is a rocky viewpoint getting people to the water's edge and providing magnificent views of the Fjord.*















## NOTCH

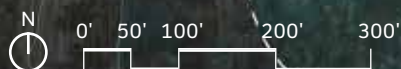
In contrast to the other destinations along the Fjord Trail, Notch is an area where minimal park infrastructure currently exists. Located in the forest landscape just north of Dutchess Manor, the site now consists of the Notch Trailhead, an abandoned carriage road, an old roadbed, a clearing, and an abandoned playground. Notch is improved to be a new destination along the Fjord Trail for gathering, education, and access. It is the only destination that proposes additional parking capacity.



# NOTCH DESIGN FEATURES

New features will include a parking loop that connects to Route 9D, a space for outdoor learning and explorative play, and a playful elevated walkway through the forest canopy. Additionally, it will have space for Fjord Trail operations and maintenance, and connection paths down to the Main Trail and Brick Beach.

- 
- ① GATEWAY
  - ② CONNECTOR TO NOTCH TRAIL
  - ③ O&M HEADQUARTERS
  - ④ PARKING
  - ⑤ ENTRY BANK
  - ⑥ OUTDOOR CLASSROOM / HOLLOW BANK
  - ⑦ FREE PLAY FOREST
  - ⑧ FOREST NETS LOCATION - ALT. 1
  - ⑨ FOREST NETS LOCATION - ALT. 2
  - ⑩ COTTONTAIL HABITAT
  - ⑪ MEANDER
  - ⑫ WALNUT GROVE
  - ⑬ MAIN TRAIL
  - ⑭ WILDLIFE CROSSING







**NOTCH: REDUCED OPTION**

The reduced option at Notch concentrates program closer to 9D, and reduces the overall footprint of interventions at this location.





#### **NOTCH: EXPANDED OPTION**

*This design option for Notch provides more program and parking capacity.*



#### **NOTCH: EXISTING CONDITIONS**

*The planned site for Notch is a clearing in the trees with abandoned play structures.*



### ***Parking***

Rather than a single large lot, the parking at Notch consists of smaller parking areas organized along a loop. This provides those approaching by car with a sense of immersion within the forest and allows for various parking options based on proximity to different activities. The loop will also integrate school bus parking and access for maintenance and emergency vehicles.

### ***Entry Trail Bank***

Adjacent to the parking loop, the entry trail bank will provide visitors with orientation and information about Notch and the Fjord Trail. It will also act as a central location to connect or gather. Social seating under a grove of trees will provide a place to rest and plan trail routes. Trails stemming from the entry will lead to the outdoor classroom, a path down to the Main Trail, and elevated Forest Nets.

### ***Outdoor Classroom & Exploratory Forest***

The outdoor classroom is nested within the forest and acts as a base for group education. Tiered seating under the canopy will align towards an informal stage for demonstrations, which could range from nature talks to art or outdoor skills workshops. The classroom space is defined by low log structures, which will create a sense of enclosure while remaining open to the forest surroundings. The adjacent forest around the outdoor classroom may be designated for further group exploration and educational tours. This area will be clearly defined to avoid conflicts with human use and sensitive habitat and ecological areas.

### ***Enhanced Habitat***

The adjacent area around Notch is an opportunity to preserve existing habitat and enhance degraded habitat for plant and animal species, such as the New England Cottontail. To facilitate animal movement through their habitats, wildlife crossings are included at points along meanders and the Main Trail to allow safe passage for animals.

### ***Expanded vs. Reduced Options***

Two plan options are shown for Notch, an expanded option and a reduced option. Both options act as primary points of entry to the Fjord Trail and accommodate significant parking and bus / shuttle access, a key need of the Fjord Trail. The reduced version has a smaller footprint that minimizes impact to the existing landscape and concentrates impacts closer to 9D. This option provides fewer parking spaces and programmatic opportunities. The expanded version provides more program and parking capacity but may impact critical sensitive habitat in the area. Both options are being analyzed further in the environmental review process, depending on the alternative pursued, some programmed elements may need to be relocated to other sites along the Fjord Trail.



### CONCEPTUAL SITE PLAN

The above images show the plan for the forest nets, with and without tree canopy.



### IMMERSIVE WALKWAYS

On the north face of the ridge, immersive walkways provide intimate spaces for reflection.



## FOREST NETS

A system of elevated wooden walkways weaving through the trees will encourage a unique experience of the forest. The structures will jut out over the edge of a steep slope to create a sense of being suspended in the canopy. Nets comprised of durable, woven rope-like material cast between paths will act as large hammocks, where visitors can relax or play. A large central net will inspire more energetic or group-oriented activities, while secluded smaller spurs will create spaces for more passive or solo recreation.

The height of the Forest Nets should be carefully selected to allow enough sunlight below the elevated paths so understory shrub layers can grow, and animal passage can occur unobstructed. In addition, the structure should also avoid disturbing nesting habitat for bird species of concern.

The Forest Nets may require specialized maintenance protocols. In future phases of design, maintenance and operations details will be determined.

### **THE FOREST NETS**

*A large net area provides space for groups of people to gather, play, and enjoy the experience of the forest canopy.*




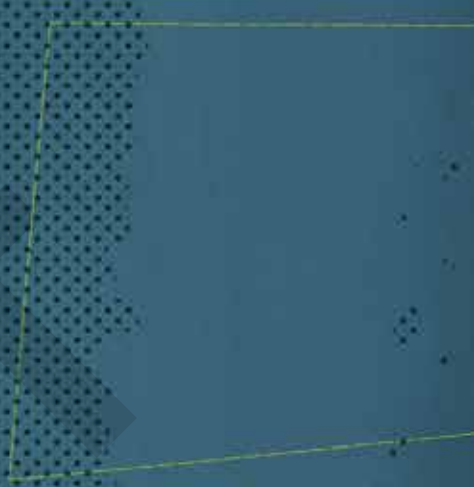


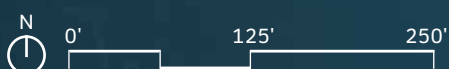




## **FOREST NETS: POTENTIAL ALTERNATE LOCATIONS**

*Final site selection will require additional analysis and coordination with project stakeholders and state agencies in future design phases.*

- 
- 
- ① NOTCH CONNECTOR
  - ② PARKING AND ENTRY BANK AT NOTCH
  - ③ FOREST NETS ALT 1
  - ④ FOREST NETS ALT 2
  - ⑤ MAIN TRAIL
  - ⑥ BROOK WALK MEANDER
  - ⑦ BLUFF WALK MEANDER
  - ⑧ FOREST NETS ALT 3
  - ⑨ DUTCHESS MANOR
  - ⑩ FOREST NETS ALT 4















## DENNINGS POINT

Dennings Point is a peninsula located between Madam Brett Park and Long Dock Park. Currently, this area is a popular place for birders and people seeking an enjoyable, but less challenging hike. At the end of the peninsula, a large beach and rock outcrop provide access to the river and views back toward the Fjord.



- ① MAIN TRAIL
- ② CONNECTOR TO BEACON
- ③ DENNINGS PT ENTRY POST
- ④ PARKING
- ⑤ MEANDER INTERSECTION
- ⑥ POCKET BEACH
- ⑦ BEACON INSTITUTE FOR RIVERS & ESTUARIES
- ⑧ PROPOSED IMPROVEMENT FOR CLARKSON UNIVERSITY & OPRHP FACILITIES
- ⑨ MEANDER
- ⑩ ROCK OUTCROP



## PROPOSED NEW CLARKSON UNIVERSITY FACILITIES

DENNINGS POINT

FISHKILL MARSH





## DENNINGS POINT DESIGN FEATURES

The Fjord Trail design does not propose major improvements to the Dennings Point area. An existing parking lot and road alignment provides access to the Fjord Trail. In addition, Clarkson University is planning to expand their facilities and OPRHP is planning a large public picnic area. The Fjord Trail design proposes two enhancements to the area: an entry and a meander.

### **Entry**

The entry links the existing road alignment and parking lot to the Fjord Trail. At the initial intersection, it is marked with an entry cairn, and closer to the meander intersection at Dennings Point, a wayfinding gateway sign helps people orient themselves to the trail. Comfort Stations are also located at the entry bank.

### **Meander**

The existing trail at Dennings Point is accessed through the Clarkson University campus. The Fjord Trail proposes shifting that access to the northern shore of the peninsula, separating the meander from the improvements to the Clarkson facilities. Trail banks are proposed along the enhanced meander, terminating in a beach and rock outcrop meander providing water access and views of the river.



### **CONNECTIONS TO DENNINGS POINT**

*Existing roads provide connections to the entry points at the Fjord Trail.*







## LONG DOCK PARK

Long Dock Park, a very popular waterfront destination recently constructed in Beacon, serves as the northern terminus of the Fjord Trail. Currently, the park provides kayak storage and a kayak launch, water access, a picnic area, flexible lawn space, and meadow pathways. The River Center, a Scenic Hudson facility, is a multipurpose space that hosts different cultural and community events.





- ① FERRY TERMINAL
- ② BEACON TRAIN STATION
- ③ DOWNTOWN BEACON
- ④ TRAIL HEAD / ENTRY
- ⑤ PARKING
- ⑥ OVERPASS TO PARKING
- ⑦ SCENIC HUDSON'S RIVER CENTER
- ⑧ LONG DOCK PARK KAYAK LAUNCH & STORAGE
- ⑨ ENTRY BANK
- ⑩ MAIN TRAIL
- ⑪ DIA BEACON MUSEUM





# LONG DOCK PARK DESIGN FEATURES

Because the park has been recently constructed, The Fjord Trail plan does not propose major interventions to the site.

## **Entry**

The formal entry, located in the southeast area of the park, serves as a welcoming portal to the Fjord Trail. Connectors spur off this formal entry and link the Beacon Metro-North Station and Beacon-Newburgh Ferry Stops to the entry.

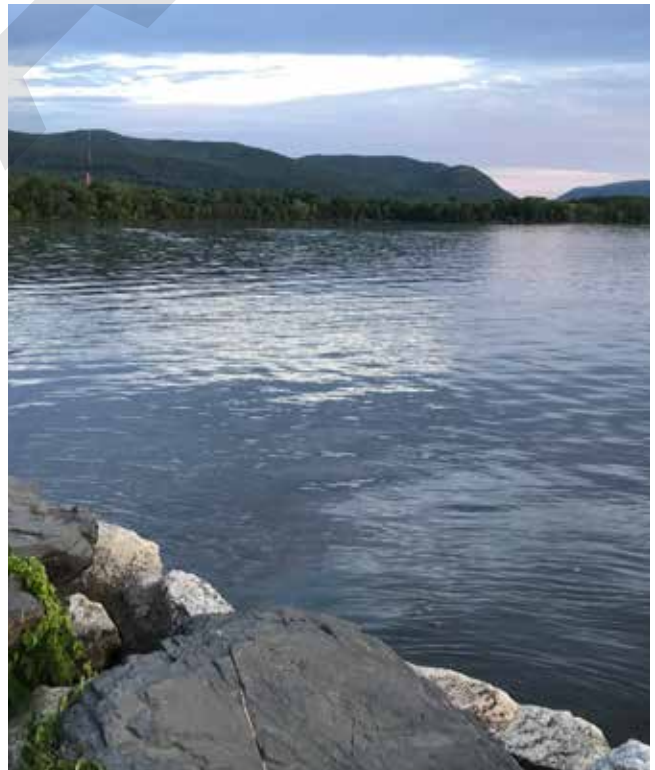
## **Comfort Stations**

The entry bank contains comfort stations that provide public facilities for Fjord Trail users. A secondary connection under the bridge provides access to the Metro-North parking lot at the Beacon station. To the south, the trail follows the current Klara Sauer Trail alignment.



### **ENTRY BANK LOCATION**

Currently, a path runs under the overpass and connects to the Klara Sauer Trail.



### **RIVER VIEWS**

Long Dock Park offers expansive river views and views of the Fjord Trail







# **DESIGN GUIDELINES**

**MAIN TRAIL**

**MEANDERS**

**TRAIL BANKS**

**BUILDINGS**

**SITE FIXTURES & FURNISHINGS**

**SIGNAGE & WAYFINDING**

**SITE LIGHTING**

**PLANTING & RESTORATION**







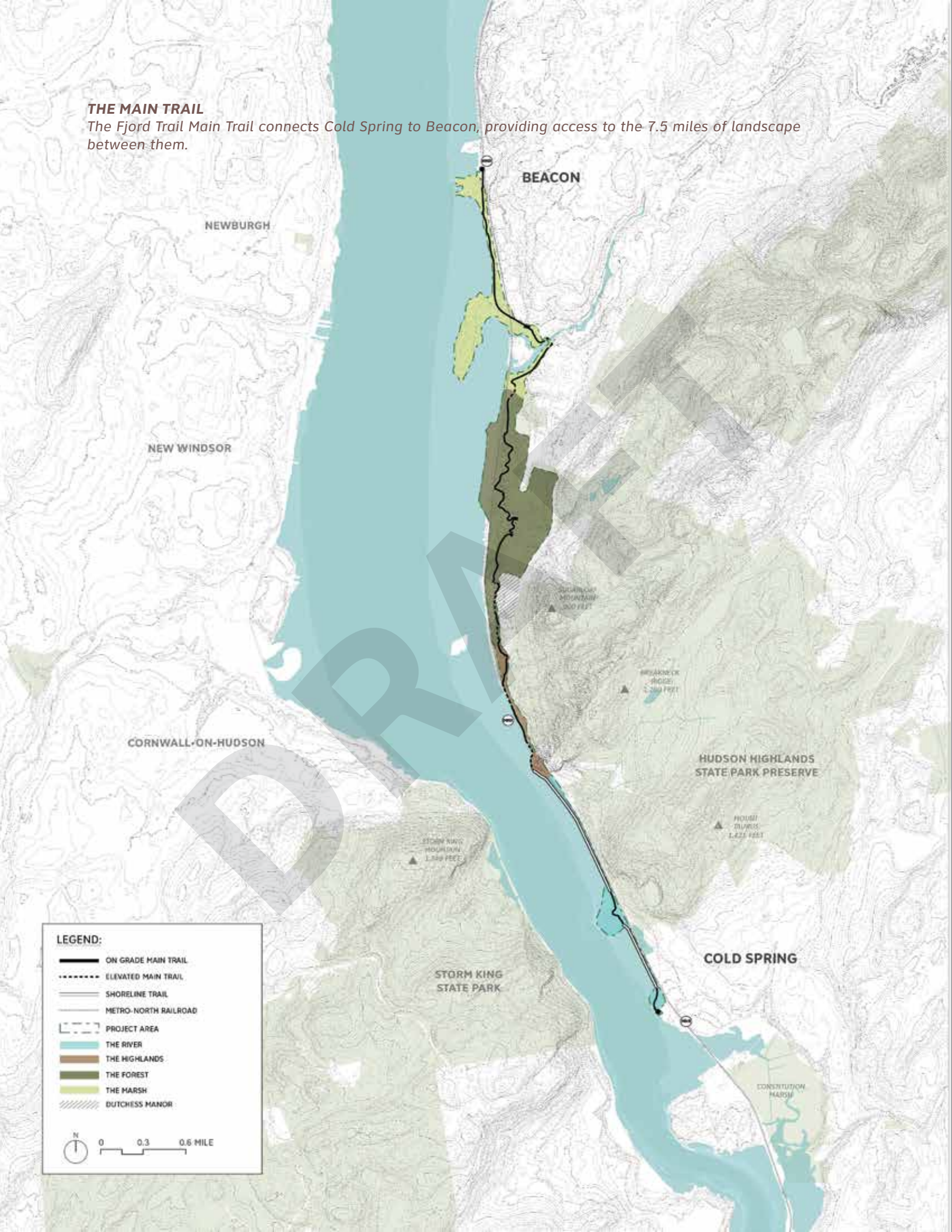


## MAIN TRAIL

Due to the complex landscape and site conditions the Main Trail must traverse (shorelines, steep topography, wet conditions, etc.), it takes many forms. This section describes the different conditions of the Main Trail including the Main Trail on grade, elevated trails, the Shoreline Trail, and select bridges. Refer to this section for the design standards for their design and implementation.

### THE MAIN TRAIL

The Fjord Trail Main Trail connects Cold Spring to Beacon, providing access to the 7.5 miles of landscape between them.



#### LEGEND:

- ON GRADE MAIN TRAIL
- ELEVATED MAIN TRAIL
- SHORELINE TRAIL
- METRO-NORTH RAILROAD
- PROJECT AREA
- THE RIVER
- THE HIGHLANDS
- THE FOREST
- THE MARSH
- DUTCHESS MANOR

N  
0 0.3 0.6 MILE



The Main Trail is a “path for all,” that stitches together the four landscape zones and provides an accessible walkable and bikeable path that remains as consistent as possible across the Fjord Trail project area. The consistency of the Main Trail fosters confidence in the system, assuring users they are on the right track with identifiable design features.

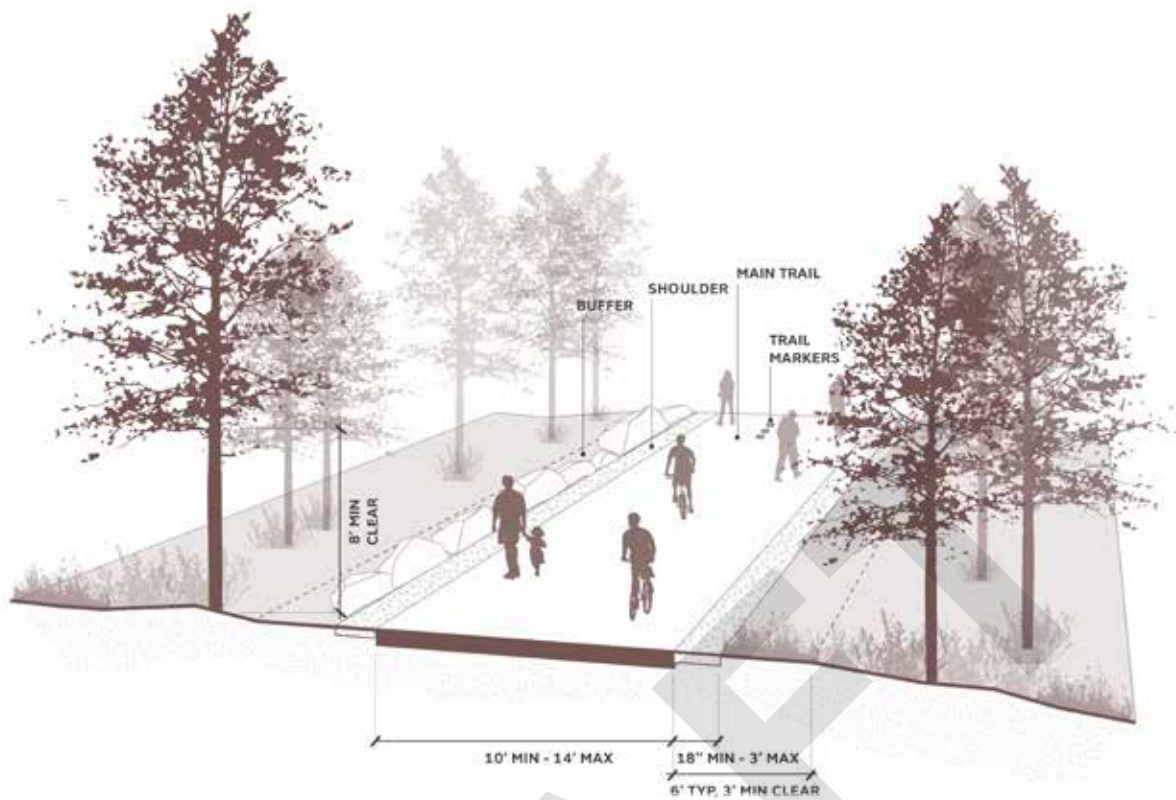
#### The Main Trail:

- Is consistent and identifiable.
- Recedes from focus and shifts attention to the surrounding landscape.
- Incorporates durable, sustainable materials.

The Main Trail is designed as an accessible shared-use path. It is 10 - 14 ft wide, excluding shoulders, and must meet accessibility standards as described in The Final Accessibility Guidelines for Outdoor Developed Areas (AGODA). Trail markers are used to suggest direction of travel when necessary or to mark distance intervals. Such markers should be used sparingly. A shared-use trail increases awareness of trail users and promotes slower cyclist travel speeds.

Due to the accessibility standards of the Main Trail, the steep and varied terrain of the Fjord Trail project area, and the alignment along the Hudson River, the trail cannot always be located directly on grade. At times, the Main Trail may need to be elevated to meet ORAR accessibility requirements. Thus, the Main Trail takes many forms: **Main Trail on grade, elevated trails, the Shoreline Trail, and major bridges / crossings.**

The materials and typical details of the Main Trail remain consistent along the entire length of the trail, regardless of landscape zone (buffers are an exception to this rule and described in this section). Because Breakneck will be the first phase of the trail moving into construction, material specifications for the Main Trail in other project phases must match or be as close as possible to the materials specified for Breakneck. These design guidelines will be amended to include specific material specifications as they are developed.



### MAIN TRAIL COMPONENTS

Diagram illustrates the relationships between the different components of the Main Trail.



### CRUSHED STONE SHARED USE PATH

Park trail in Acadia, ME.



# MAIN TRAIL ON GRADE

The Main Trail on grade is the portion of the shared-use path that does not require specialized structure to meet accessibility requirements. This Main Trail type occurs most frequently along the Fjord Trail length. The components of the Main Trail on grade include: **the shared-use path, the shoulder, buffers, and trail markers.**

## SHARED-USE PATH

The shared-use path is the portion of the Main Trail supporting user travel.

### *Design Strategies*

- The width of the path ranges 10 – 14 ft wide. Where possible, maintain 14 ft width to accommodate the anticipated high level of pedestrian and bicycle use. This width provides adequate space for a cyclist to pass a pedestrian user going in the same direction, with another user approaching from the opposite direction.
- The minimum width of a shared-use path is 10 ft and use only in areas where a low volume of use is anticipated, when the main trail passes through ecologically sensitive areas, or when site constraints do not allow for a 14 ft width. A 10 ft path supports a low level of use between bicyclists and pedestrians (AASHTO Bike Guide Section 5.2.1).

### *Materials and Typical Details*

- The material of the shared-use path is crushed stone. The material qualities (aggregate size, stabilizer) must establish a firm and stable surface in compliance with AGODA standards.
- Provide consistent crushed stone color throughout and match the tone and color of the existing stone of the landscape at Breakneck, Little Stony Point, and in areas of the forest, to reflect the native geology of the region.

## TRAIL MARKERS

Trail markers are selectively used to indicate direction of travel in high traffic areas or mark distance intervals along the Main Trail.

### *Design Strategies*

- When higher traffic volume is expected, provide trail markers to define direction of travel.
- In areas where visibility is low or there is a sharp, blind turn, trail markers indicate directional separation and can reduce the chance of a head-on collision.

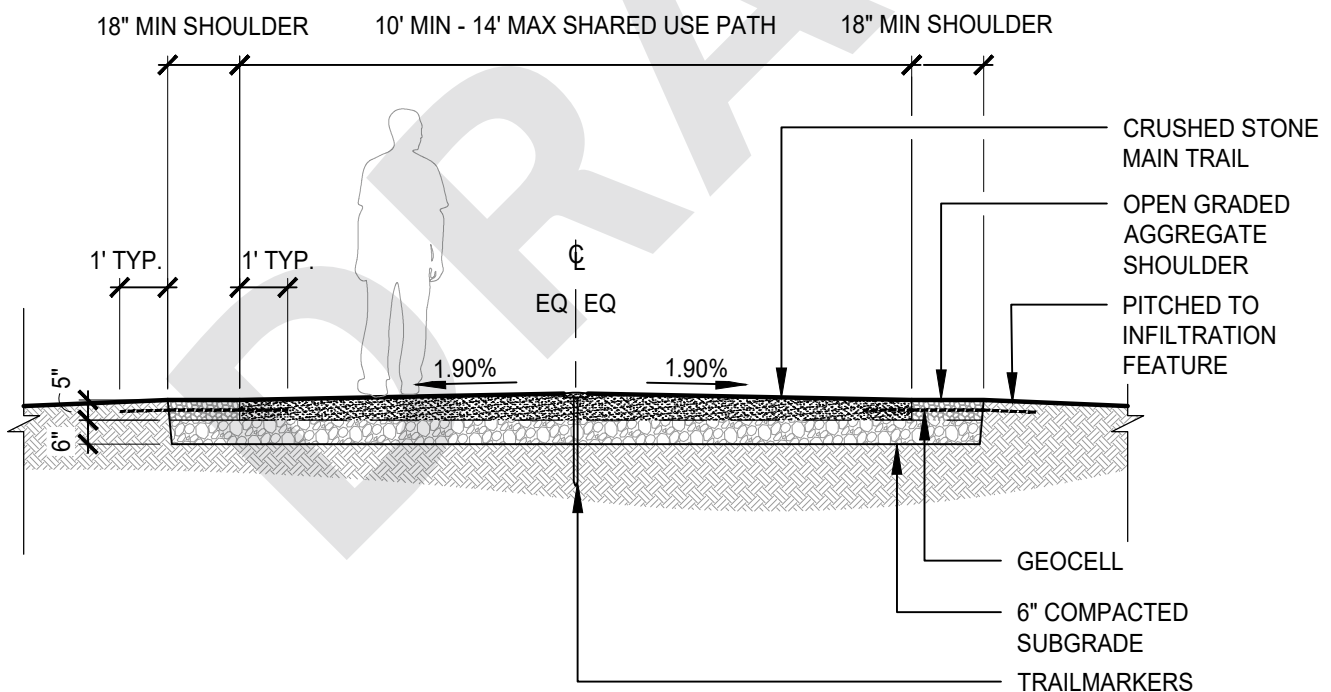
### *Materials and Typical Details*

- Trail markers are granite cobbles or metal discs inset into the crushed stone trail surface.
- Engrave markers with relevant information. (refer to **Signage & Wayfinding Section**)



### CRUSHED STONE

Use of finer crushed stone on the shared use path creates a firm and stable surface. Larger aggregate stone at the shoulder maintains permeability. Trail markers are inset into trail surface.



### TYPICAL MAIN TRAIL ON GRADE

Scale 1/4" = 1'-0"



## MAIN TRAIL ON GRADE: SHOULDERS

The shoulder is a zone on either side of the trail that provides a stabilized edge for the material of the shared-use path. It also serves a stormwater function, as described in Drainage and Erosion Control.

### *Design Strategies*

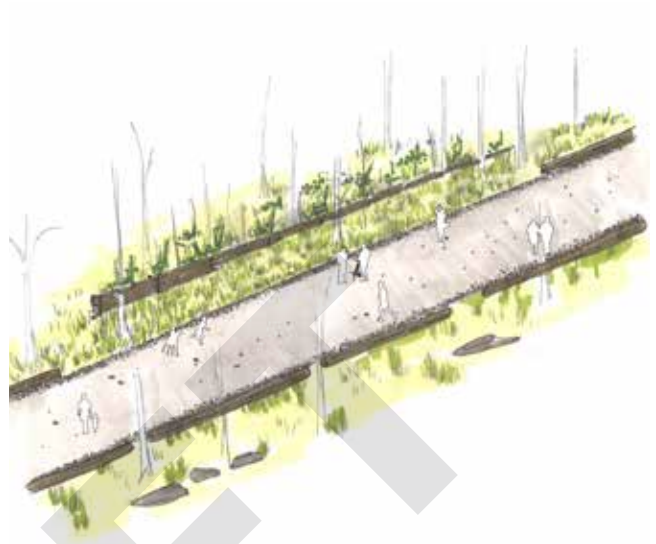
- Maintain a minimum shoulder width of 18 in.
- Where the Main Trail is constructed on a steep side slope, maintain a 36 in. width for drainage purposes.
- On steep side slopes and other constrained sites, maintain the 36 in. width on one side of the path to meet the required width for resting intervals along accessible trails.

### *Materials and Typical Details*

- Shoulders are crushed stone, with a visibly larger aggregate size than the shared-use path. Use open graded aggregate to support water drainage.
- The aggregate color of the shoulder is visibly lighter than the material of the shared-use path.
- Stabilize the shoulder material with a geocell technology and provide an edge to hold the material of the shared-use path. The geocell material should overlap a maximum of 12 in. along the shared-use path and along adjacent grade.



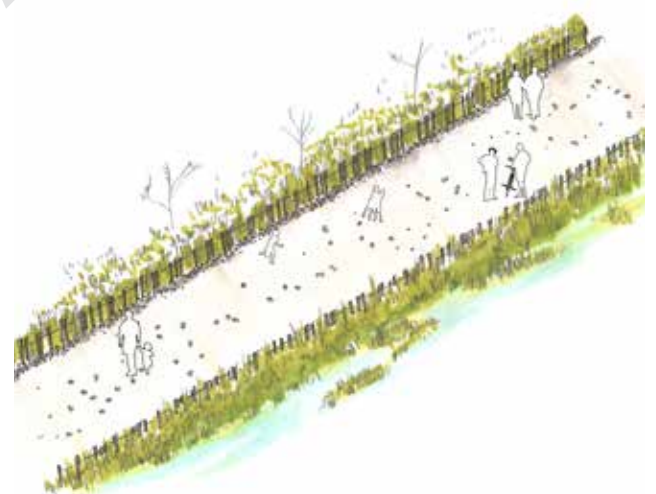
**RIVER BUFFER**



**FOREST BUFFER**



**HIGHLANDS BUFFER**



**MARSH BUFFER**



## MAIN TRAIL ON GRADE: BUFFERS

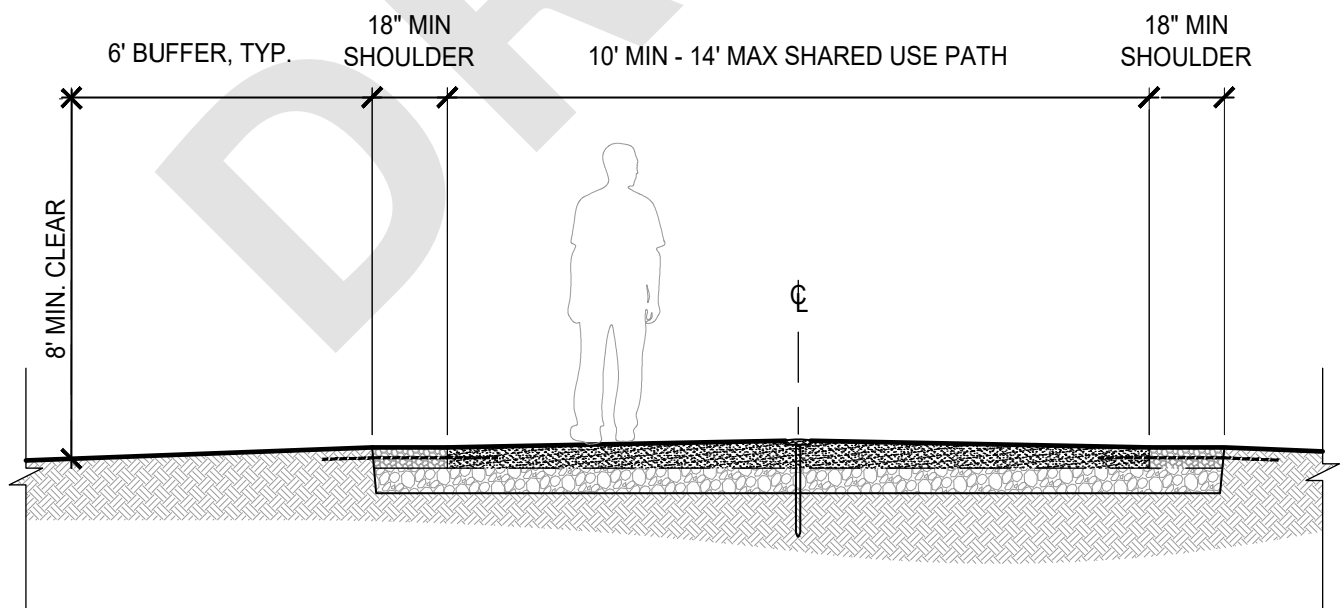
Buffer zones are adjacent to the Main Trail that remain clear of landscape obstructions for specified horizontal and vertical clearances. Buffer zones are measured from the edge of the shared-use path and contain the trail shoulder. Where needed, they include material interventions that warn of steep grade changes or signal to trail users that an area is off limits. The materials and typical details of buffers change with the landscape and are described below.

### Design Strategies

- In ecologically sensitive areas, use buffers to keep users on the Main Trail and out of the landscape. Ensure buffers are porous and contain breaks, to not impede wildlife passage.
- Where site conditions allow, provide 6 ft wide by 8 ft high area from the edge of the shared path free of obstructions.
- Where site conditions are constrained and do not allow for the full buffer zone, provide minimum of 3 ft on one side of the trail for accessible resting intervals.
- Maintain an 8 ft overhead clearance unless the obstruction is a permanent site feature, such as a rock outcropping.

### Materials and Typical Details

- **The River:** Use smooth, weathered boulders that reference the larger stone along the Hudson River's edge. Where more separation is required to keep users out of specific areas, the thickness and height of the stacked river boulders increase.
- **The Highlands:** Use larger boulders, and in some cases, incorporate rough sawn edges on boulders. The stones increase in scale when needed to keep people out of a specific area.
- **The Forest:** Use the resulting logs from tree clearing for the Main Trail and trail banks. Lay logs horizontally along the Main Trail. At ecologically sensitive areas, stack logs higher to form a low, visually porous, log fence.
- **The Marsh:** Provide a simple, low fence comprised of vertical wood members that are lighter and more delicate than the logs of the forest.



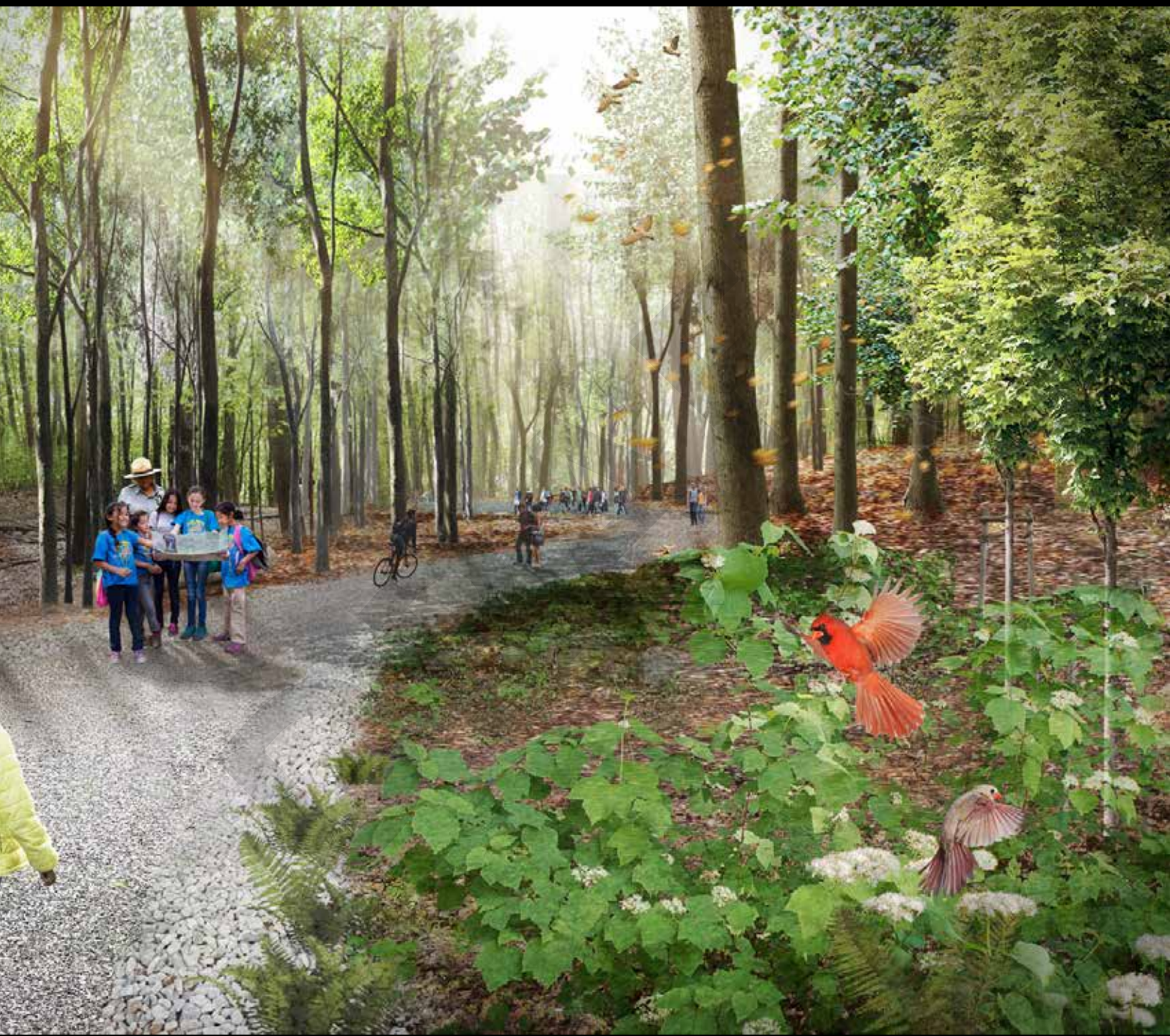
### MAIN TRAIL BUFFER ZONE

Scale 1/4" = 1'-0"

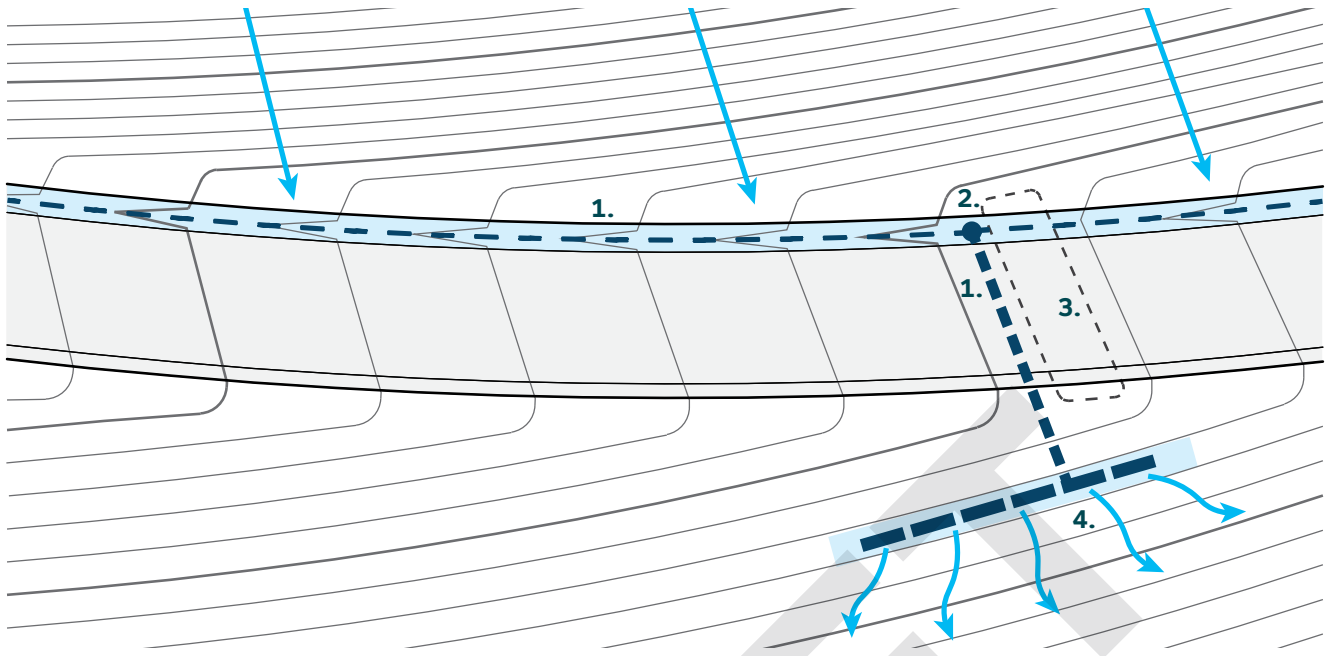
MAIN TRAIL THROUGH THE FOREST





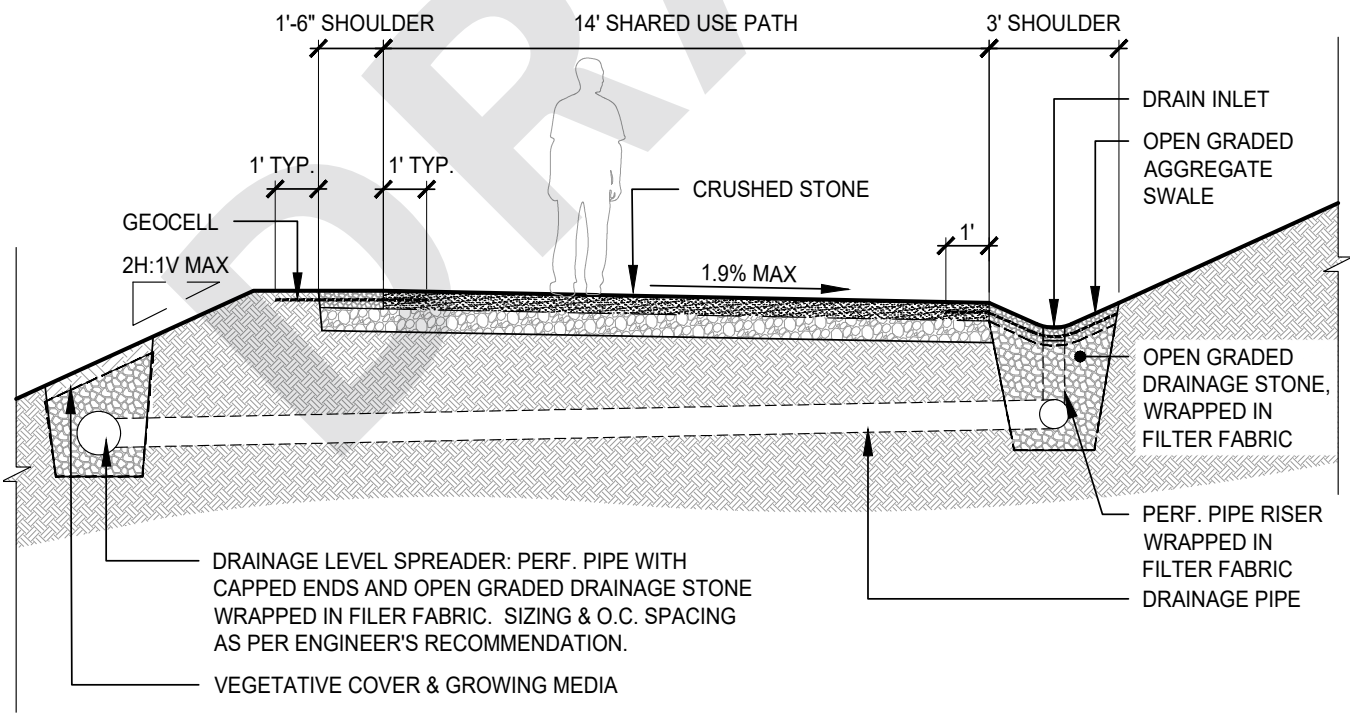






#### **DRAINAGE ON CROSS SLOPE DIAGRAM**

- 1). Open-graded aggregate swale with perforated pipe.
- 2). Perforated pipe riser and inlet.
- 3). Grade Reversal
- 4). Level Spreader Outlet with vegetative cover



#### **MAIN TRAIL IN-SLOPE SECTION**

NOT TO SCALE



## MAIN TRAIL ON GRADE: DRAINAGE AND EROSION CONTROL

Drainage and erosion control strategies are essential for maintaining a firm, stable, accessible main trail, as well as minimizing erosion impacts to adjacent landscapes. Best practices for trail alignment and layout follow the natural contours of the land to reduce overall cut and fill or stretches of elevated trail. Because the terrain of the Fjord Trail landscape varies greatly and is steep along some stretches, strategies and guidelines for building on side slopes are highlighted in this section.

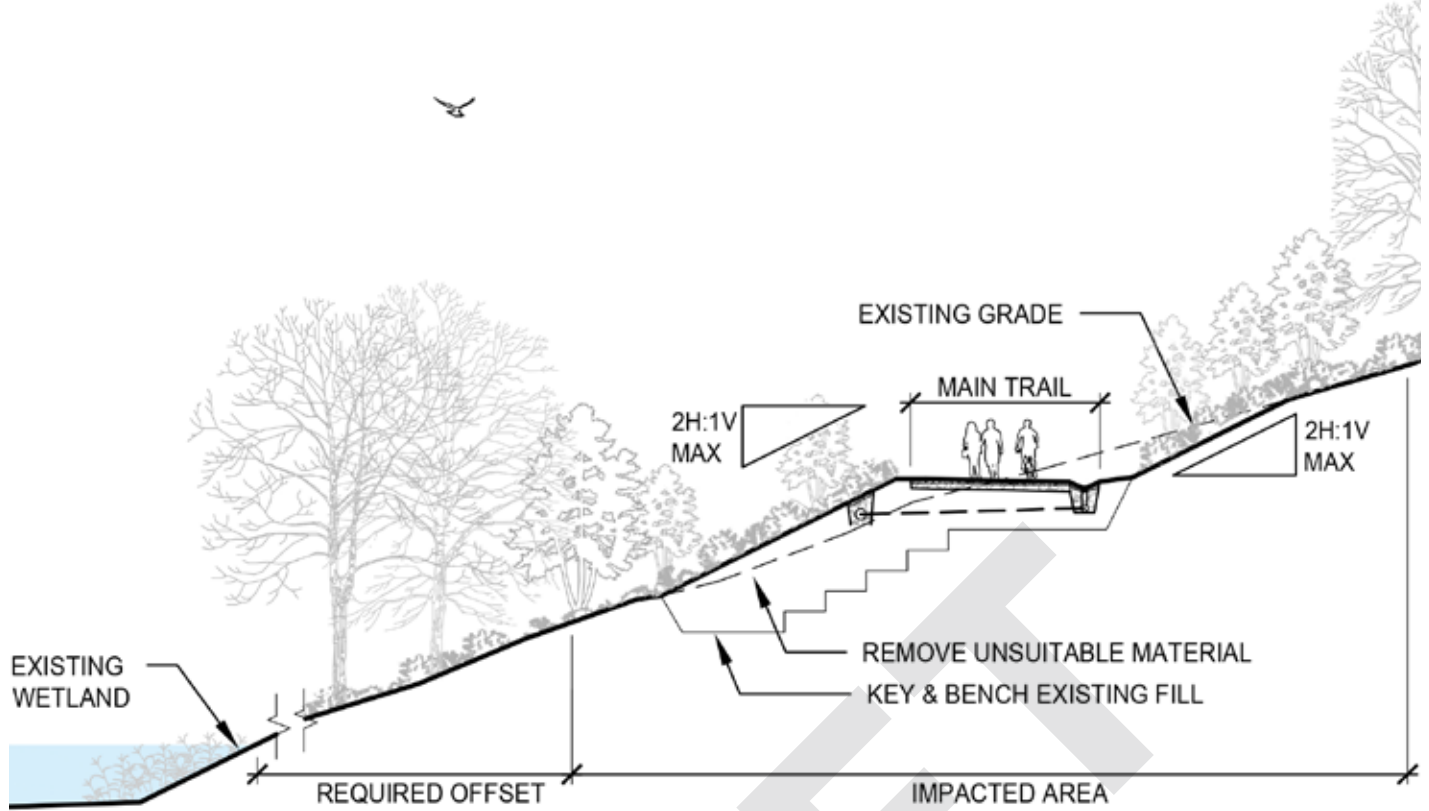
### **Grading & Drainage**

- Maintain a maximum cross slope of 1.9%.
- Where trail is sited on relatively flat ground, crown trail profile.
- When siting on steep side slopes, slope trail profile inward.
- Along steep side slopes provide minimum 36 in. shoulder to function as a swale to collect runoff at the base of the slope. At low points, water will be directed through a pipe below the trail and out through a “spreader.” A “spreader” distributes outlet flow across a greater surface area and reduces erosion.
- A series of high and low points where water can flow along the swale and collect is described as “rolling grade” or “grade reversal.” Use this technique to maintain sustainable natural surface trails. (US Forest Service 2007).

### **Erosion Control**

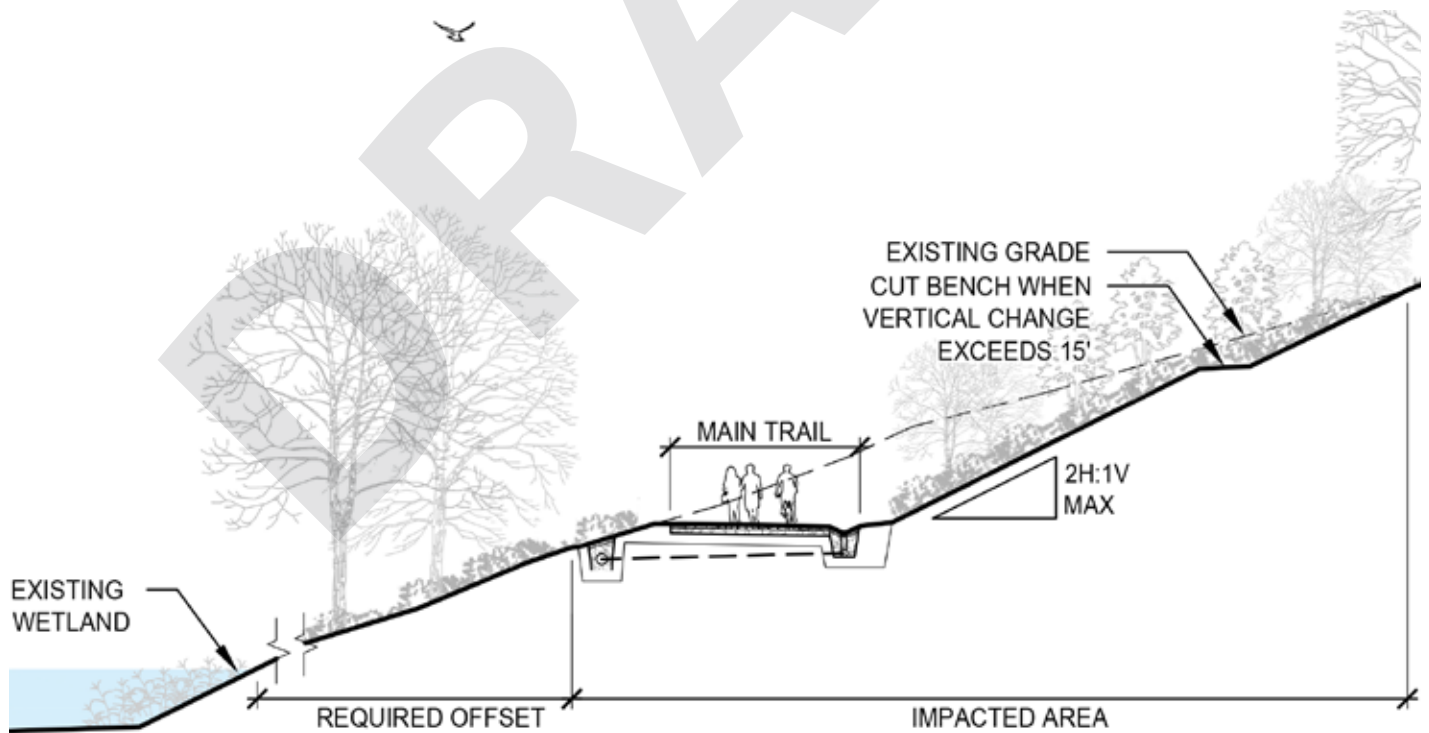
- The “rolling grade” technique (see above) reduces erosion along the Main Trail.
- **Balance Cut and Fill:** When building on moderately steep side slopes, a balanced cut fill method is preferred (subject to site level review by project engineer). Limit slope to recommended maximum 2:1 for both cut and fill slopes in order to tie into the existing grade.
- **Benched Trail:** Where a side slope is too steep to successfully balance cut fill with a 2:1 slope, use a “benched trail” or all cut method technique. The trail profile is completely cut into the existing grade and is retained through stacked boulder walls or a maximum 2:1 slope. If deemed feasible for reuse, the excess fill resulting from the benched trail method could be used in other areas of the site to elevate the Main Trail (i.e. out of sea level rise zone) and reduce the overall amount of fill imported from an off-site location.

In all cases, the proposed grading along the trail should consider site specific constraints, adjacencies, and allowable limits of disturbance in the selection of the most applicable construction methods.



#### **BALANCE CUT / FILL**

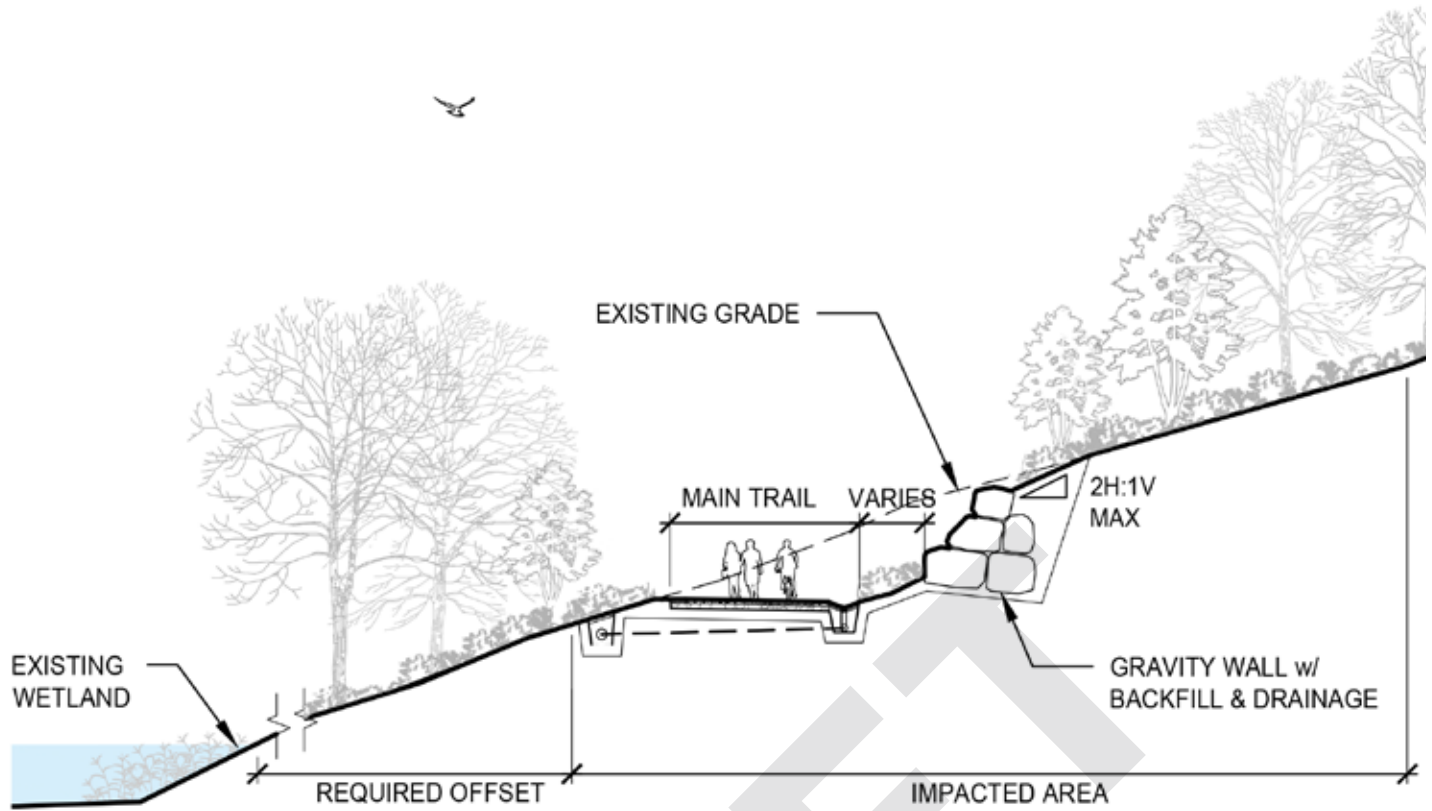
*Applicable in areas where existing cross slopes do not exceed 2:1, and as permitted by geo-technical analysis.*



#### **BENCHED TRAIL - NO WALLS**

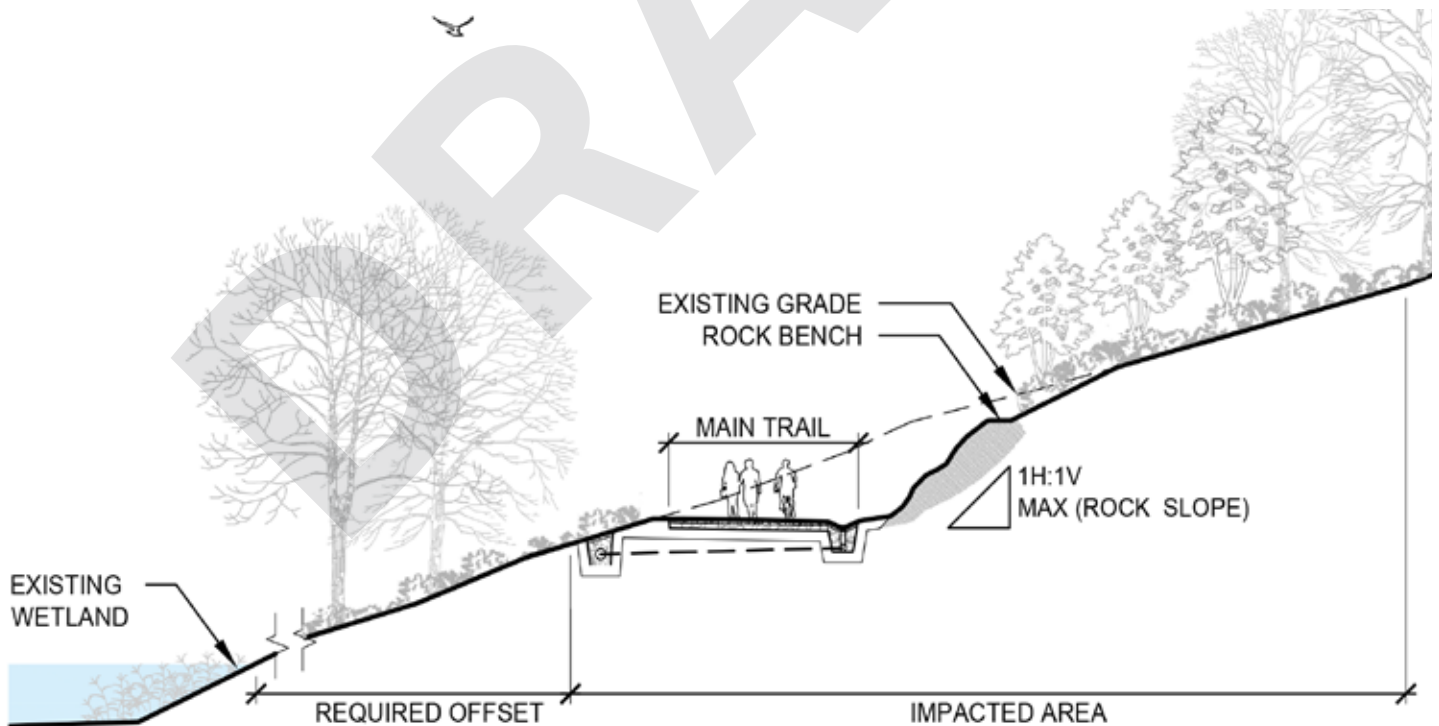
*Applicable in areas where existing cross slopes exceed 2:1, and where upland disturbance allows.*





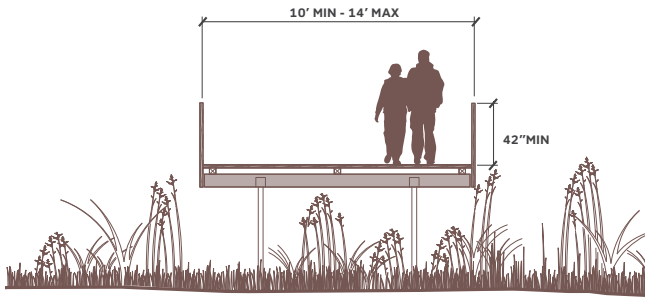
#### **BENCHED TRAIL - GRAVITY WALL**

*Applicable in areas where existing cross slopes exceed 2:1, and where upland disturbance must be limited.*



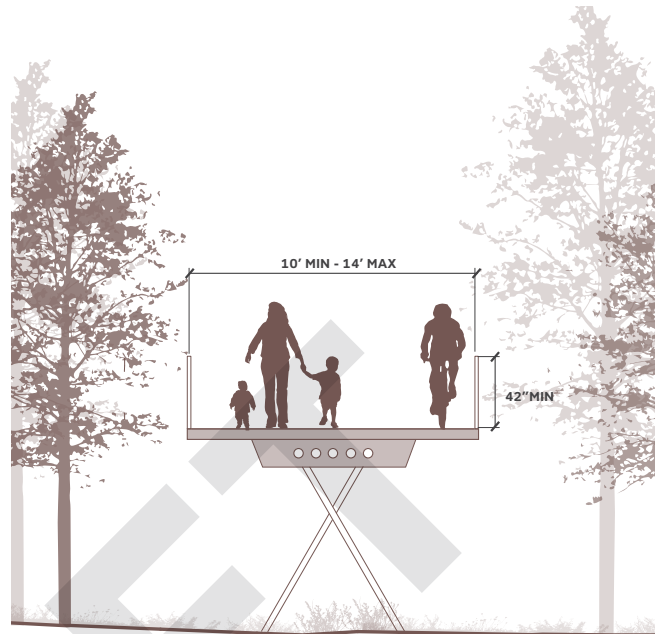
#### **BENCHED TRAIL - ROCK SLOPE**

*Applicable in areas of surficial bedrock as permitted by geo-technical analysis.*



#### **SLIGHTLY ELEVATED TRAIL**

*Slightly elevated trails avoid wetter conditions, minimize impacts in sensitive areas and to surface hydrology, and do not impede small wildlife movement.*



#### **VERY ELEVATED TRAIL**

*Very elevated trails are selectively used to mediate steep grade changes and provide a unique forest canopy experience.*



#### **ELEVATED TRAIL MATERIALS**

*Stainless steel mesh for guardrail and glulam wood deck*



# MAIN TRAIL: ELEVATED TRAILS

Elevated trails are selectively used to mediate between steep grade changes, so the Main Trail meets accessibility requirements. Elevated trails are part of the Main Trail and occur in stretches upland from the river and out of the 1% annual chance storm flood with 75 in. of sea level rise. See **Shoreline Trail** for elevated trail design guidelines in the floodplain.

## DESIGN STRATEGIES / ELEMENTS

- Elevated trails provide accessible paths that comply with ORAR standards (defined in AGODA).
- Elevated trails are constructed of prefabricated parts including piers, girders, decking, and guardrails.
- The design of the elevated trail is responsive to both the technical requirements of its location and the material language of the region the trail is found within.
- The structural system including the decking of the elevated trail sections is responsive to the site-specific technical requirements of each section.
- Spacing of structural piers or columns will be coordinated to meet accessible landing requirements.
- A consistent 42 in. guardrail with an integrated 36 in. handrail is required on both sides of elevated trail to meet code requirements for fall heights greater than 30 in.
- Successful water management is essential to the life expectancy of the elevated portions of the trail. Elevated sections will be designed to manage water away from the structure prolonging life expectancy and meeting safety requirements established by stakeholders, specifically Metro-North Railroad (MNR).
- As much as possible, all elevated trail elements will be prefabricated off site and assembled on site.

## MATERIALS AND TYPICAL DETAILS

- The typical elevated trail deck is consistent and constructed of wood timbers or glulam laid perpendicular to length of the section, finished with a series of kerfs cut into the surface for enhanced grip.
- Guardrails include stainless-steel posts or stanchions connected by a continuous top rail and stainless-steel mesh infill. The mesh infill is non-scalable and has a minimum cell dimension of 2"x 2" and a maximum opening or gap of 4" typically and 2" at all MNR crossing locations.

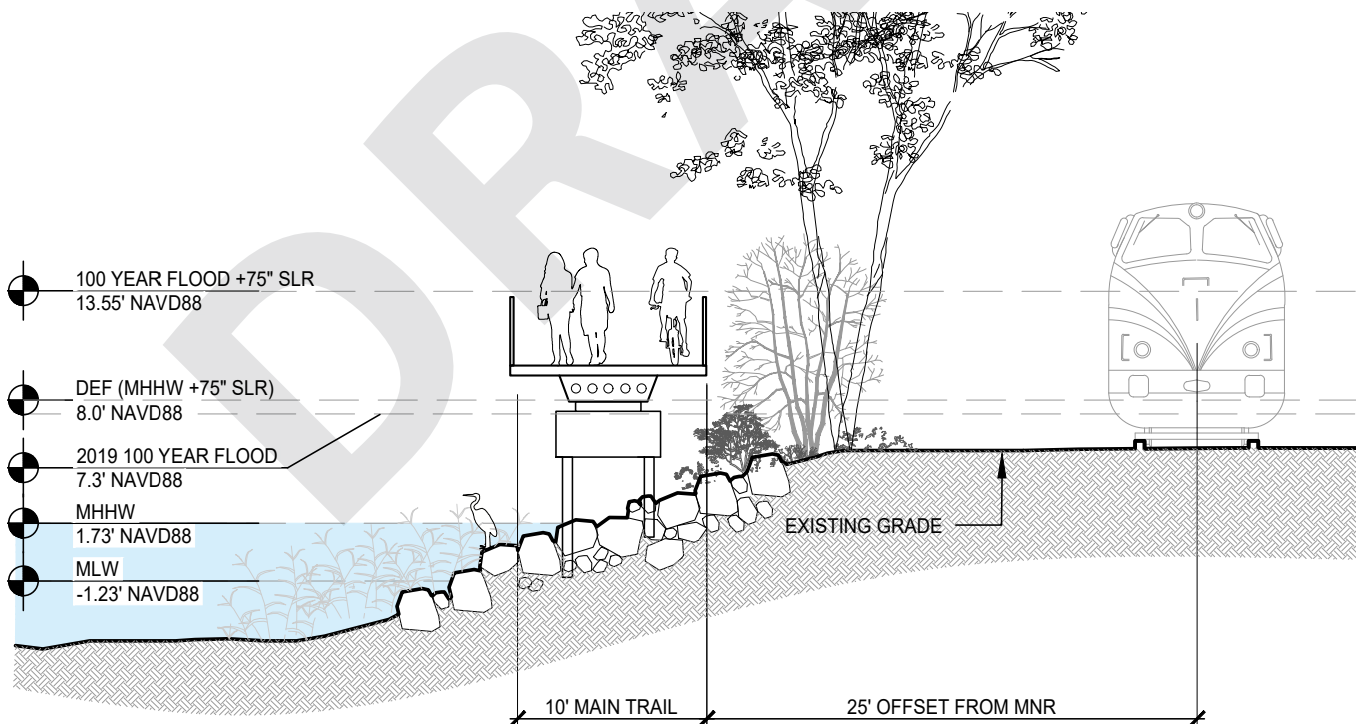
## MAINTENANCE CONSIDERATIONS

- The elevated trail design allows for ease of safety and maintenance inspections in keeping with best practices and regulatory requirements. All bolted and welded connections to be visible for inspection.
- Elevated trail sections are designed to allow for annual repair and maintenance due to use.
- Anti-graffiti coating to be utilized when and where feasible on substantial structural members that are accessible by pedestrians.
- Decking to be sized for wearing without affecting structural performance.
- Deck and guardrail elements are designed to be easily replaced and maintained without trained labor or heavy equipment.
- Materials will be finalized based on based on outdoor performance and ability to hold up over time.



### PRECAST CONCRETE PLANKS

This material will maintain the spacing and rhythm of the wood of elevated trails, but is more durable and can withstand the harsh conditions of the Hudson River.



### SPACE CONSTRAINTS

Limited space to accommodate required offsets from Metro-North Railroad will require an elevated path.



# MAIN TRAIL: THE SHORELINE TRAIL

The Shoreline Trail is an approximately 1.5 mile stretch of the main trail located between the Hudson River shoreline and Metro-North Railroad tracks, extending from Dockside Park to Breakneck Ridge.

## DESIGN STRATEGIES / ELEMENTS

- Offset edge of Shoreline Trail closest to the Metro-North tracks 25 ft from the centerline of the nearest tracks, as required by Metro-North.
- The recommended minimum width of the shoreline trail is 10 ft, maintain a clear, unobstructed path.
- Provide 42 in. guardrail on both sides of the shoreline trail to meet code requirements for fall heights greater than 30 in. and keep trail users on the trail.
- Avoid large, mature tree clusters. Shoreline Trail alignment should weave around these clusters.

## MATERIALS AND TYPICAL DETAILS

- All materials specified for the Shoreline Trail must be sustainable and durable to minimize maintenance and withstand the harsh seasonal conditions of the Hudson River.
- Match material color, tone, and texture as closely as possible to Main Trail on grade and elevated trail materials.
- The recommended decking material for the shoreline is pre-cast concrete planks. Match or replicate the scale of planks to the scale of the wood planks at elevated trails.

## ADDITIONAL CONSIDERATIONS

- Additional coordination with state agencies and focus groups is required to advance the shoreline trail design and alignment.
- The alignment of the shoreline trail should avoid footprints below Mean Higher High Water (MHHW). If absolutely necessary, the footprint below MHHW must be minimized and mitigate any displaced habitat.
- The shoreline trail should be structurally designed to support lightweight maintenance vehicles or vehicles for emergency access.
- Sound attenuation measures are recommended to mitigate the noise from the adjacent railroad.
- Explore opportunities for prefabricated components to improve constructability and reduce project costs.

### **SHORELINE TRAIL**

*The shoreline trail will weave in and out of mature tree clusters to minimize impacts on existing vegetation and create a varied shoreline experience.*











**CORTEN STEEL**  
Structural steel for bridges



**CORTEN STEEL WITH GLULAM**  
Material for super structure and deck



**GLULAM**  
Material for deck of bridges and elevated trails



**STAINLESS STEEL MESH**  
Provides guardrail and track protection



# MAIN TRAIL: BRIDGES / MAJOR CROSSINGS

There are several bridges along the Hudson Highlands Fjord trail. These include two (potentially three) Metro-North Railroad crossings, one major stream crossing, and a series of ravine crossings. Each bridge will consist of primary elements, the deck, the structure, guardrails, and screens for MNR track protection. Bridges will primarily serve a pedestrian and emergency access function except for the Breakneck Bridge, which requires H-10 truck passage.

## DESIGN STRATEGIES / ELEMENTS

- The structural system for each bridge is unique and is defined by the specific design criterion and site conditions.
- All bridges will utilize a consistent material language, steel structure, a wood deck, and steel guardrails.
- Bridge guardrails, handrails and MNR screens are a continuation in form and materiality of the trail guardrail rising up beyond the 42 in. guardrail minimum to the required heights per MNR / DOT specifications and returning to guardrail height once clear of the MNR impact zone. The handrail will remain a consistent 36 in.
- As much as possible, all bridge elements shall be prefabricated off site and assembled on site.
- Successful water management is essential to the life expectancy of the bridge. Bridges will be designed to manage water away from the structure prolonging life expectancy and meeting safety requirements established by stakeholders, specifically MNR.

## MATERIALS AND TYPICAL DETAILS

- The primary structure of all bridges and major crossings will be comprised of steel and mass timber elements.
- Bridge decks are constructed of glulam laid perpendicular to length of the bridge and will be finished with a series of kerfs cut into the surface for enhanced grip.
- Guardrails will include stainless-steel posts

or stanchions connected by a continuous top rail and stainless-steel mesh infill. The mesh infill will be non-scalable and have a minimum cell dimension of 2"x2" and a maximum opening or gap of 4" typically and 2" at all MNR crossing locations.

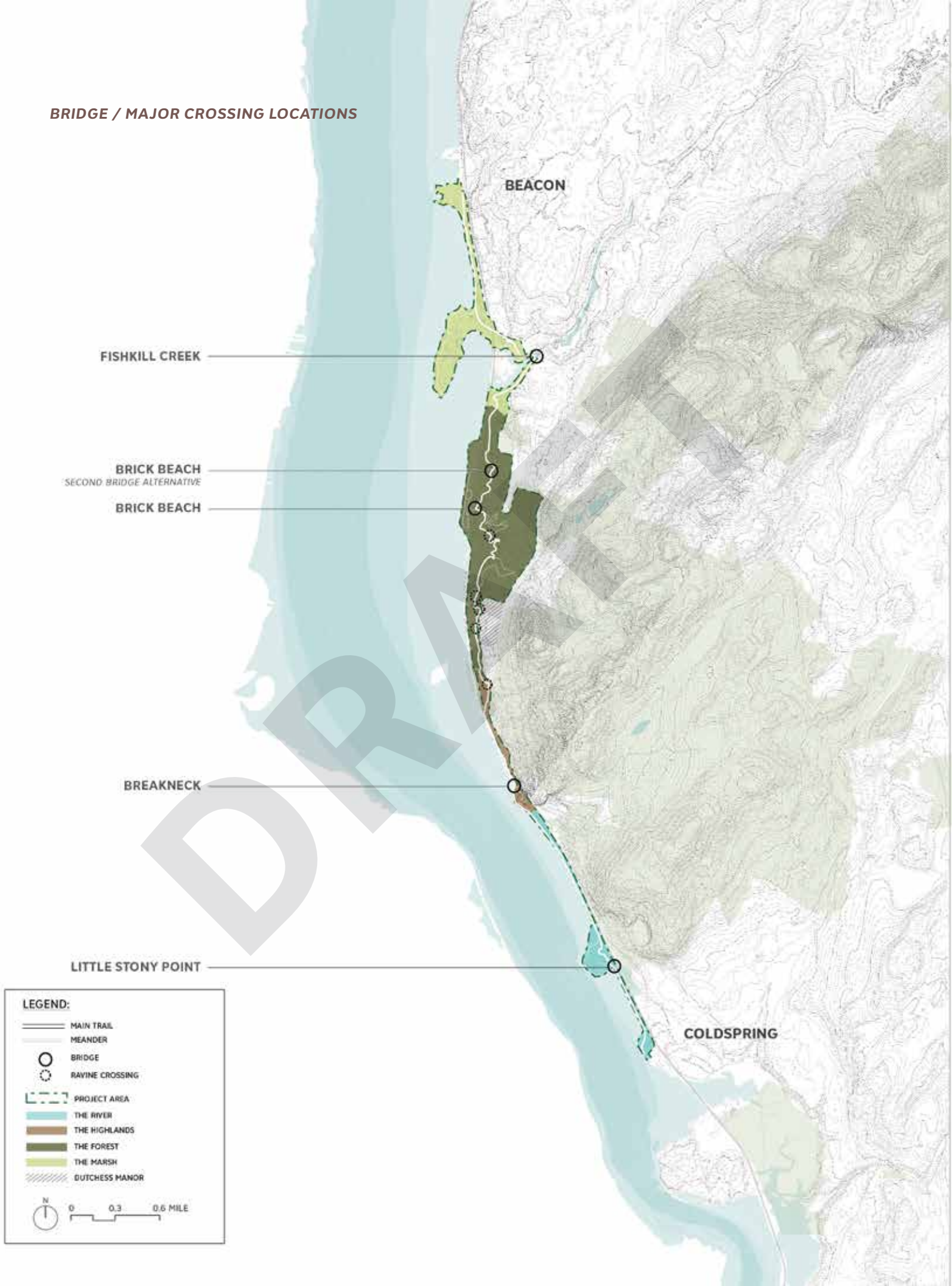
## MAINTENANCE CONSIDERATIONS

- The Bridge design will allow for ease of safety and maintenance inspections in keeping with best practices and regulatory requirements. All bolted and welded connections will be visible for inspection.
- Bridges will be designed to allow for annual repair and maintenance due to use and weathering.
- Anti-graffiti coating will be utilized when and where feasible on substantial structural members that are accessible by pedestrians.
- Decking will be sized for wearing without affecting structural performance.
- Deck and guardrail elements are designed to be easily replaced and maintained without trained labor or heavy equipment.

## ADDITIONAL CONSIDERATIONS

- The Fjord Trail bridges meet accessibility requirements for Outdoor Recreation Access Routes (ORARS) as defined in The United States Access Board's *Final Accessibility Guidelines for Outdoor Developed Areas* (AGODA).
- All walking surfaces in this zone will comply with AGODA requirements for surface texture and cross slope.

**BRIDGE / MAJOR CROSSING LOCATIONS**







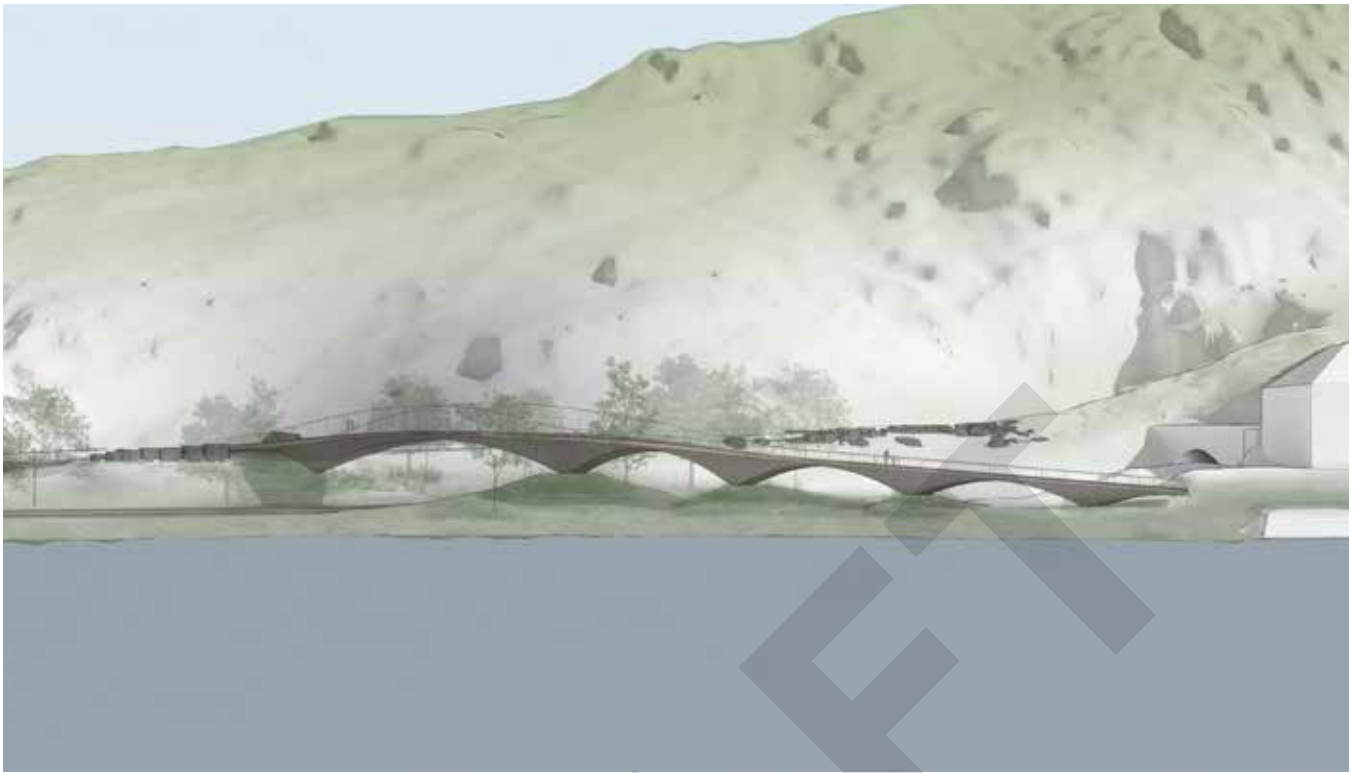
#### **FISHKILL CREEK**

*A major crossing is proposed at Fishkill Creek.*



#### **BRICK BEACH**

*To access Brick Beach, a major bridge is proposed to span the Metro-North Railroad. An alternative route for this area proposes two bridge crossings.*



**BREAKNECK BRIDGE**

*View from Hudson River looking east*



**BREAKNECK BRIDGE**

*Aerial of Breakneck Bridge and Porch looking south*





**BREAKNECK BRIDGE**

View from elevated trail looking south



**BREAKNECK BRIDGE**

View from Porch looking northwest







## MEANDERS

In addition to the Main Trail, meanders expand the Fjord Trail path system and unlock destination-based experiences. Refer to this section to locate meanders and identify the design guidelines for their **accessibility and use parameters, types and materials**, and **intersections** - moments when the meanders meet the Main Trail.

## FJORD TRAIL MEANDERS





Meanders, or spur and loop trails, offer destination-based moments of immersion and escape into the Hudson Highlands landscape. Meanders can be small, quick departures from the main trail to capture a view or access the river's shore, or longer, rambling walks that unlock unique experiences and create new pathways to traverse the Fjord Trail landscape.

Meanders are pedestrian-only and offer a wider diversity of hiking experiences. Because each meander is a unique experience, the material qualities and details of the meanders are not consistent across the Fjord Trail but change with the landscape they move through.

Each meander, from the River to the Marsh, has been carefully sited to offer a diverse range of experiences that are unique and different from the main trail. Some meanders bring people to the water; others lead visitors to spectacular views and vistas. Below is a list of meanders and the map (left) shows their locations along the Fjord Trail.

## THE RIVER

- **Dockside:** The Dockside meander brings people to the edge of the water and the spectacular views down the Hudson.
- **Fair Street:** The Fair Street meander is an alternate route for people to travel from Cold Spring to Little Stony Point, on improved sidewalks and wayfinding along Fair Street.
- **North Beach (at Little Stony Point):** The North Beach meander connects from the main trail, on the upland portion of Little Stony Point, down to the north beach stretch and its destinations and trail banks including the Driftwood Play Zone and Serene Beach.
- **Shoreline meander (at Little Stony Point):** The shoreline meander is an accessible path that leads people along the shoreline of Little Stony Point.
- **Fjord Overlook:** At Little Stony Point, an enhanced existing trail connects the entrance of Little Stony Point to the vista at the top of the rocky outcrop.

## THE HIGHLANDS

- **Breakneck Ridge Walk:** The Breakneck Ridge Walk links the Fjord Trail to the relocated trailhead of the nationally popular Breakneck Ridge hike.

## THE FOREST

- **Pollepel Overlook:** Just off the main trail, the Pollepel Overlook is a small spur that emerges at a magical view of Pollepel Island and Bannerman's Castle.
- **Bluff Walk:** The Bluff Walk traces the contours and slope of a bluff along the Hudson. The walk brings people to panoramic views up and down the Hudson.
- **Brook Walk:** The Brook Walk is a longer meander that follows Wades Brook, ascends a steep slope with a view of Wades Brook valley and a vista to the river, then descends back down a boulder scramble back to the main trail.
- **Canopy Trail (Notch):** The Canopy Trail connects people from the Notch entry to the main trail. This trail follows an existing carriage road alignment, then traces a ridge as it brings people to Notch.
- **Brick Beach:** This meander links the unique brick beach shoreline to the forest over the Metro-North Railroad. This meander has two alternatives: (1) a single bridge crossing over Metro-North that connects to an elevated boardwalk loop. (2) two bridge crossings that land in the form of an elevated trail along the shoreline. The meander in this section is elevated to be above sea level rise to persist as the brick beach landscape slowly becomes intertidal.

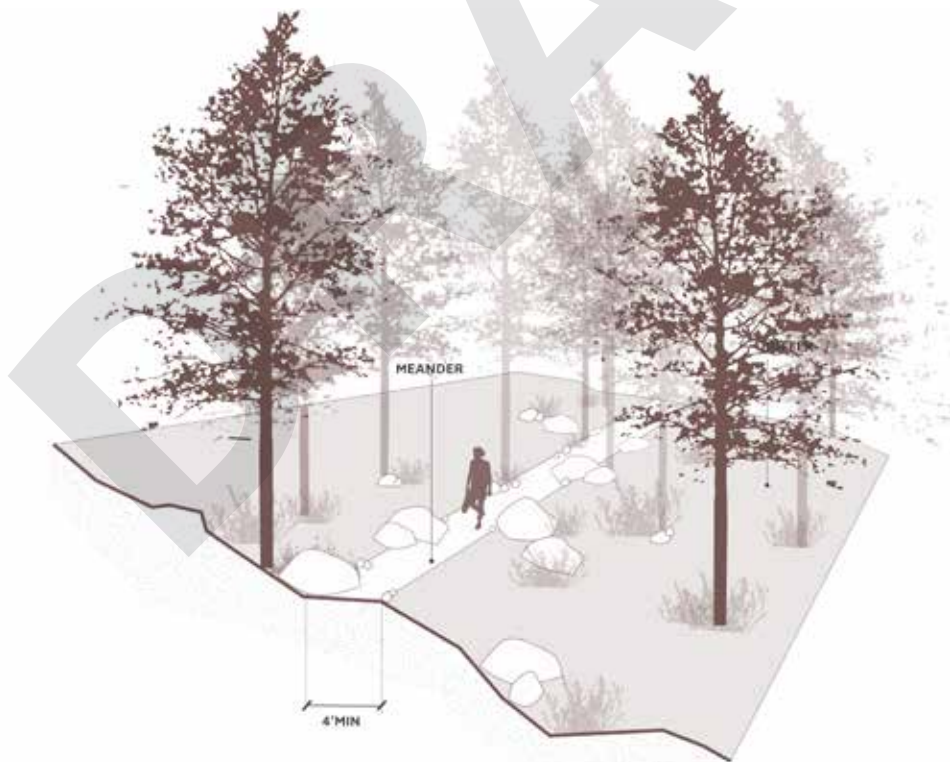
## THE MARSH

- **Fishkill:** The Fishkill Meander is an elevated path bringing people closer to Fishkill Marsh, immersing Fjord Trail users in the ecology of the marsh.
- **Dennings Point:** This meander, an existing trail, will be enhanced and accessible, leading people from the main trail to the tip of the peninsula.



#### **ACCESSIBLE MEANDER**

Minimum clearances and dimensions are required to meet accessibility requirements.



#### **ADVENTURE MEANDER**

These meanders traverse rougher, wetter, or more challenging terrain.



# MEANDER ACCESSIBILITY AND USE

Meanders are categorized into two types, accessible and adventure. Accessible meanders traverse flatter terrain and adhere to accessibility requirements for trails; adventure meanders are not accessible and are more challenging hikes that spur off the Main Trail.

## ACCESSIBLE MEANDERS

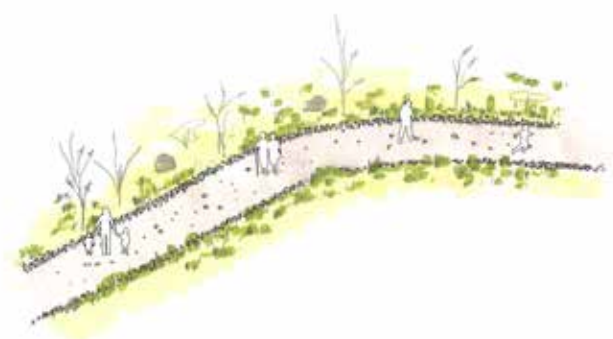
Where accessibility can be achieved without sacrificing the experience, views, or ability to reach destination points along them, meanders should be accessible and meet the accessibility standards for trails as described in *The Final Accessibility Guidelines for Outdoor Developed Areas* (AGODA).

- The width of the meander ranges from 4 – 8 ft. The trail surface must be firm and stable. If the meander is less than 60 in., provide passing spaces that meet the AGODA standards.
- Provide positive drainage while minimizing disturbance to adjacent landscape. Refer to the *US Forest Service 2007 Trail Construction and Maintenance Notebook* for standards and guidelines on drainage and erosion control methods.
- Provide minimum 36 in wide and 60 in long resting area that complies with the guidelines in AGODA.
- Maintain a minimum of 8 ft overhead clearance on accessible meanders.

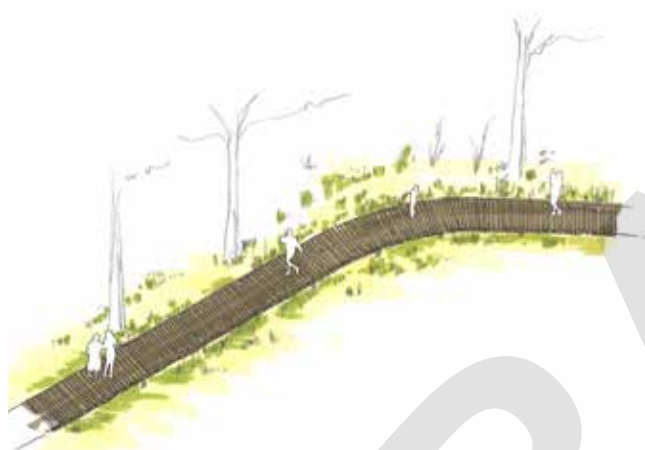
## ADVENTURE MEANDERS

Where meanders are more challenging, the path carefully follows the existing landscape to minimize disturbance.

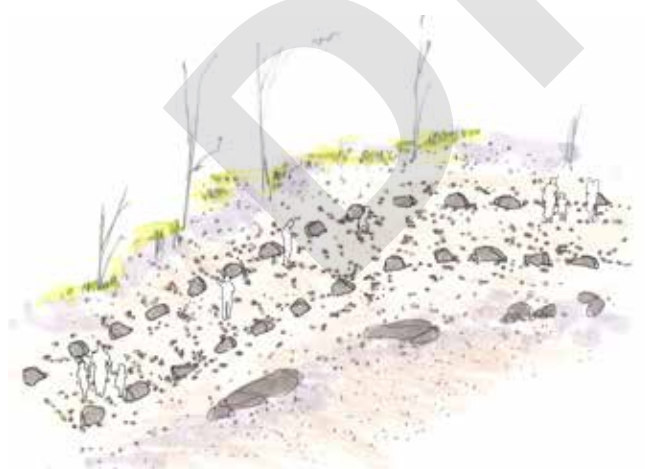
- Provide a minimum 4 ft wide trail tread. Where obstructions impede the trail width, ensure the area can be safely passed by one hiker.
- Provide positive drainage while minimizing disturbance to adjacent landscape. Refer to the *US Forest Service 2007 Trail Construction and Maintenance Notebook* for standards and guidelines on drainage and erosion control methods.



**ACCESSIBLE GRAVEL PATH**



**LOW BOARDWALK**



**FRAMED WITH STONE**





# MEANDER TYPES & MATERIALS

Meanders are site specific spurs off the main trail, and their materials and typical detail design guidelines change with each landscape zone.

## THE RIVER

River meanders bring people to the river's edge, and their materials evoke the dynamism of the Hudson River. River meanders must be resilient to damage from ice and flooding and easy to maintain, repair, and replenish, while accommodating anticipated high user volume.

### Accessible Gravel Path

- Paving materials are crushed stone and must maintain a firm and stable surface to meet accessibility standards. Crushed stone color and tone to match stone/gravel of river's edge.
- Where meander is closer to the steep, rocky outcrop at Little Stony Point, provide larger boulder buffers to keep trail users back from the edge.

### Low Boardwalk

- Where possible, maintain a maximum of 30 in. above grade to minimize / eliminate need for guardrails.
- Structural support systems to minimize landscape impact.
- Low boardwalks, where accessible, are comprised of anti-slip wood decking perpendicular to the direction of travel. For adventure meander boardwalks, the meanders may be larger wood plank boardwalks (pictured left) parallel to the direction of travel.

### Framed with Stone

- Larger boulders to match the color and tone of stone of the surrounding landscape line the meander path. The boulder size should be large enough that movement is minimized when flooded or exposed to ice flows. This treatment is recommended for use in areas subject to regular inundation and ice exposure.



EXISTING TRAIL AT LITTLE STONY POINT



**STONE STEPS**



**ROCKY TRAILS**



## MEANDER TYPES & MATERIALS: THE HIGHLANDS

All materials specified for meanders in the Highlands must be durable enough to withstand high volumes of pedestrian traffic.

### **Stone Steps**

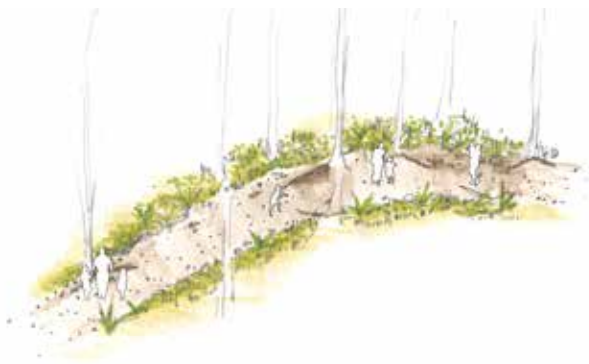
- Steps, used sparingly and applied irregularly, are monolithic slabs of granite with thermal, slip resistant treads and natural/ split face risers.
- Where trails meet steps, the recommended paving material is crushed stone intersected by moments of large, granite flags set flush to grade.

### **Rocky Trails**

- Paving is comprised of rough boulder tops buried flush to grade with irregular gaps between “units.” It is intended to define a legible trail for users to follow while still receding into the landscape.
- Retaining features along the meander are composed of irregular granite & quartzite boulders of varying sizes which echo the surrounding geology and Acid Talus Wood Slope ecological community.



**EXISTING STONE STAIRS AT BREAKNECK**



**EARTHEN PATH**



**LOG STEPS**



**BOULDER SCRAMBLES**



**SLIGHTLY ELEVATED BOARDWALKS**





## MEANDER TYPES & MATERIALS: THE FOREST

The forest zone has the greatest diversity of meanders, with many different potential experiences and materials.

### **Earthen Path**

- Where possible, use the material of natural grade, compacted as necessary to minimize erosion impacts.

### **Log Steps**

- Use steps reinforced with natural wood logs to traverse steep slopes
- Use wood from trail clearing procedures as log steps.

### **Boulder Scrambles**

- In a few locations, natural boulder scrambles can be incorporated into the meander experience.
- Supplement with stone boulders that match the tone and color of the existing rock to create a clear path of travel, stabilize as necessary and needed.

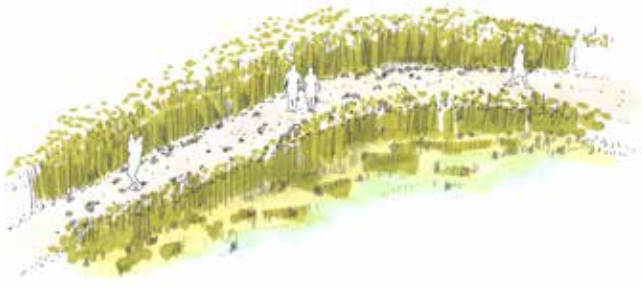
### **Slightly Elevated Boardwalk**

- Structural support systems must minimize landscape impact.
- Select boardwalk materials that are durable, resistant to weathering, and slip resistant as shoreline landscapes transition in sea level rise.
- Use guardrail on boardwalks through sensitive sites to keep users on the trail and off the landscape.

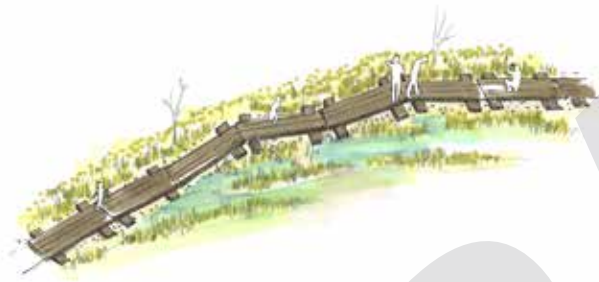


### **CARRAIGE ROAD AT NOTCH**

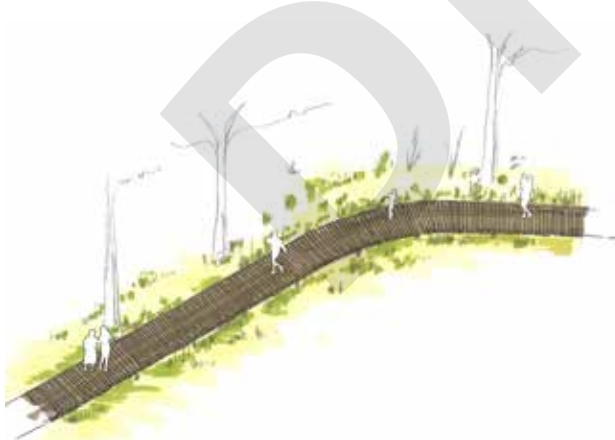
*The Canopy Walk utilizes the alignment of an abandoned carraige road.*



**IMMERSIVE PATH**



**ADVENTURE BOARDWALK**



**ACCESSIBLE BOARDWALK**





## MEANDER TYPES & MATERIALS: THE MARSH

The materials of the marsh meanders reflect the delicate and diverse landscape at Fishkill Marsh.

### ***Immersive Path***

- Compact natural grade to minimize erosion impacts. If natural grade meanders are not feasible, use crushed stone fines.
- Selectively restore vegetation at path edges, to reinforce the feeling of traveling through fine, delicate, but dense vegetation.

### ***Adventure Boardwalks***

- Low boardwalks, where possible maintain a maximum of 30 in. above grade to minimize / eliminate need for guardrails.
- Minimize impacts to landscape when selecting structural support system.
- Use larger, anti-slip wood plank boardwalks (pictured left) parallel to the direction of travel.

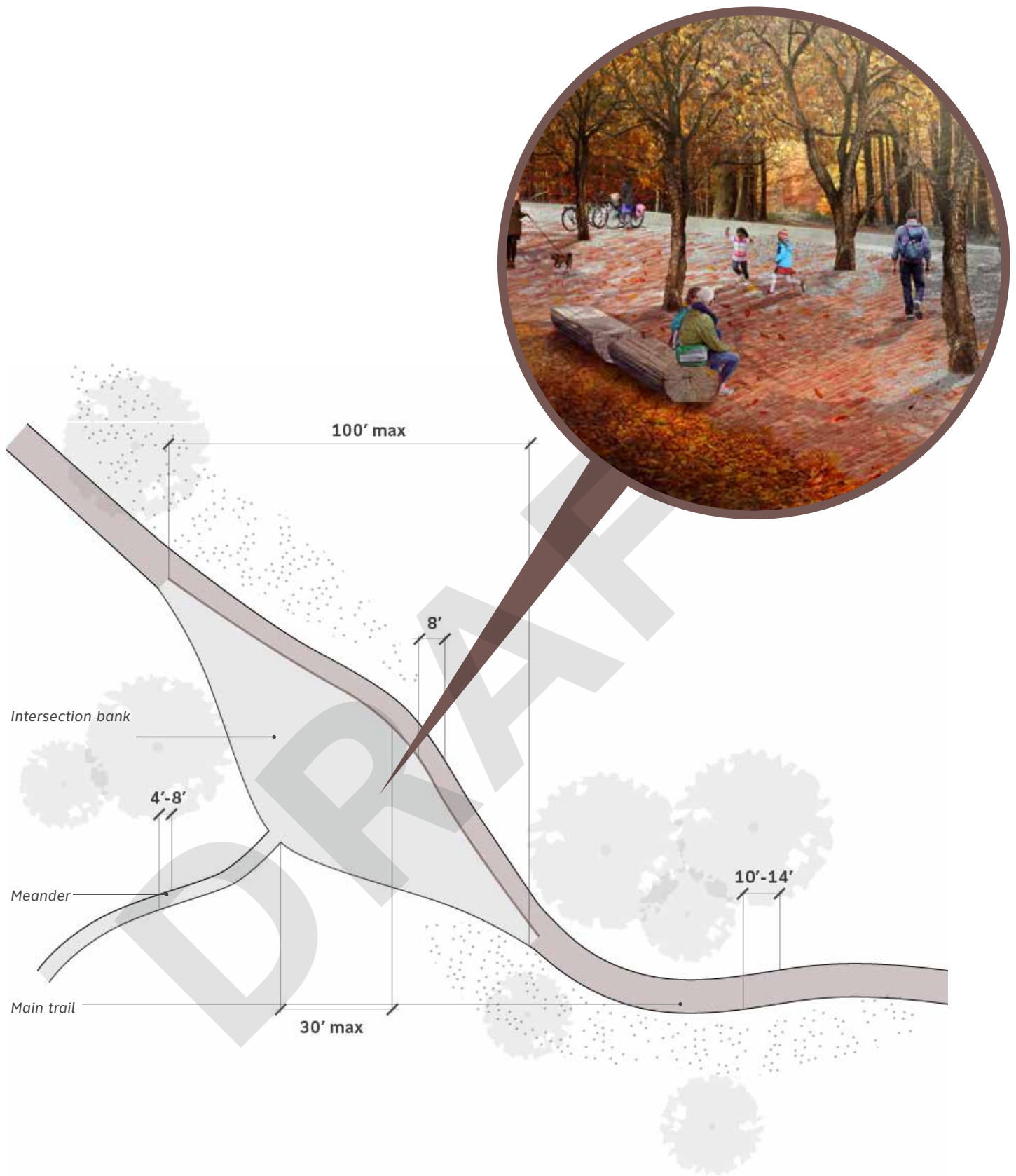
### ***Accessible Boardwalk***

- See adventure boardwalks regarding height above grade and structural support systems.
- Use anti-slip wood decking perpendicular to the direction of travel.



### ***INFORMAL BOARDWALKS***

*Like the existing boardwalk at Madam Brett Park, slightly elevated platforms will allow Fjord Trail users to experience the marsh and traverse wetter areas.*



**MEANDERS INTERRUPT THE MAIN TRAIL**

The intersection bank partially interrupts the Main Trail. A portion of the Main Trail remains uninterrupted to support bicycle traffic.



## MEANDER INTERSECTIONS

Where meanders intersect with the Main Trail, an expanded meander trailhead provides space for trail users to stop, orient, rest, and plan their hike. These trailhead moments partially interrupt the Main Trail, signaling to Fjord Trail users that a meander is ahead. Intersections provide seating, bike racks, and wayfinding elements, and the materials and details of the intersections respond to the surrounding landscape.

- Intersections are a maximum of 100 ft long and 30 ft wide. At intersections, the meander bank partially interrupts the Main Trail with the meander path material, bumping the trail out slightly and maintaining a minimum of 8 ft clear Main Trail material.
- Provide areas for groups to step off the trail and gather, as well as places to sit and rest.
- Refer to the **Signage & Wayfinding Section** for approach to sign placement and location at intersections.
- All meander intersections to have bike racks. See **Site Fixtures & Furnishings** section for guidelines.



#### **BOULDER SEATING**

*Image shows use of boulder seating elements in crushed stone paving.*



#### **STONE GRADIENTS**

*Crushed stone with gradients of aggregate sizes recommended for meander paving techniques.*



## MEANDER INTERSECTIONS: THE RIVER

- Pave river intersections with crushed stone matching the tone and color of the existing stone in the landscape. Stones should be smoother and appear weathered by the river.
- Provide planting pockets within intersections. Larger aggregate crushed stone to be used within the planting pocket and transition through a gradient to smaller aggregate stone for walking surfaces. Refer to **Planting & Restoration** section for guidance on plant families in the River.
- Provide larger boulders (matching color and tone of existing stone in the landscape) for seating. See **Site Fixture & Furnishings** guidelines for seating in the River.

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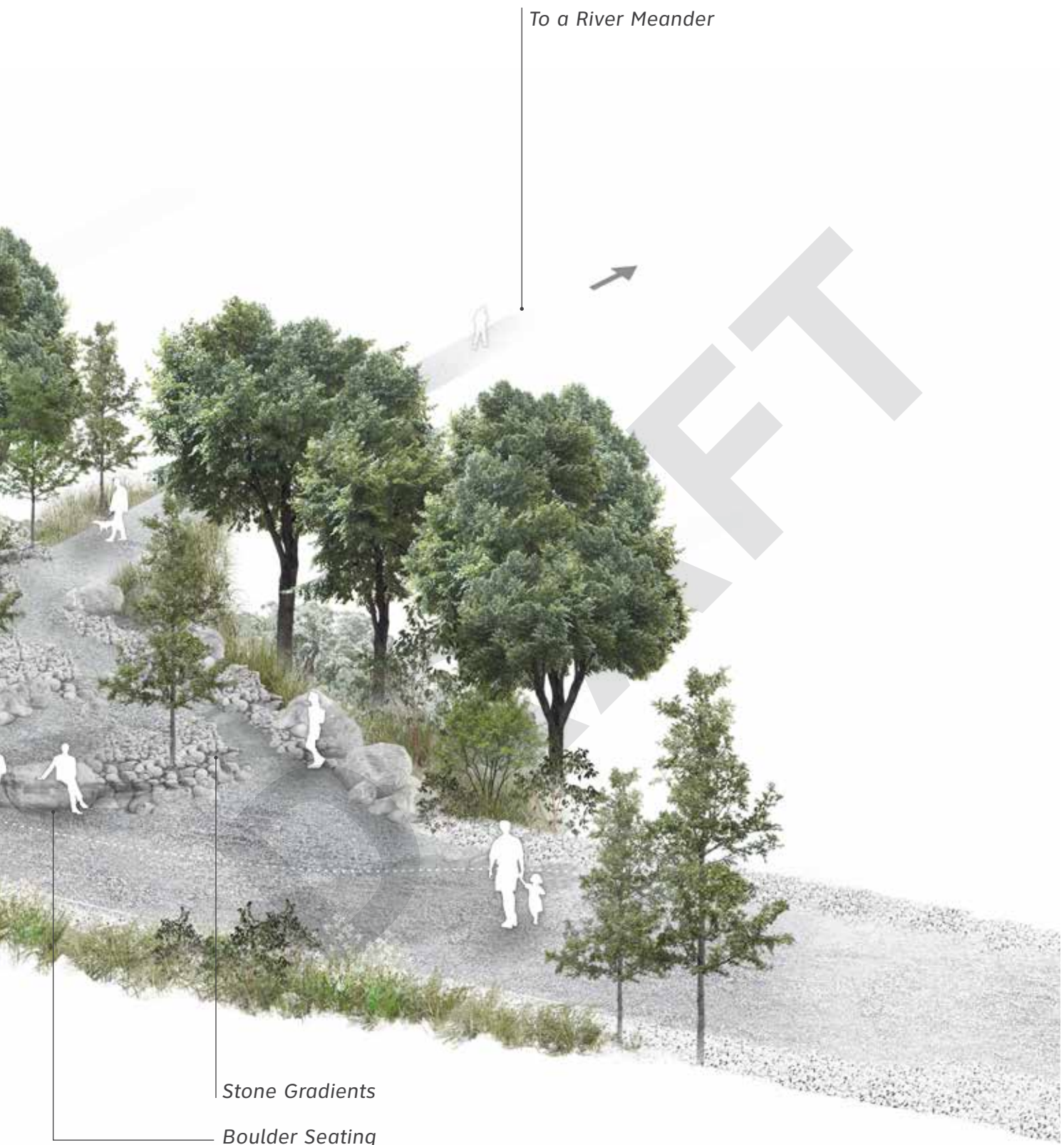
**TYPICAL MEANDER AND MAIN TRAIL  
INTERSECTION, RIVER ZONE**

Main Trail

Bike Racks











#### **BREAKNECK BRIDGE LANDING**

*The landing at Breakneck Bridge is a meander intersection.*



#### **LARGE GRANITE FLAGS, SET FLUSH TO GRADE**

*Images show examples of paving techniques at typical Highlands intersections.*

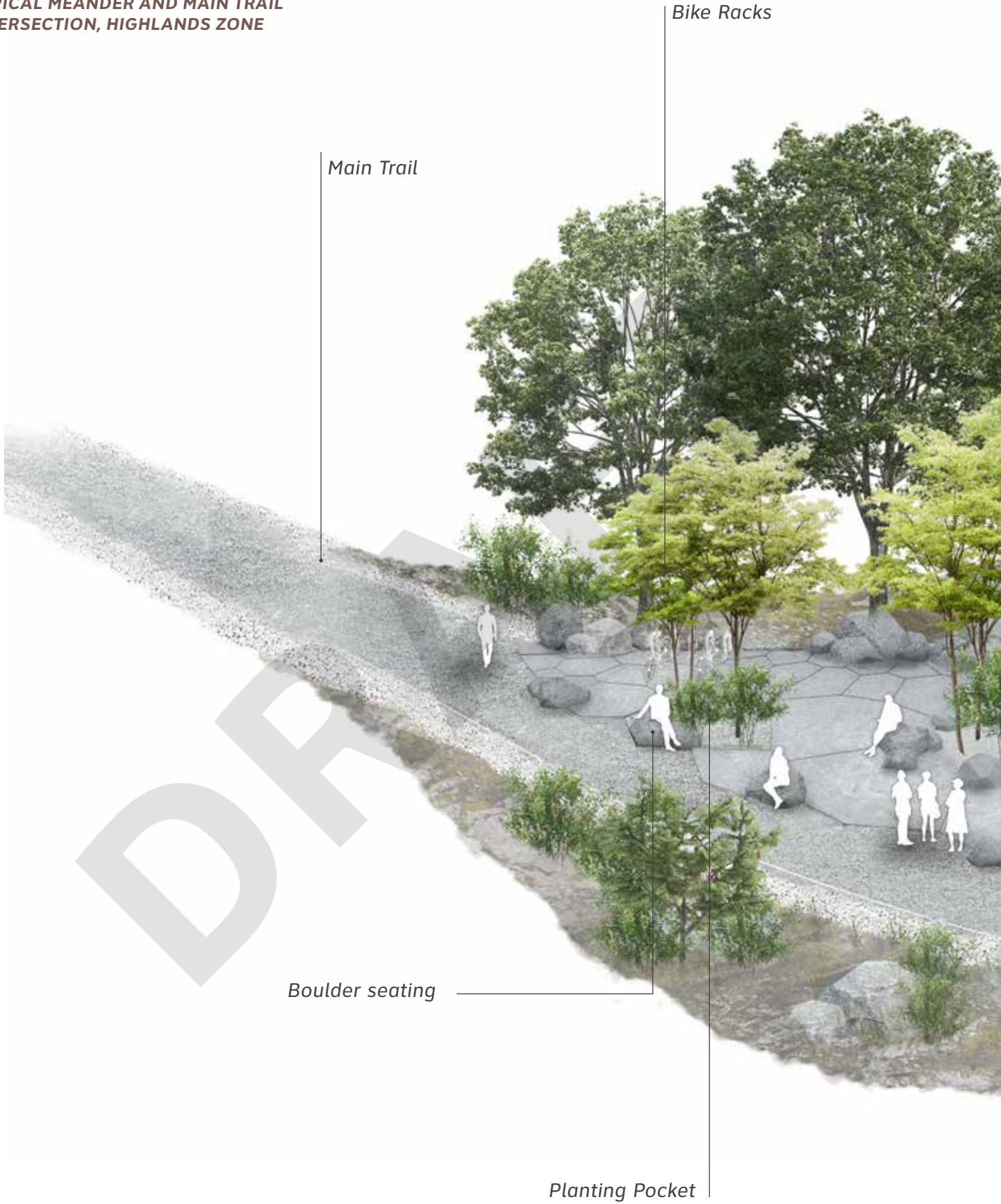


## INTERSECTIONS: THE HIGHLANDS

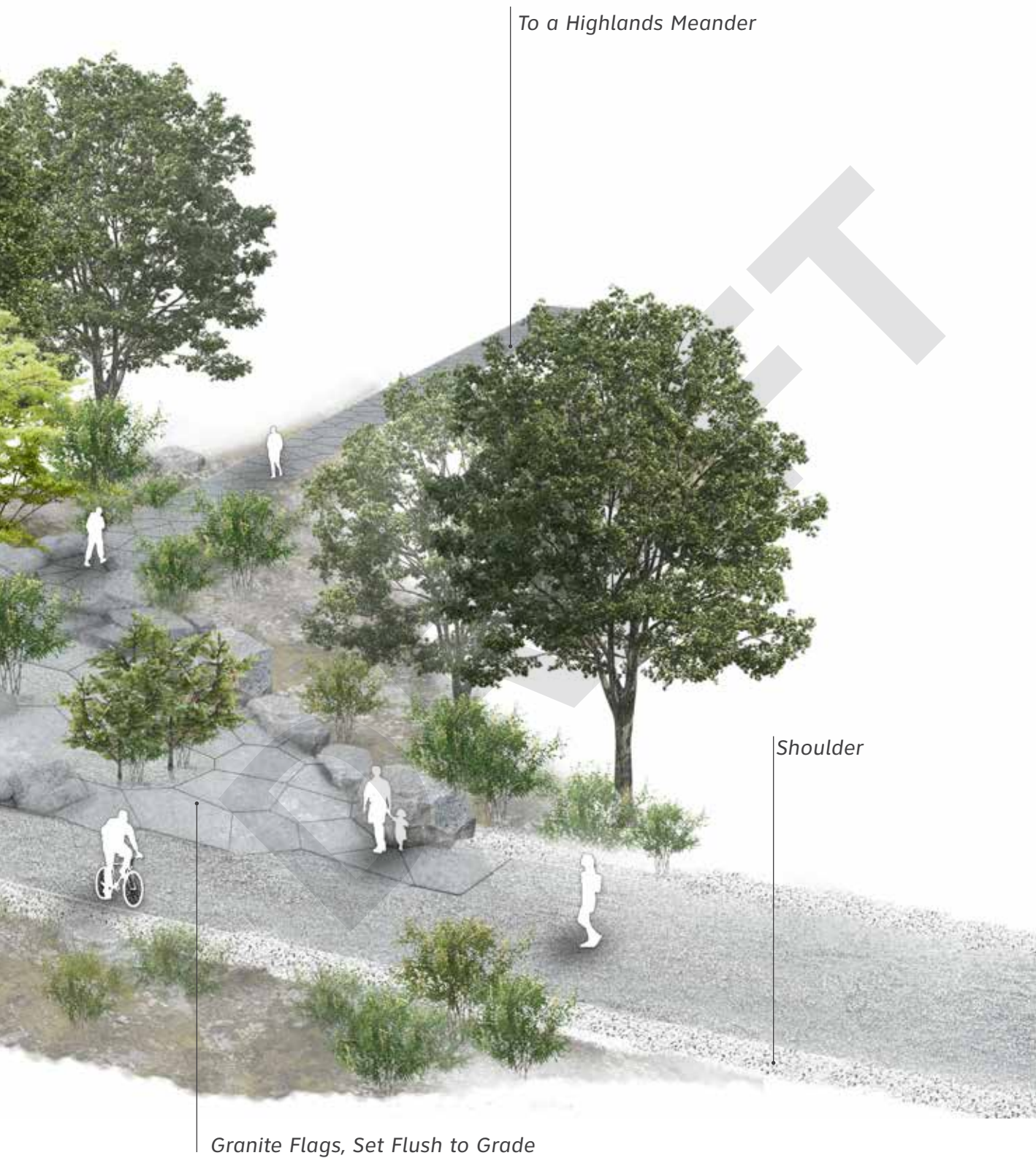
- Surface treatment consists of larger, granite flags that match the existing stone of Breakneck, set flush to grade.
- Provide planting pockets within intersections. Refer to **Planting & Restoration** section for guidance on plant families in The Highlands.
- Seating elements consist of larger boulders or quarry block. Refer to **Site Fixtures & Furnishings** for seating guidelines in the Highlands.

DRAFT

**TYPICAL MEANDER AND MAIN TRAIL  
INTERSECTION, HIGHLANDS ZONE**











#### **SAWN LOGS**

*The use of sawn logs defines the space of forest meander intersections.*



#### **BRICKS**

*Referencing the industrial legacy of brickmaking in the area, bricks are proposed at the intersections of the brick beach meander.*



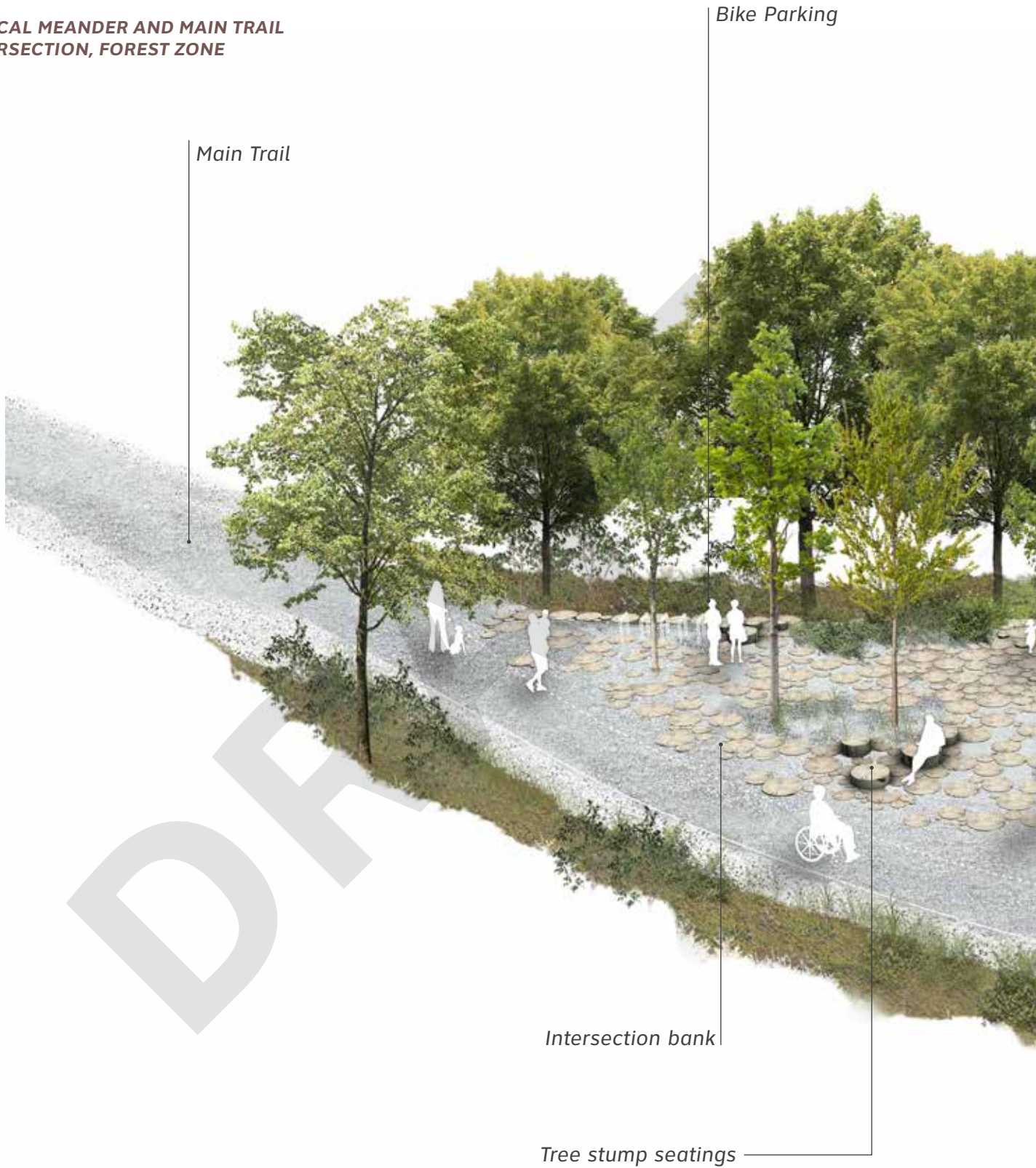
## INTERSECTIONS: THE FOREST

- Pavement at typical intersections consists of sawn wood log stumps set into a crushed stone or earth base.
- Provide clusters of wood stumps for seating. Seating clusters should accommodate small groups. Refer to **Site Fixtures & Furnishings** for seating guidelines in the Forest.
- Provide planting pockets within intersections. Refer to **Planting & Restoration** section for guidance on plant families in The Forest.

### **Brick Beach**

- Where the brick beach meander intersects the Main Trail, pave with bricks, set in a crushed stone base. Crushed stone should be browner or tanner than the material of the Main Trail.
- At brick beach intersections, provide seating made of longitudinally sawn logs. Refer to **Site Fixtures & Furnishings** for seating guidelines in the Forest.

**TYPICAL MEANDER AND MAIN TRAIL  
INTERSECTION, FOREST ZONE**



*Main Trail*

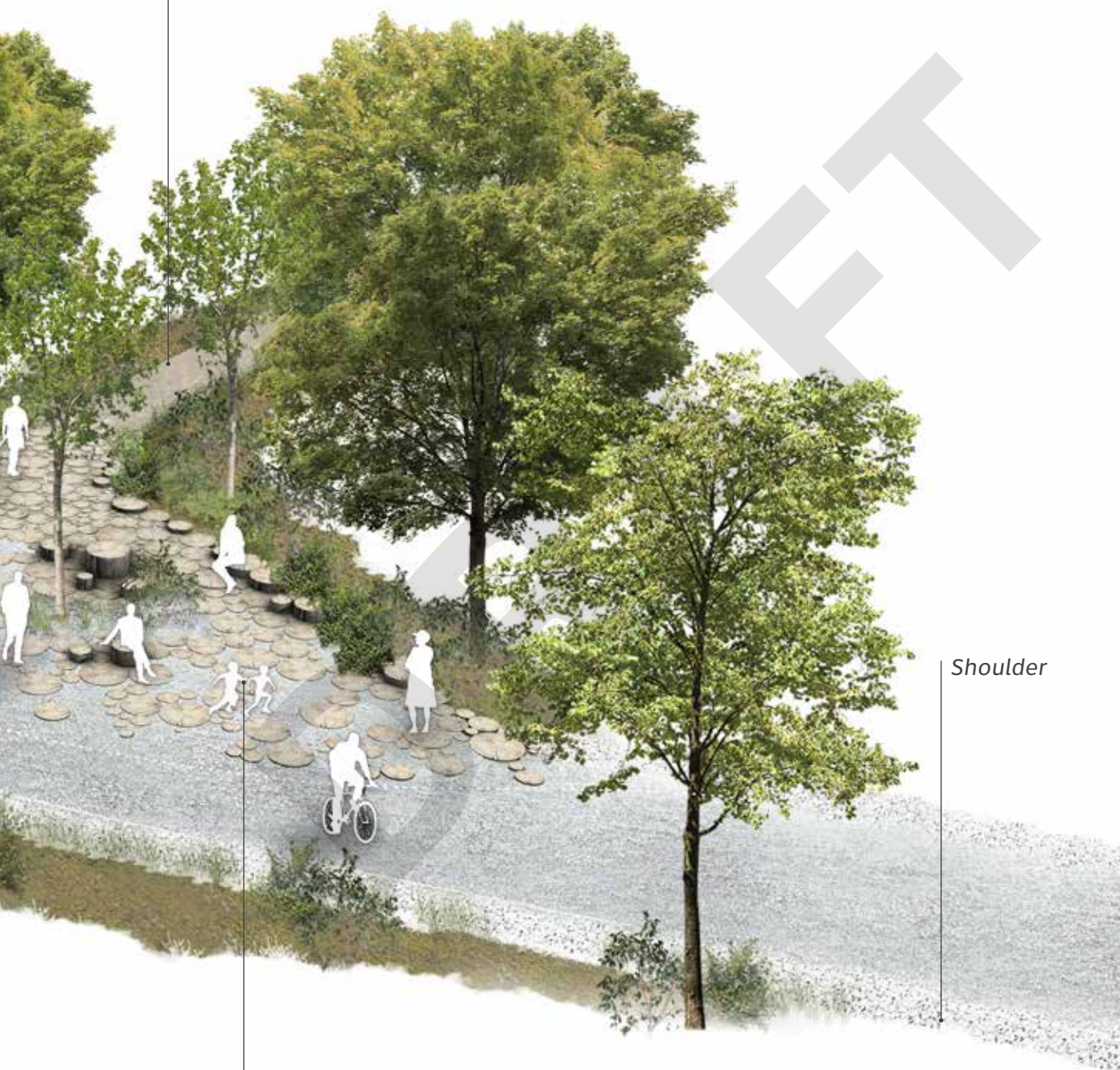
*Bike Parking*

*Intersection bank*

*Tree stump seatings*



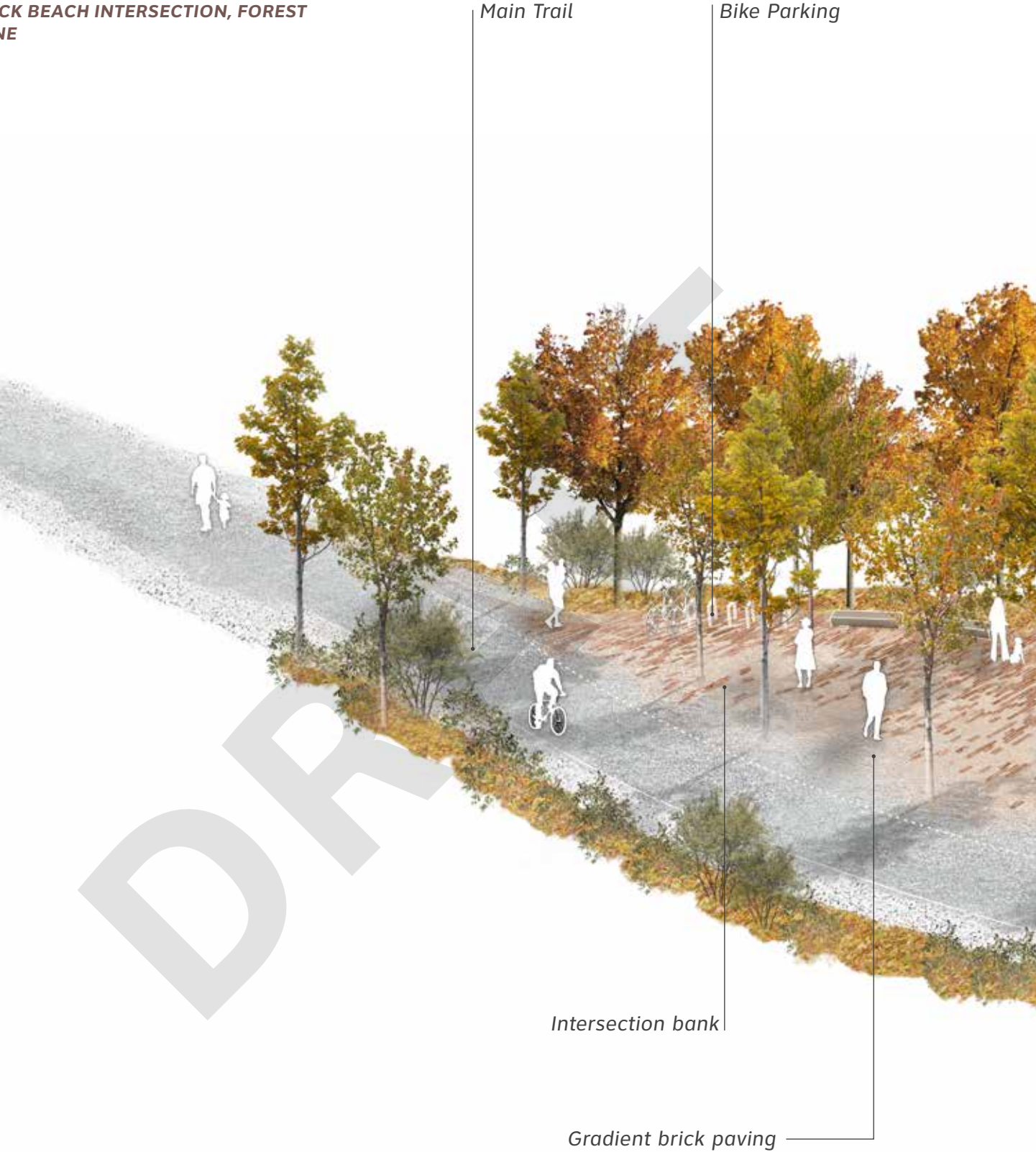
*To a Forest Meander*



*Shoulder*

*Tree stump paving*

**BRICK BEACH INTERSECTION, FOREST ZONE**



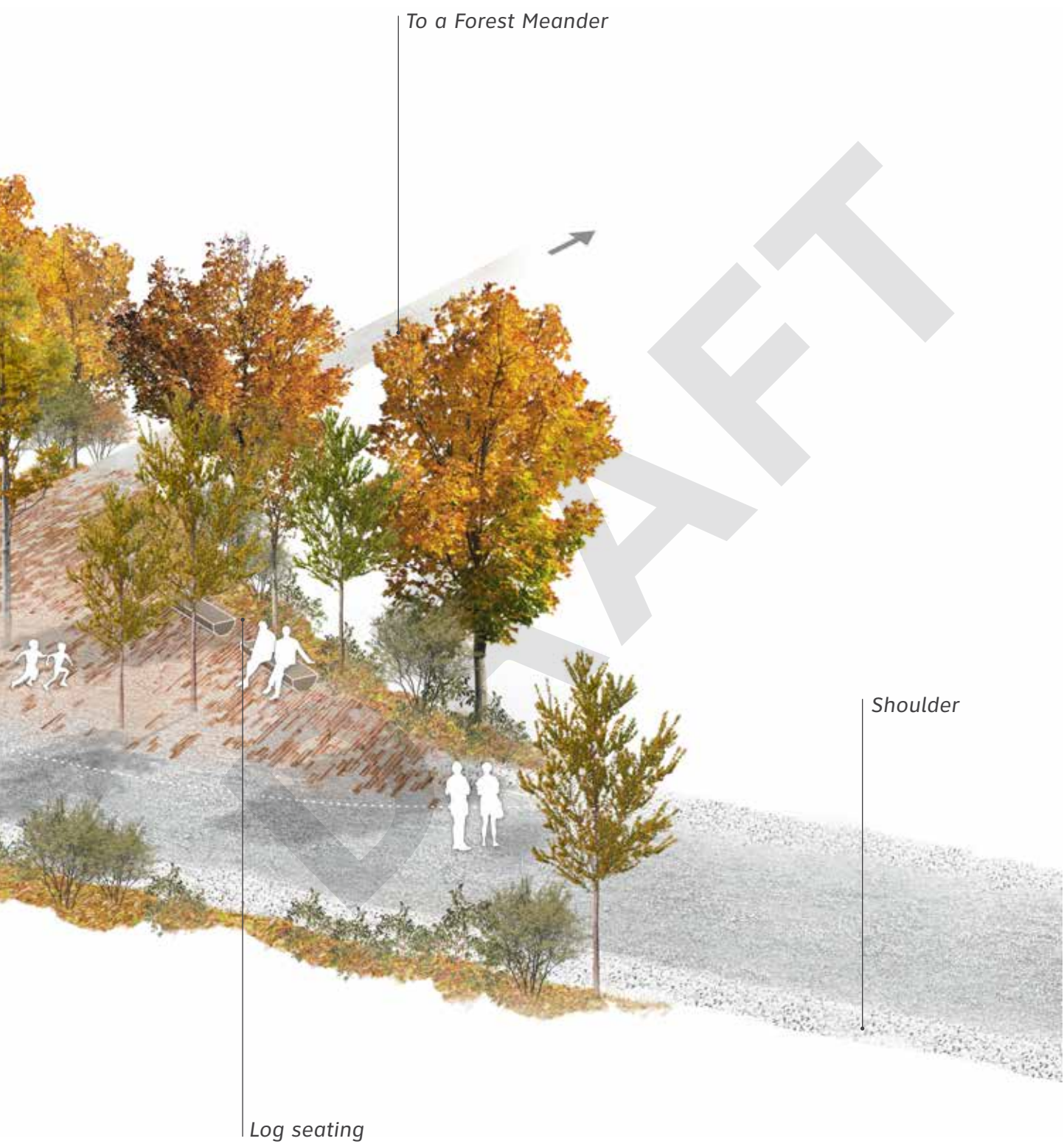
Main Trail

Bike Parking

Intersection bank

Gradient brick paving









#### **FRAMED WITH PLANTING**

*Marsh meander intersections are framed with delicate, finer plant species, like those native to the marsh.*



#### **CRUSHED STONE FINES**

*The paving of the intersections is crushed stone fines, finer than the aggregate of the main trail.*



## INTERSECTIONS: THE MARSH

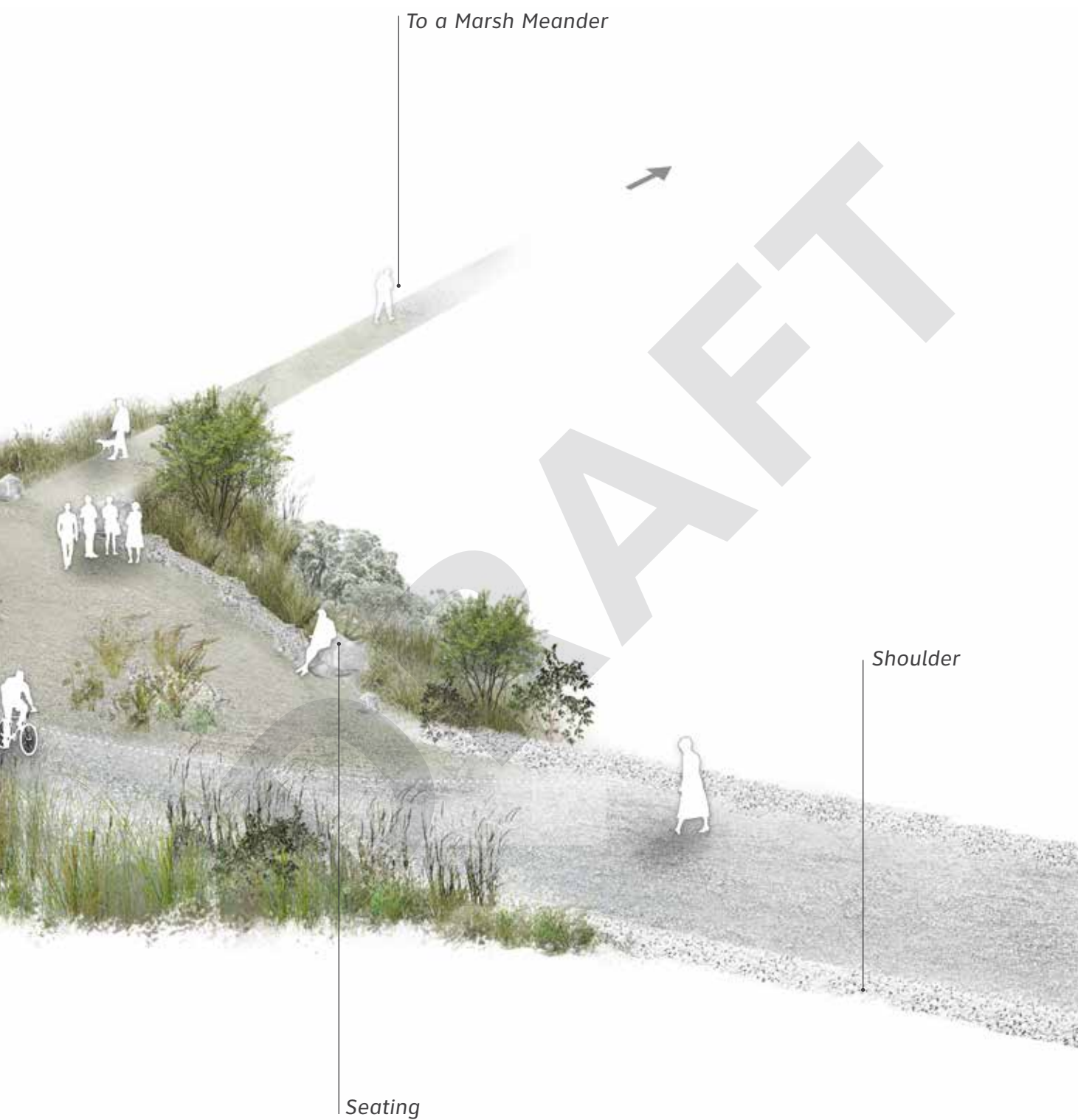
- Paving consists of browner crushed stone fines. Stone fine aggregate to be smaller than aggregate specified for Main Trail.
- Provide planting pockets within intersections. Refer to **Planting & Restoration** for guidance on plant families in the Marsh.
- Provide seating, see **Site Fixtures & Furnishings** for seating guidelines in the Marsh

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**TYPICAL MEANDER AND MAIN TRAIL  
INTERSECTION, MARSH ZONE**











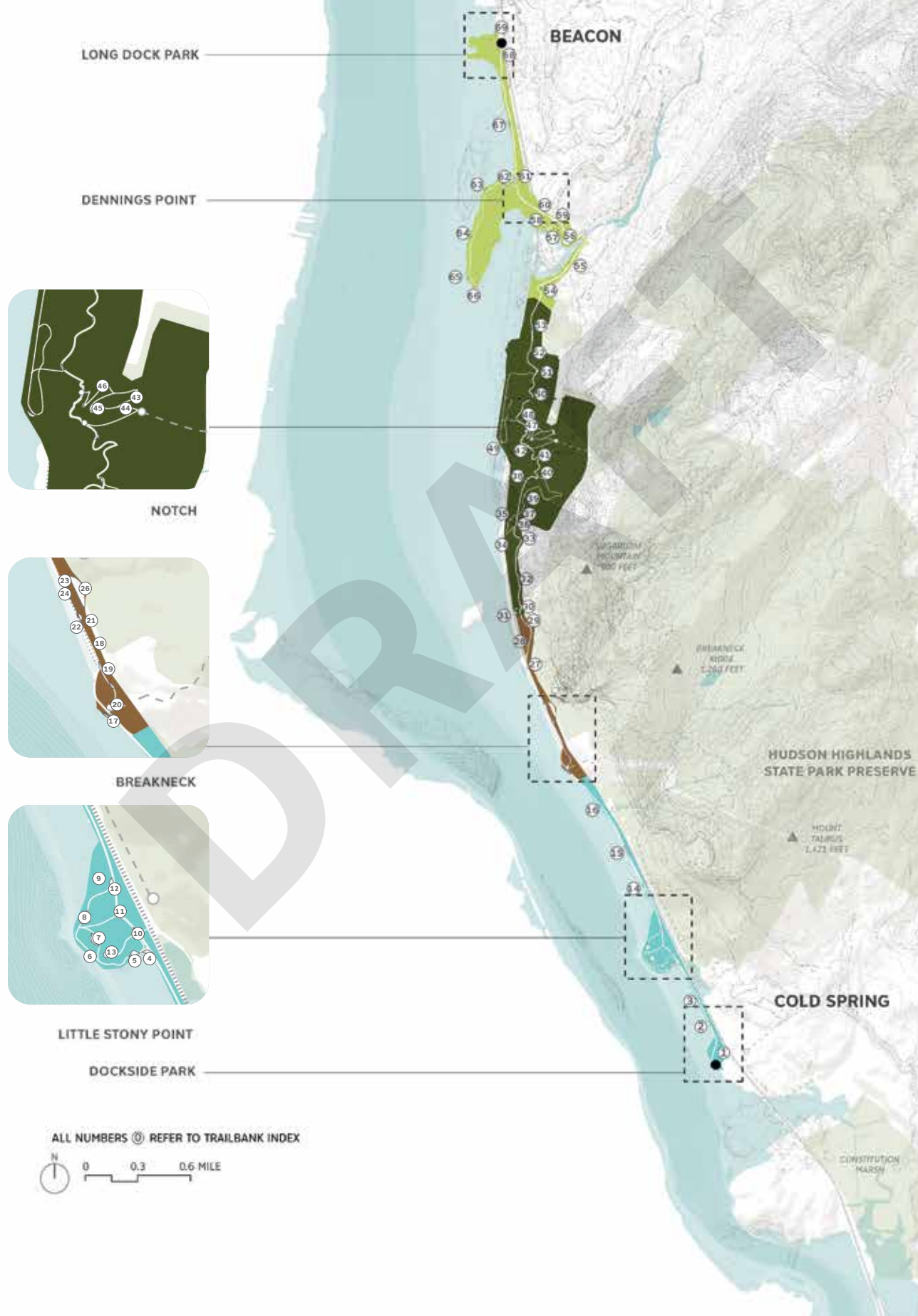


## TRAIL BANKS

Trail banks are designated areas along the Fjord Trail that support different scales of program. This section describes trail bank **size and scale, form,** and **types and materials** by landscape zone.

## TRAIL BANKS

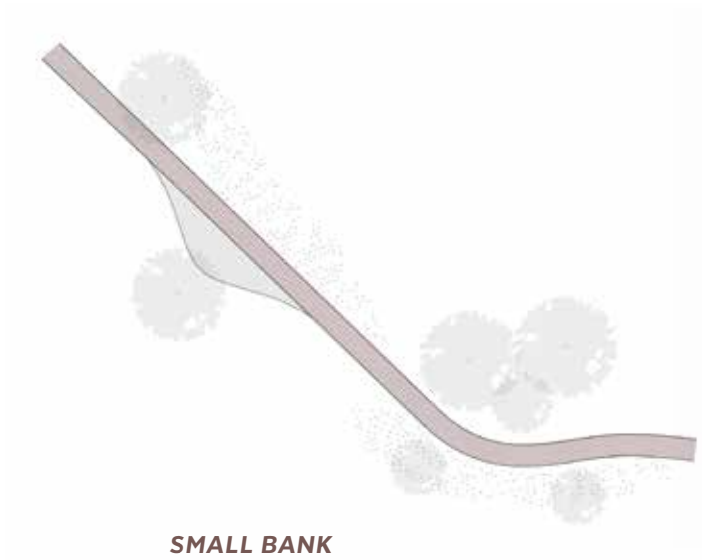
Diagrammatic locations of trail banks along the Fjord Trail.





Inspired by the riverbanks, flats, and sandbars that line the Hudson, the Fjord Trail design includes a simple language of “trail banks.” These moments along the Main Trail and meanders create different scales of gathering space, orient people to scenic views, and seamlessly merge with their larger landscape surroundings. They are made from materials that are durable, sustainable, and integrate with the surrounding environment and are designed to mark thresholds, define moments of access to the water, create overlooks to the Hudson Highlands and Fjord, or simply provide a place along the trail to stop and rest. Trail banks provide designated areas for Fjord Trail users to have an immersive landscape experience while creating clear edges and boundaries to limit access to more sensitive areas in the landscape.

Each bank is **unique and responds to its immediate landscape**, but the system of banks is recognizable as a family of places, shaping an identity and world-class civic experience that celebrates the landscape of the Fjord Trail.





# TRAIL BANK SIZE & SCALE

The size of trail banks depends on the program it supports. Refer to the trail bank index in **Project Geography & Alignment** for specific program and size of each trail bank. The below outlines design guidelines for sizing trail banks.

## SMALL BANKS

- Small trail banks support small overlooks, or places to sit and rest along the trail.
- Small banks are sized to support a maximum of 10 people, seated or standing comfortably.

## MEDIUM BANKS

- Medium banks support more programs: seating / places to rest, larger overlooks to key views, small outdoor classrooms / educational spaces, small shelters / wind breaks / warming huts, water access, and wildlife and habitat viewing.
- To support a greater range of programs, the medium banks are sized to support 15-30 people at capacity.

## LARGE BANKS

- Large banks support signature programs along the Fjord Trail: amphitheaters / large outdoor classrooms; family play spaces; major access to water (i.e. beach); ADA accessible kayak launches; and buildings / comfort stations.
- Large banks are sized to support larger groups visiting the Fjord Trail, or where appropriate, to support larger events.
- Typically, large banks are located at destinations.



### **HOLLOW TRAIL BANKS**

*A hollowed center allows landscape to emerge.*



### **PULL OFF MOMENTS**

*Trail banks provide places for people to gather and sit.*



# TRAIL BANK FORM

Although their edges will not always be defined with perfect lines, the trail bank form evokes the elegance of river flows through gentle curves and expansions along the alignment of the Main Trail and meanders.

## PULL-OFF TRAIL BANKS

Trail banks are “pull-over” moments from the Main Trail or meander along which they occur.

- The material edges of the trail bank adjacent to the Main Trail subtly interrupt the material of the Main Trail, creating an irregular edge at the interface. Typical trail banks follow this simple formal language.
- When along the Main Trail, typical trail banks meet ORAR accessibility requirements.

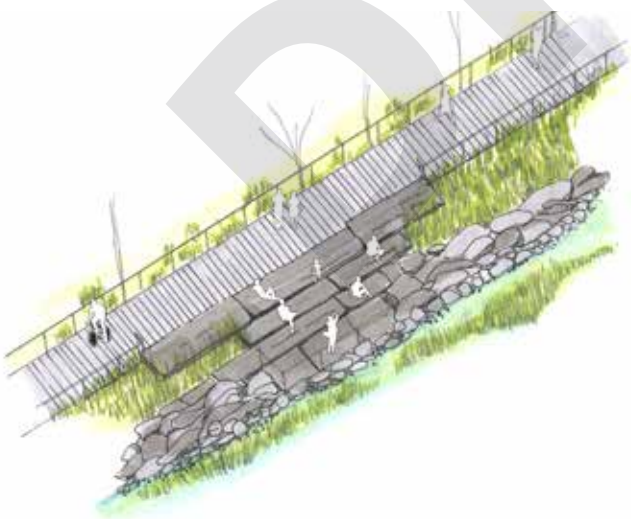
## HOLLOW BANKS

In addition to the more typical “pull off” trail bank type, hollow trail banks also peel off the Main Trail and meanders but create a “hollowed” interior to emphasize landscape conditions.

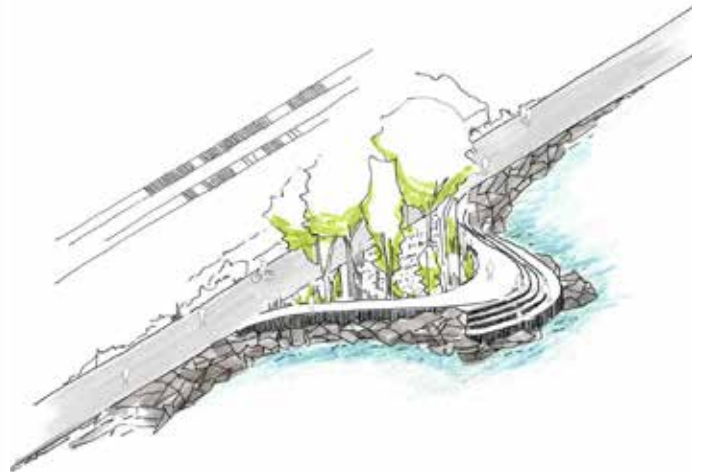
- Hollow banks are elevated paths where the trail visually splits, forming a “hollowed” area between two paths allowing unique or interesting landscape ecologies or conditions to emerge.
- When along the Main Trail, hollow trail banks meet ORAR accessibility requirements.
- Hollow banks are made of wood planks, running parallel to the direction of travel.
- The elevated deck of the bank can rise or drop in some locations to form seat walls, or steps down to the landscape.
- When along the Main Trail, the wood decking material intersects and interrupts the Main Trail material, as described in the image (left).



**POCKET BEACH**



**SHORELINE GET-DOWN**



**OVERLOOKS**



# TRAIL BANK TYPES & MATERIALS

Trail banks use “artful camouflage” to blend in with their landscape surroundings. The material selection and program of each trail bank expresses and amplifies the landscape experience.

## THE RIVER

In the River zone, the trail banks heighten the experience of the river and engage the dynamic shores of the Hudson.

### ***Pocket Beach***

- Pocket beaches provide direct access to the water’s edge, allowing for “toes in the water” moments, fishing, or taking in an epic view.
- Frame pocket beaches with carefully curated, stacked, and arranged driftwood – woven wrack lines - to form the elegant curve of the edge of the trail bank. Ensure driftwood is stacked to allow for users to sit on the driftwood.
- Provide crushed stone surface material that forms gradients from larger aggregate sizes further upland and breaks down to fine gravels or sand at the beach.
- Match crushed stone color and tone to the existing rock of the upland area. As the crushed stone gradient transitions to sand, the tone and color of the sand is warmer than the crushed stone.
- Provide seating boulders if additional seating is required (in addition to woven wrack line).
- Provide shade tree planting, in addition to existing trees, for shade at the water’s edge. Refer to **Planting & Restoration** section for River planting guidelines.

### ***Shoreline Get-Down***

- Shoreline get-downs bring people closer to the water along the Shoreline Trail, but do not provide direct access to the water. Where desired, shoreline get-downs can serve as potential stopping points for kayakers.
- Construct shoreline get-downs using chunky, stone blocks set into the existing shoreline slope. Durable materials are required to withstand river ice conditions.
- Locate get-downs to avoid mature tree clusters.
- Provide larger areas at the base of get-downs for fishing. Provide guardrails to prevent direct water access.
- Feather edges of the get-down and supplement the shoreline edge with native planting that will tolerate harsh river / estuary conditions.



#### **TYPICAL OVERLOOK BANK**

Overlook banks split off the Main Trail, bringing people to the water's edge while avoiding mature tree clusters. Fishing and wildlife viewing are potential programs and activities on the Overlook bank.



#### **PROTRUSIONS OF LAND ALONG THE SHORELINE**

Along the Shoreline Trail, where typical Overlook banks are sited, protrusions of land provide more space to place a structure above MHHW.



## TRAIL BANK TYPES & MATERIALS: THE RIVER

### *Overlooks*

Overlooks provide resting areas along the shoreline trail, a place to stop, rest, and take in a view. Overlook banks are hollow trail banks, made of wood, that extend out into small portions of land along the shoreline above Mean Higher High Water (MHHW).

- Site support structure footprint above MHHW. Overlook banks should take advantage of existing protrusions of land along the shoreline.
- Use the same guardrail as the shoreline trail.
- Provide wind protection from harsh river elements.
- Provide seat walls for a place for people to rest and enjoy the view. Ensure ample space is provided at rail for fishing.



### **STONE BLOCKS**

*Stone blocks provide access down to the water.*



### **LIVING SHORELINES**

*Living shorelines enhance river edges.*

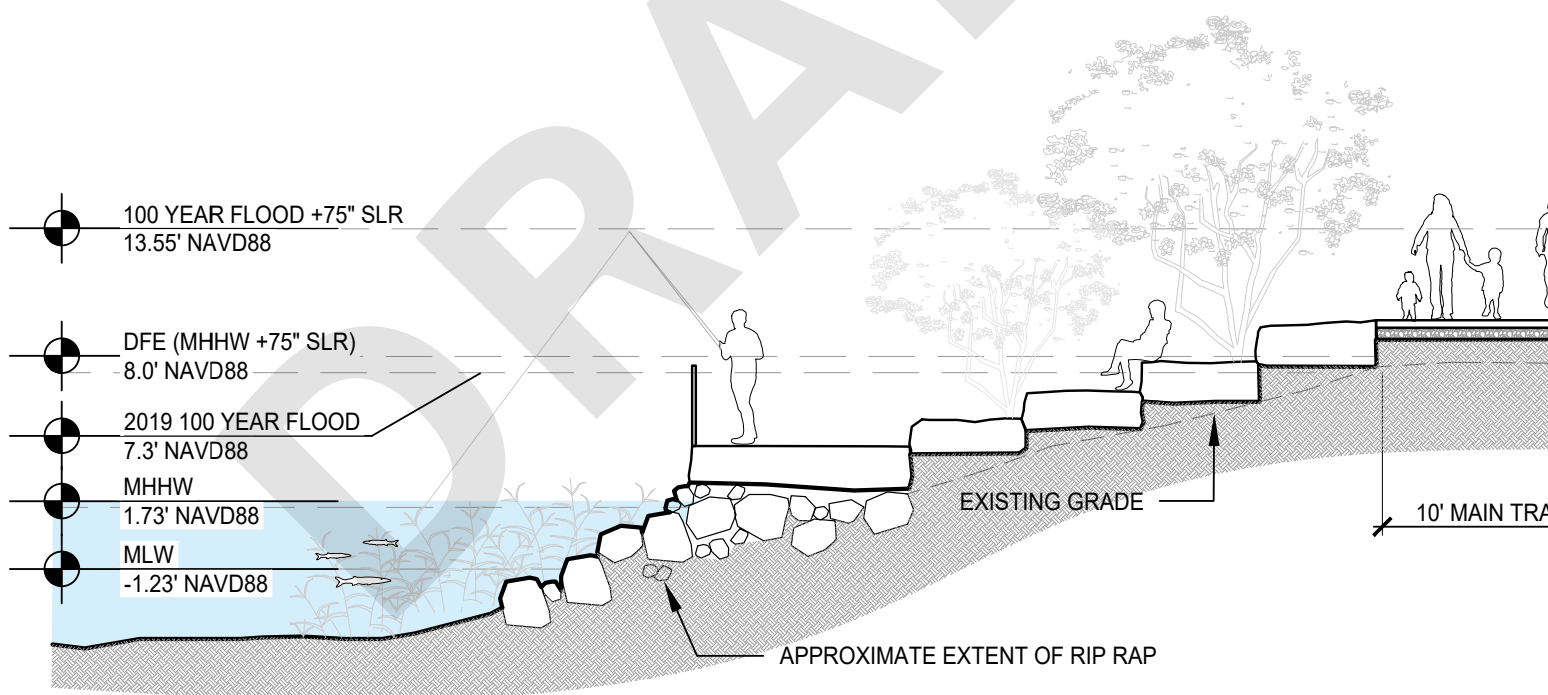




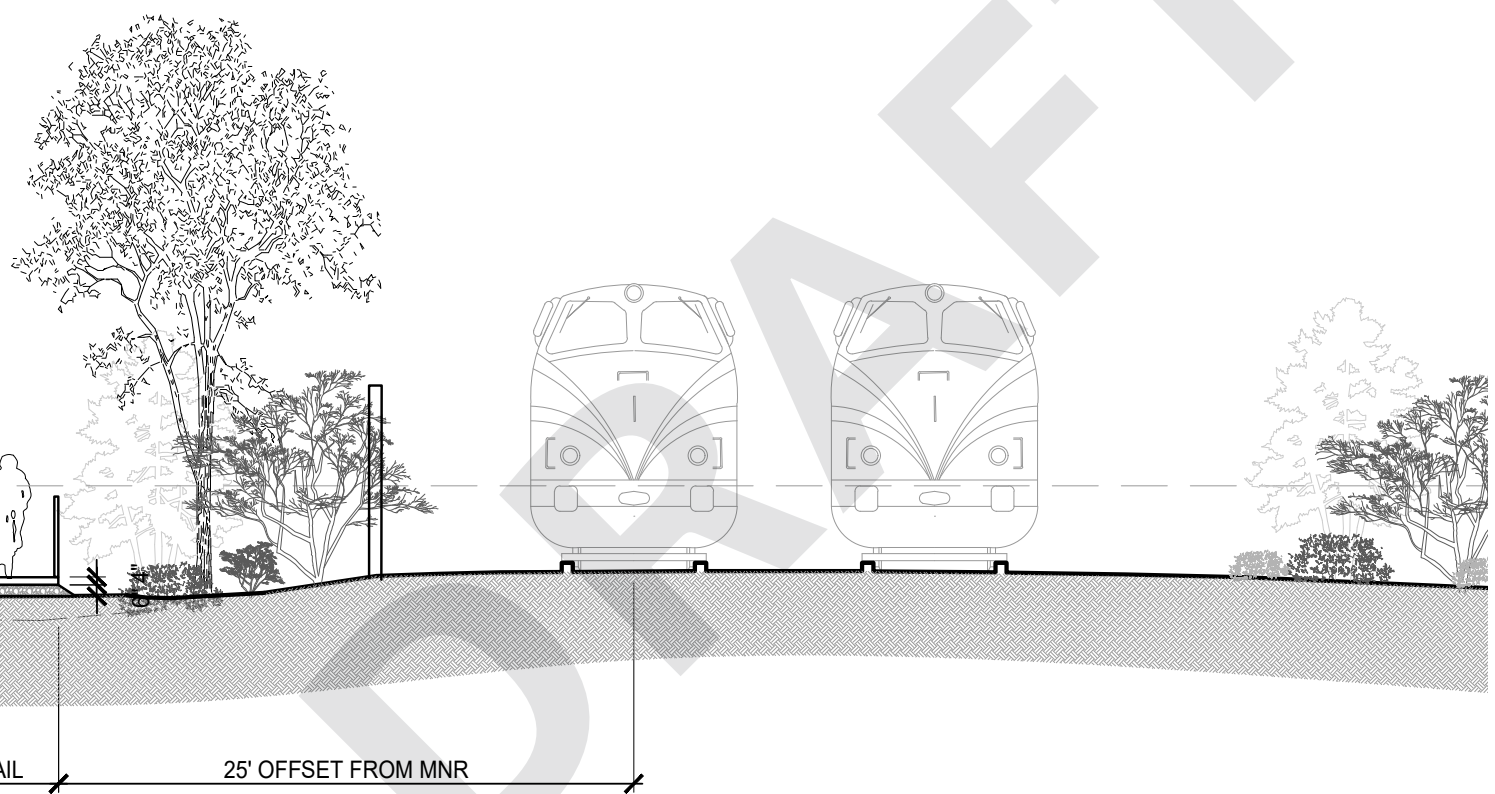
- ① SHORELINE TRAIL
- ② MATURE TREE CLUSTERS
- ③ LIVING SHORELINE
- ④ STONE BLOCKS IN RIP RAP



# TYPICAL SHORELINE GET-DOWN SECTION, IN THE RIVER ZONE















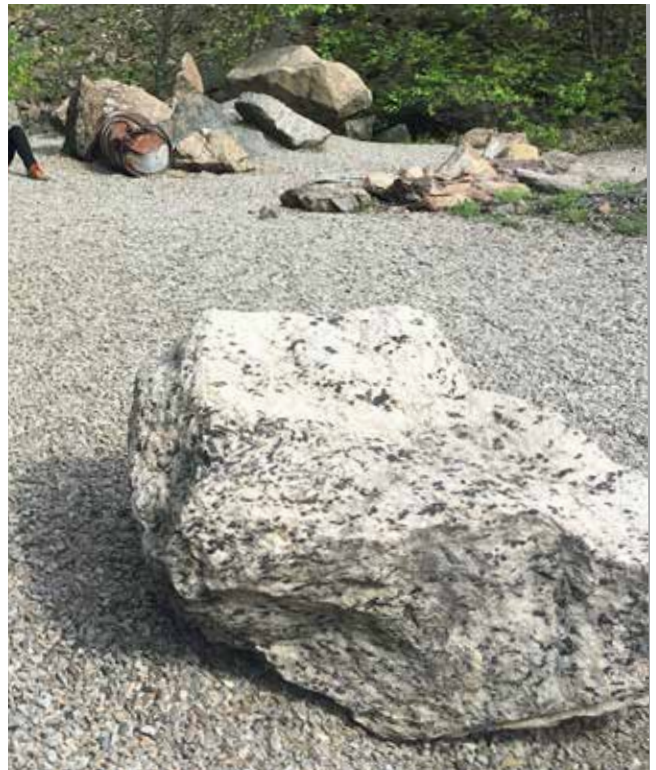
#### **WOVEN WRACK LINE**

*Woven driftwood pieces frame beaches and provide places to sit.*



#### **STONE GRADIENTS**

*Gradients of stone aggregate sizes comprise the paving of pocket beaches.*



#### **BOULDER SEATING**

*In addition to the woven wrack line, boulders provide places for people to sit at the river's edge.*



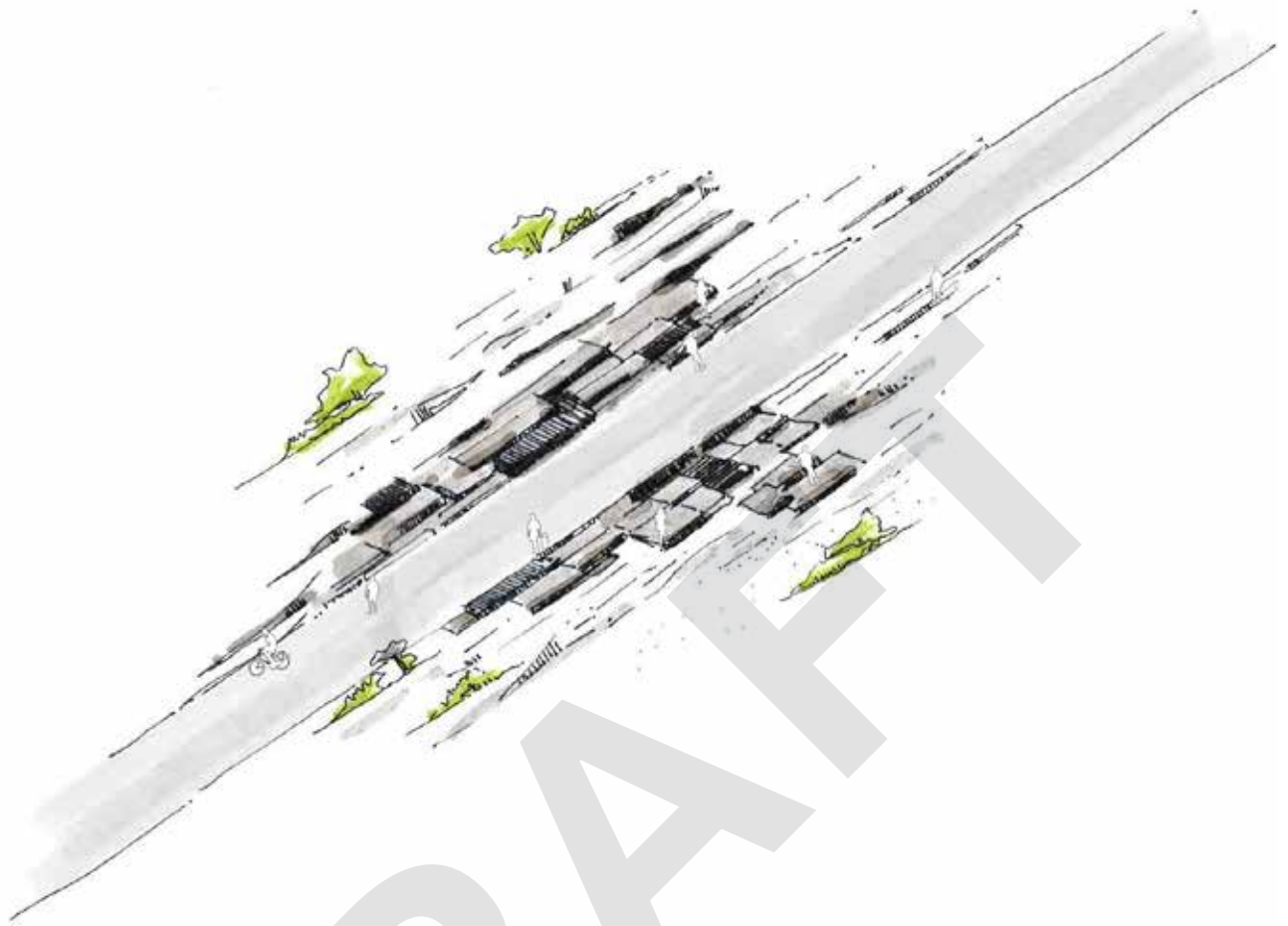
## **SERENE BEACH**

*People sit on woven wrack lines and take in epic river views.*





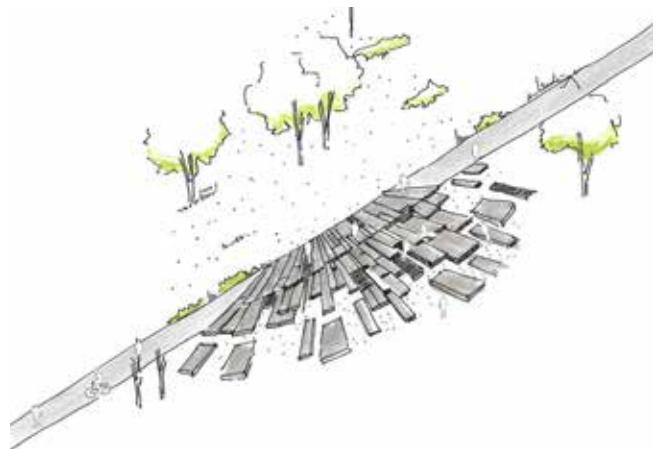




**BOULDER SCRAMBLES**



**SEATING BANKS**



**OVERLOOKS**



## TRAIL BANK TYPES & MATERIALS: THE HIGHLANDS

In the Highlands, the materials and elements of the trail banks reflect the rockiness and roughness of Breakneck and Storm King.

### **Boulder Scrambles**

Boulder Scrambles provide opportunities to engage with the landscape in challenging ways and provide elevated views and informal seating. Boulder Scrambles are large gestures with legible yet irregular form. They are oriented towards desirable views.

- Provide boulders ranging in size, shape, and finish but generally mimic the Acid Talus Woodslope found on Breakneck Ridge.
- Use crushed stone and large, flush granite slab surface materials.
- Plant within the crevices of boulders. Planting should appear to spill in and out of the scrambles.
- Provide shade trees for comfort and to create a sense of enclosure.

### **Seating Banks**

Seating banks are smaller rest areas along the trail that provide places for visitors to regroup and prepare for the journey ahead.

- Site seating banks with orientations toward views and adjacent to connections to parking, intersections, or transit arrivals.
- Provide seating in the form of rough stone boulders or quarry blocks sized to comfortable seating parameters. Edges may be natural or rough sawn.
- Use crushed stone as paving material.
- Provide shade trees for comfort and to create a sense of enclosure.

### **Overlooks**

Overlooks in the Highlands provide places to stop and take in panoramic views of Storm King and the Fjord. Overlook banks engage directly with the river when possible.

- Use large, natural flags and boulders set into crushed stone and flush to grade for paving materials.
- Provide irregular boulder seating and step downs that match the tone of the surrounding rock.
- Avoid using guardrails where possible, especially those immediately adjacent to resting spaces.
- Preserve and protect existing vegetation. Additional planting should define space and provide screening or shade.



### **BOULDER SCRAMBLES**

*Scrambles provide a playful environment for children and adults to climb up and get a view.*



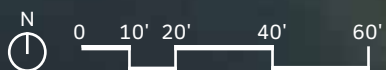
### **STORMWATER GET-DOWN**

*Daylit stormwater areas are a mix of boulders and planting.*

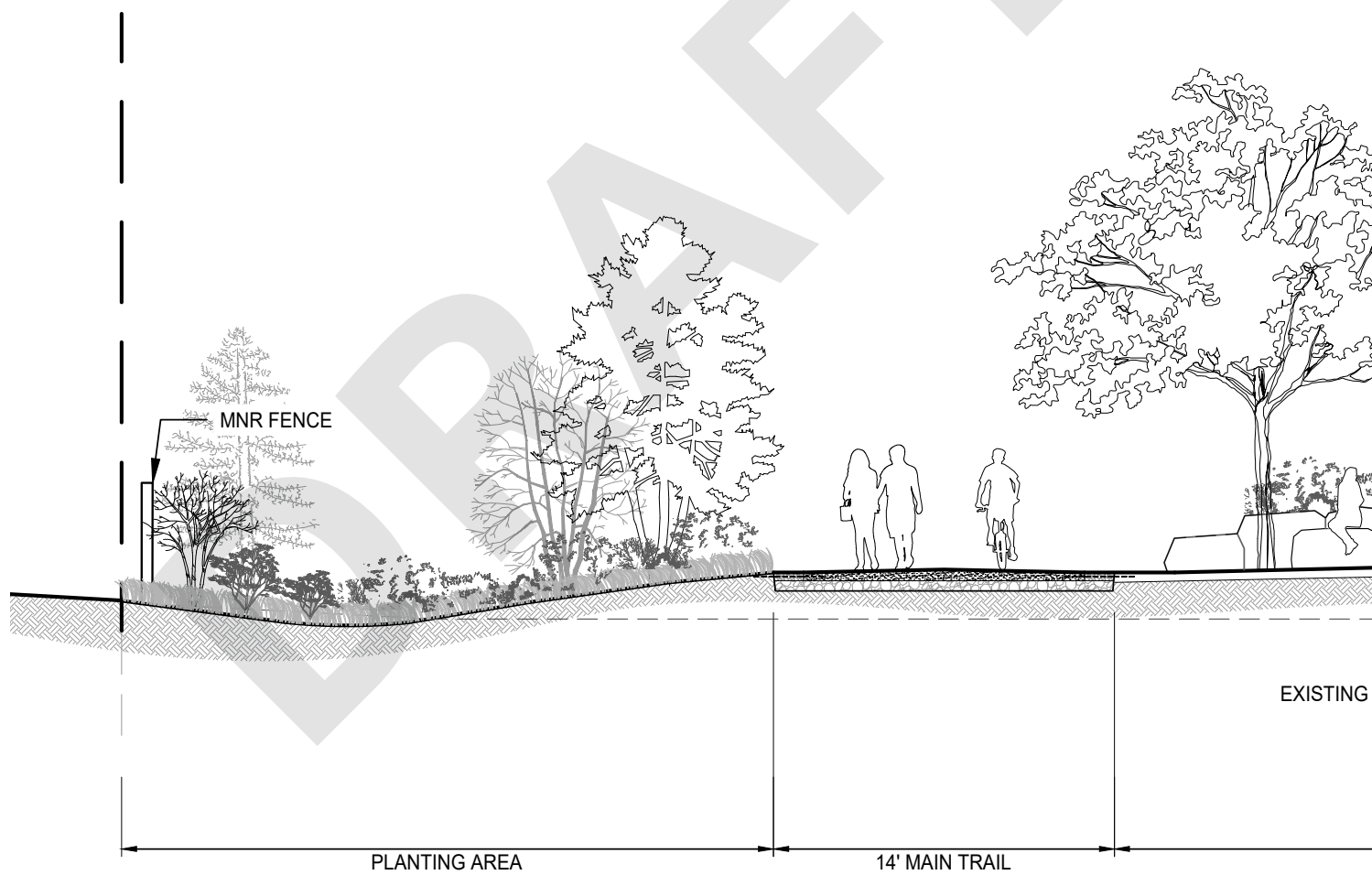




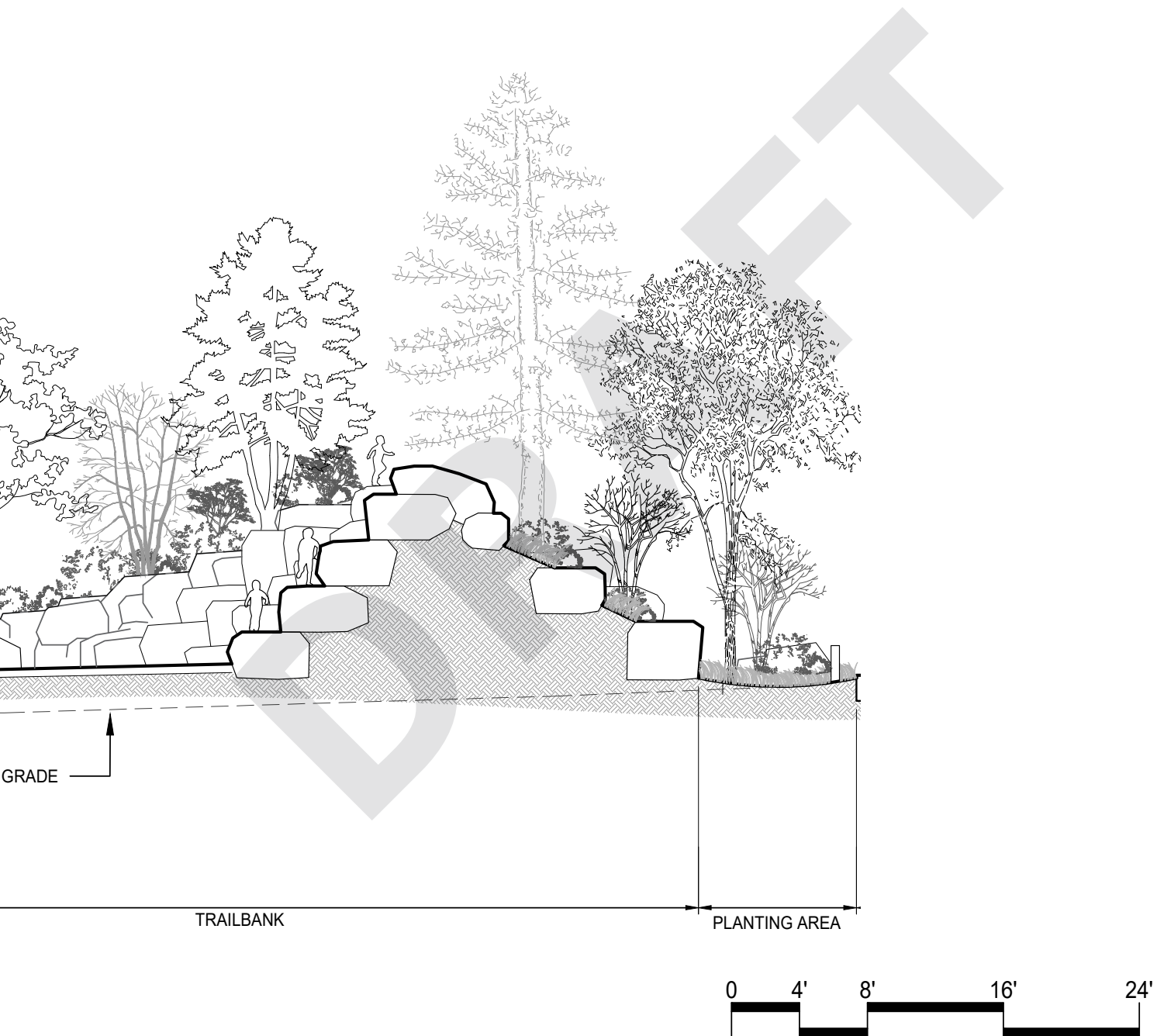
- ① ACCESSIBLE MNR PLATFORM
- ② BOULDER SCRAMBLE
- ③ SEATING POCKET
- ④ STORMWATER GET-DOWN



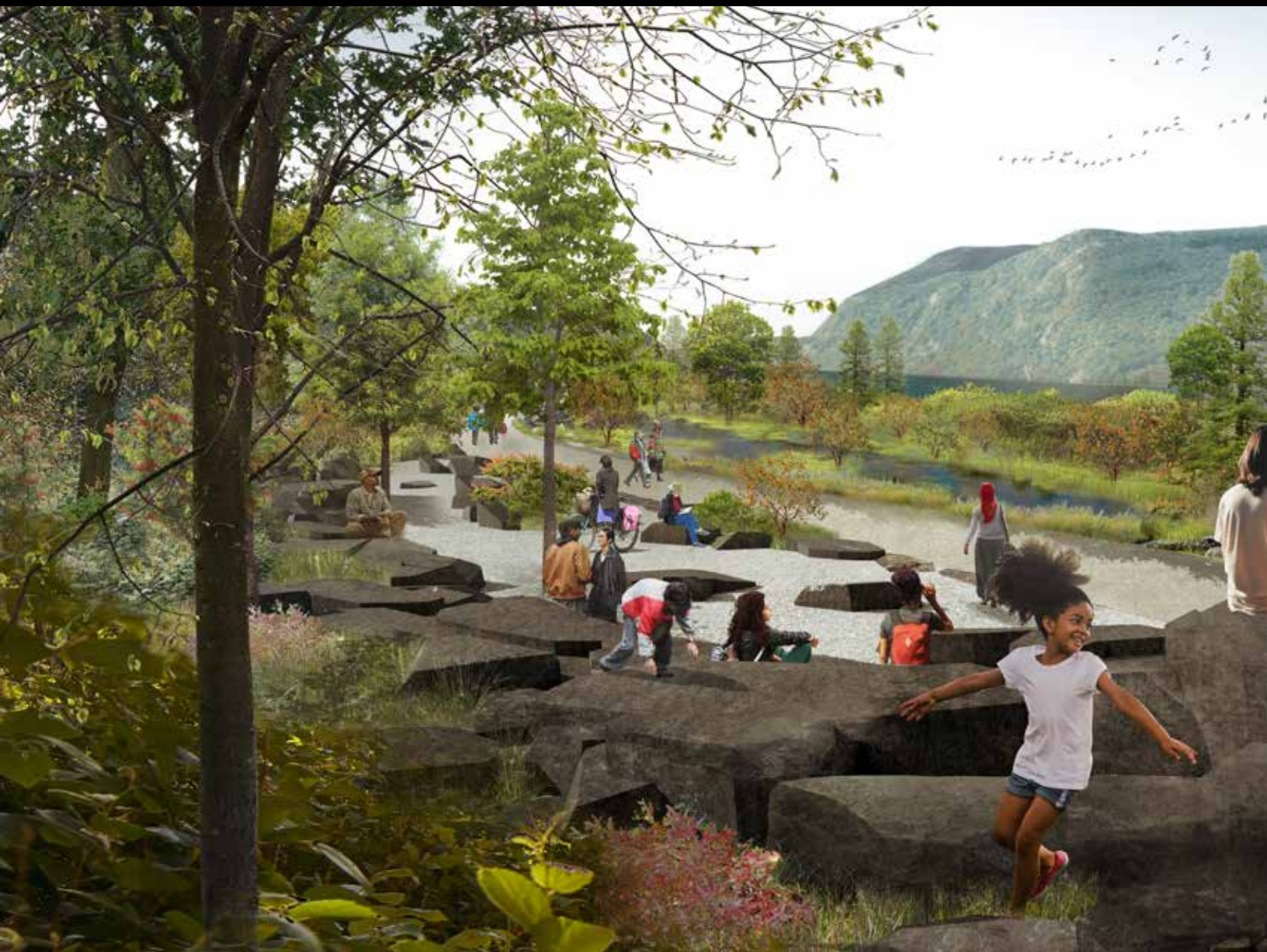
**TYPICAL BOULDER SCRAMBLE SECTION, IN THE HIGHLANDS ZONE**





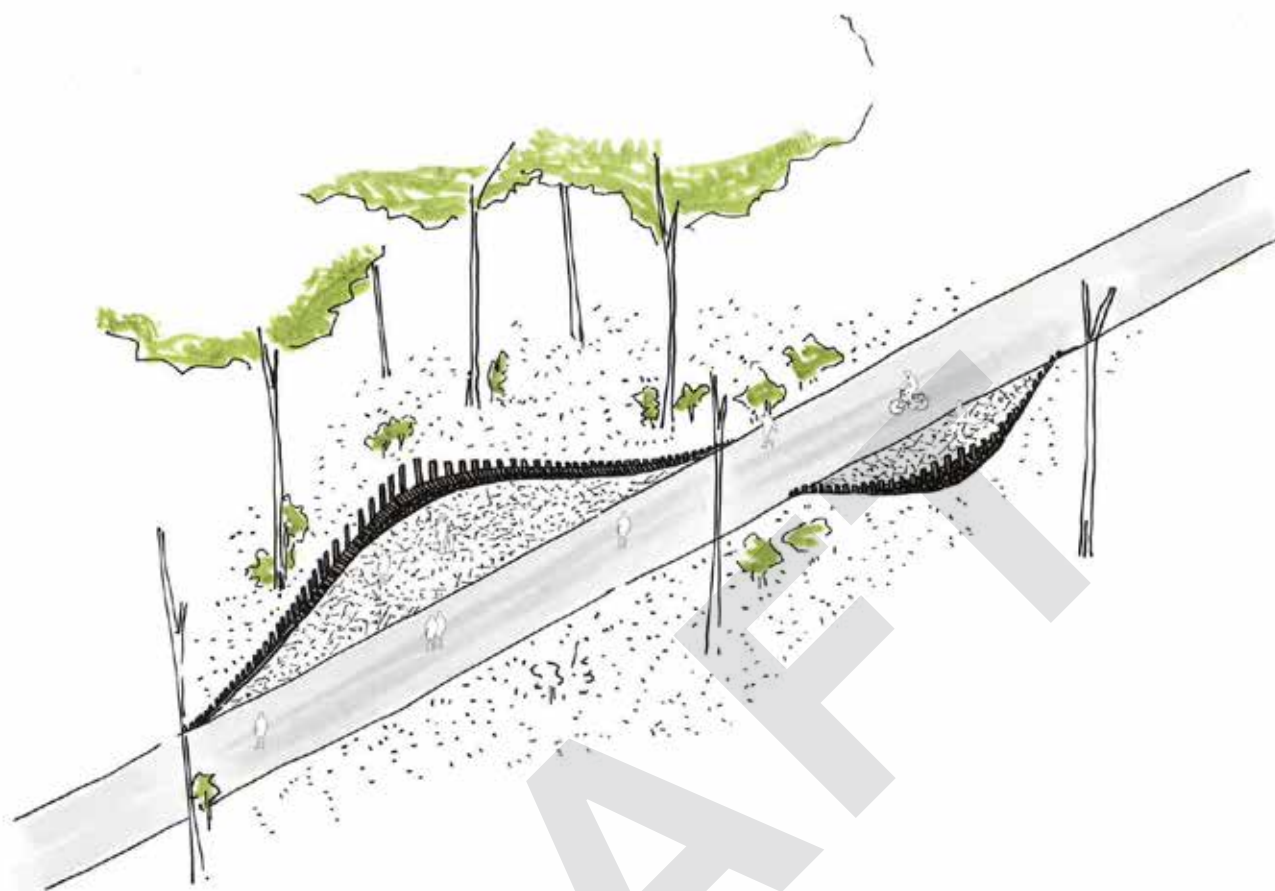


**BOULDER SCRAMBLE BANK**





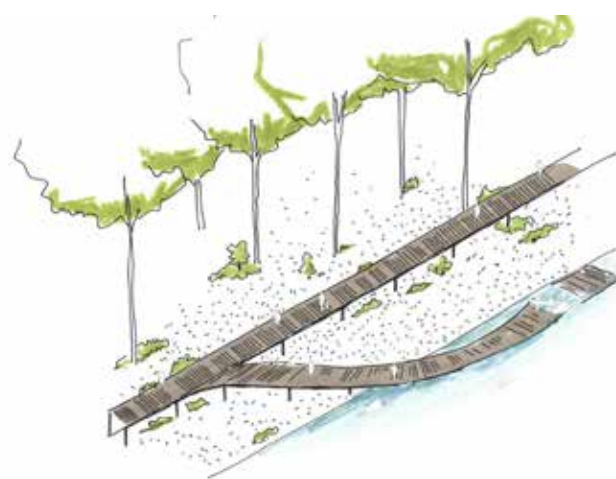




**CLEARINGS / TRAIL PULL-OFFS**



**HOLLOW TRAIL BANKS**



**HOLLOW TRAIL BANKS**



## TRAIL BANK TYPES & MATERIALS: THE FOREST

The Forest trail bank family reflects the vertical nature of the forest landscape zone and adopts a wood material palette.

### **Clearings / Trail Pull-Offs**

Simple clearings or pull-offs in the forest provide small resting areas or educational spaces under the shelter of the forest canopy.

- Provide softer material pavement, ranging from crushed stone fines or wood mulch at on-grade trail banks.
- Provide seating made of longitudinally sawn logs. Refer to **Site Fixtures & Furnishings** for seating guidelines in the Forest.
- Where adjacent forest sites are ecologically sensitive or framing the trail bank is desired, line the edge of the trail banks with buffers. See buffers in the **Main Trail** section, as well as "Fences, Screens, Blinds" in the **Site Fixtures & Furnishings** section.

### **Hollow Trail Banks**

Hollow trail banks in the forest project out over slopes, providing a resting area or overlook on steeper slope conditions. Elevated hollow banks in the forest also bring trail users up into the forest canopy, offering a unique perspective of the landscape.

- Use the typical elevated trail guardrail when elevated hollow trail banks are higher than 30 in. from adjacent grade.
- Provide built-in wood seatwalls.

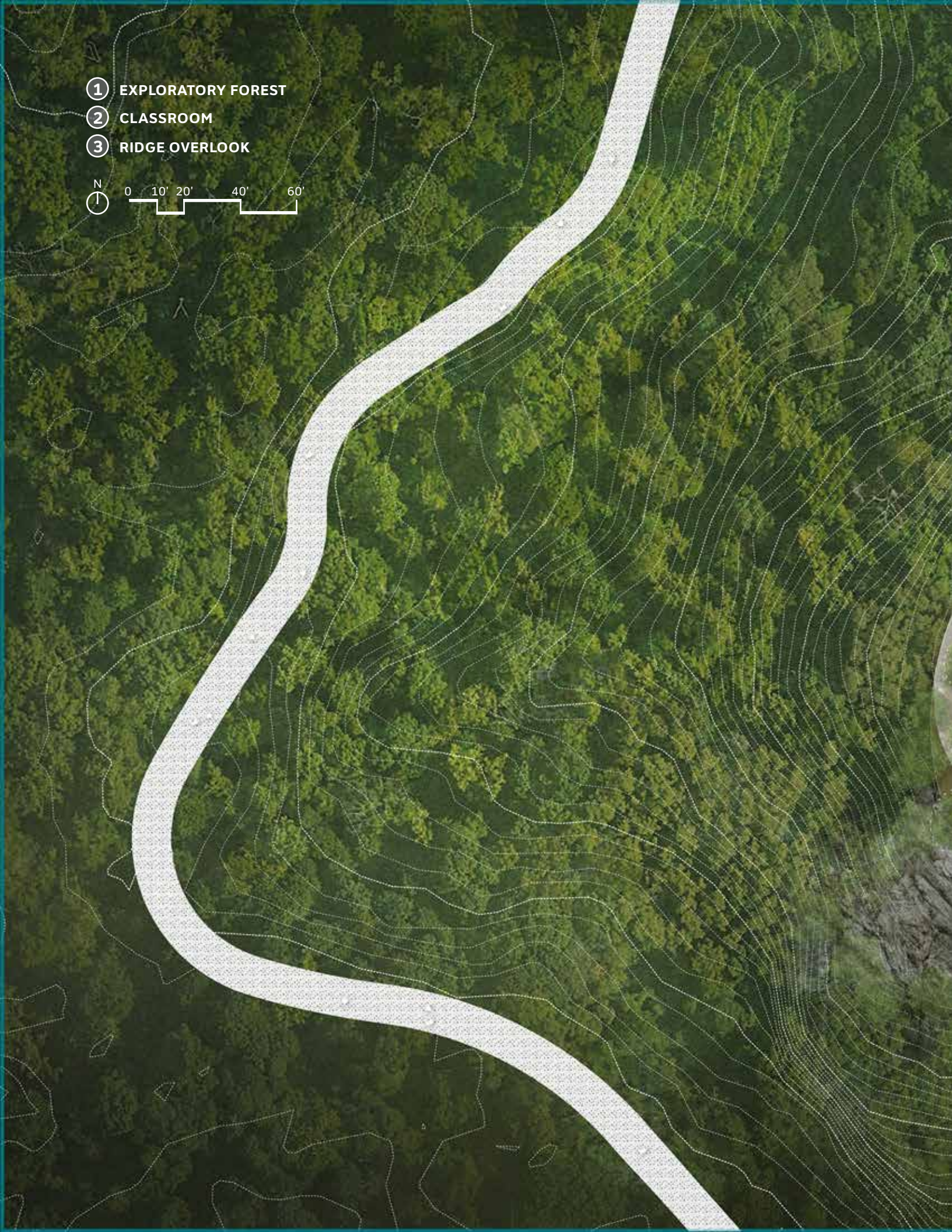


### **FOREST BANK**

*A typical forest bank with log seating, a low log fence, and soft surface materials.*



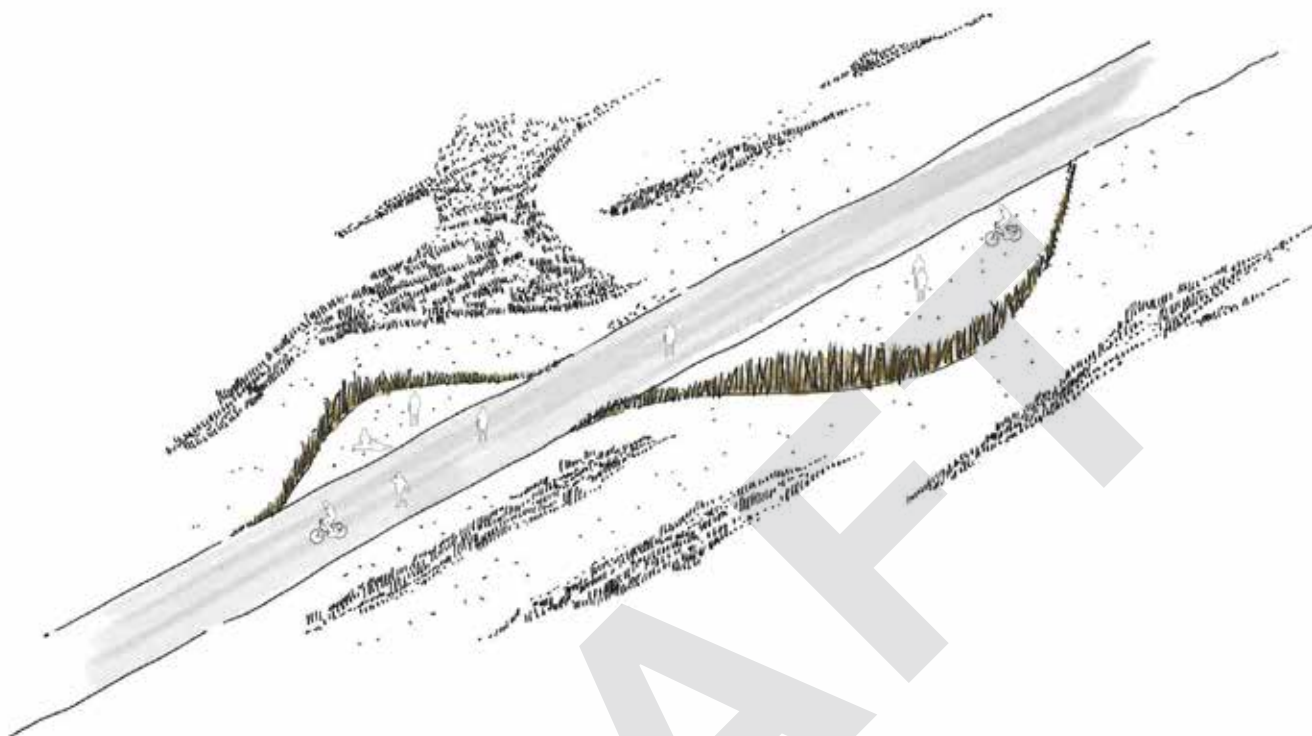
- ① EXPLORATORY FOREST
- ② CLASSROOM
- ③ RIDGE OVERLOOK



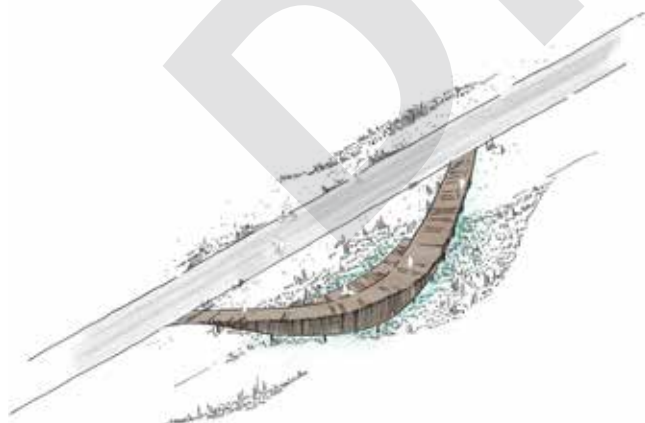




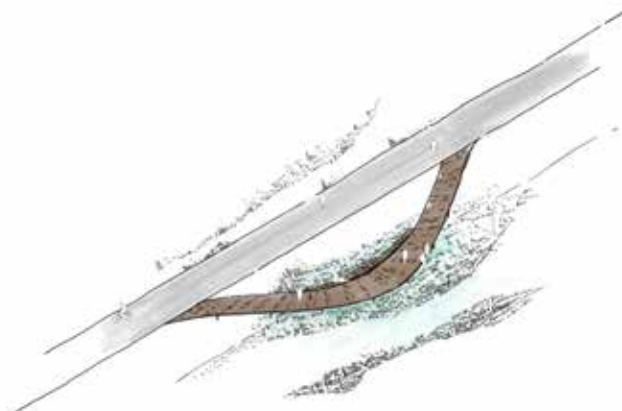




**CLEARINGS**



**OVERLOOKS**



**HABITAT BANKS**



## TRAIL BANK TYPES & MATERIALS: THE MARSH

The materiality of the trail banks in the Marsh is designed with a thinner, delicate wood material palette.

### Habitat Banks

Habitat banks are hollow trail banks that frame marsh ecologies. Habitat banks should be sited in areas that are not currently marsh habitat but may transition to marsh with sea level rise.

- Provide a wood platform stepping down to the landscape on the bank's interior, to bring people closer to the landscape.
- Where fall heights exceed 30 in, the typical guardrail provides fall protection.
- Blinds / screens constructed of delicate, thin wood material. See "Fences, Screens, Blinds" section of the **Site Fixtures & Furnishings** section.

### Overlooks

Overlook trail banks in the marsh project out over steep slopes to provide better views of the marsh landscape. Overlook trail banks are hollow banks.

- Use the typical elevated trail guardrail when elevated hollow trail banks are

higher than 30 in. from adjacent grade.

- Provide built-in wood seatwalls.
- Provide ample space at the end of the platform for bird watching, wildlife viewing, or fishing.
- When a bird blind or wind break screen is considered, construct using fine, delicate wood materials. See "Fences, Screens, Blinds" section of the **Site Fixtures & Furnishings** section.

### Clearings

Clearings in the marsh landscape are simple pull-off moments along the main trail or meanders providing places to sit, rest, or meet up with friends.

- Pave with crushed stone fines. The color of the paving is warmer than the main trail, providing subtle contrast.
- Provide planting at the bank perimeter and in the interior as desired for shade. Refer to **Planting & Restoration** section for guidelines for planting.
- Line the edge of the trail banks with buffers. See buffers in the Main Trail section, as well as the "Fences, Screens, Blinds" section of the **Site Fixtures & Furnishings** section.



### INTERPRET AND ENGAGE

The trail banks in the marsh will engage Fjord Trail users with the ecology of the area and interpret how the landscape with change with time (i.e. sea level rise).



#### **WOOD PLATFORMS**

*Wood platforms immerse users in landscape ecologies.*



#### **WOOD PATHWAYS**

*Boardwalks lead to the habitat bank.*



#### **DELICATE MATERIALS**

*Delicate, thin screens of steel or wood serve as bird blinds.*



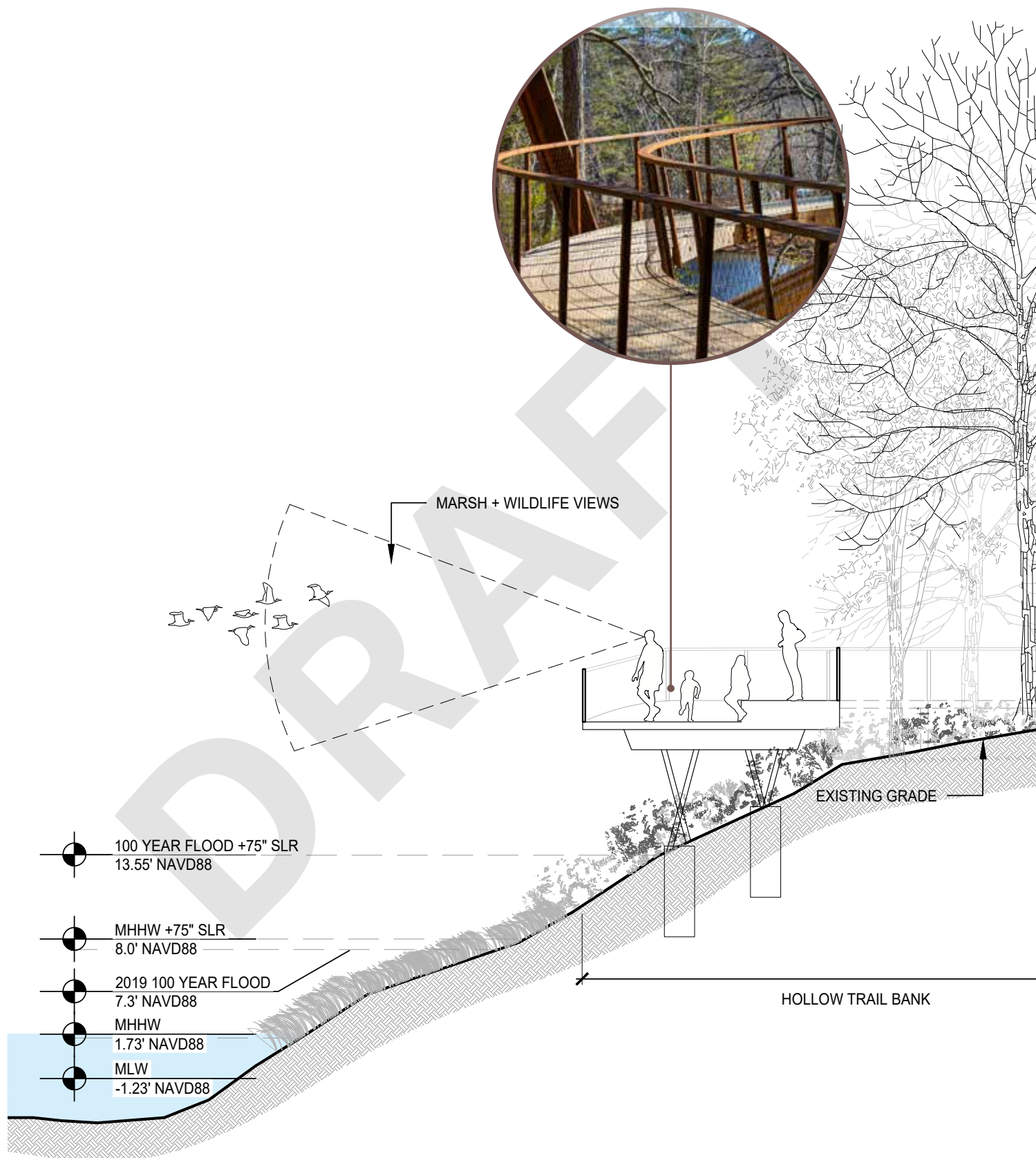


- ① MAIN TRAIL
- ② ELEVATED MEANDER
- ③ INTERACTIVE PLATFORM
- ④ OVERLOOK PLATFORM
- ⑤ EXISTING MARSH
- ⑥ FUTURE MARSH W/ SLR

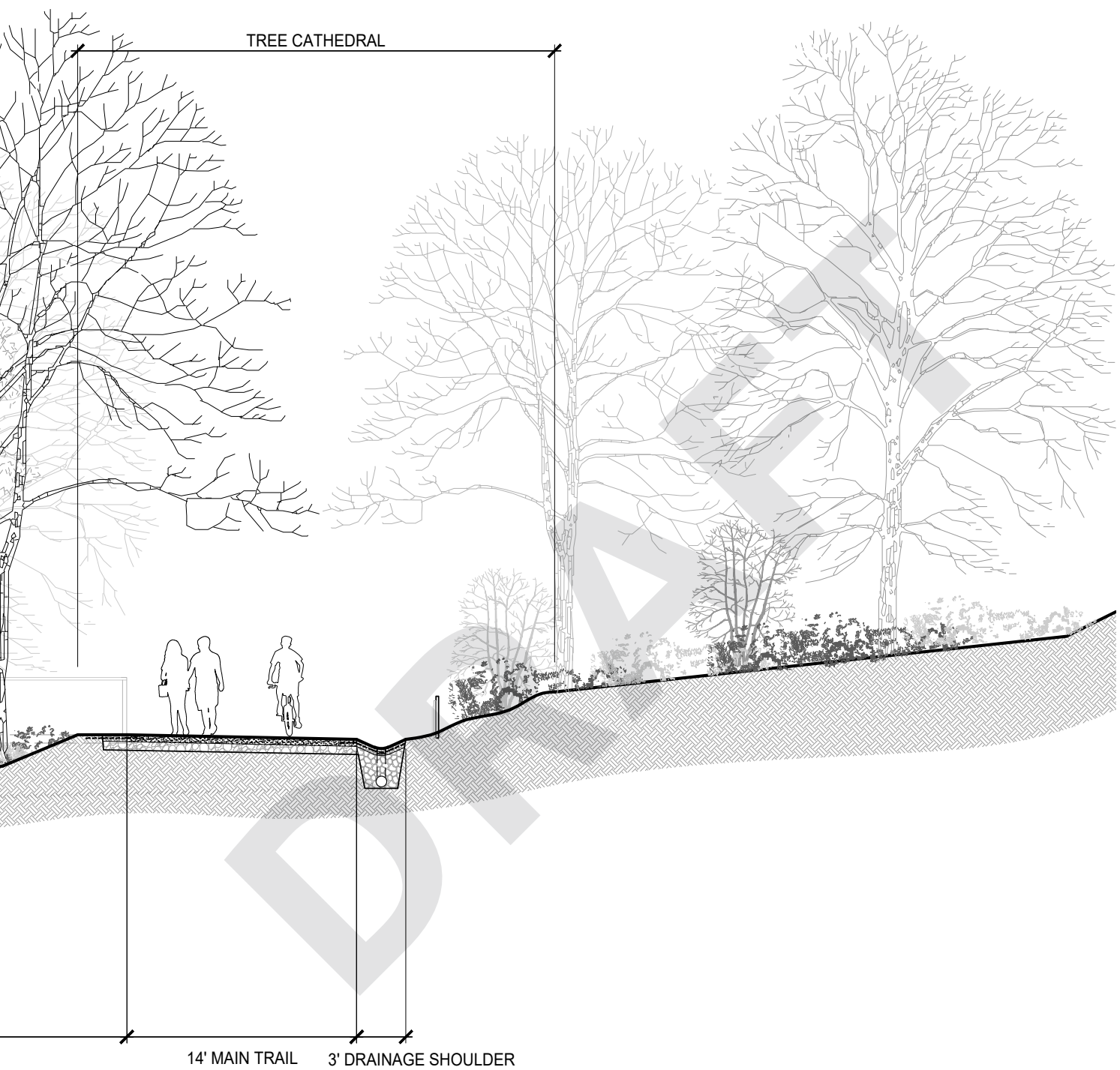




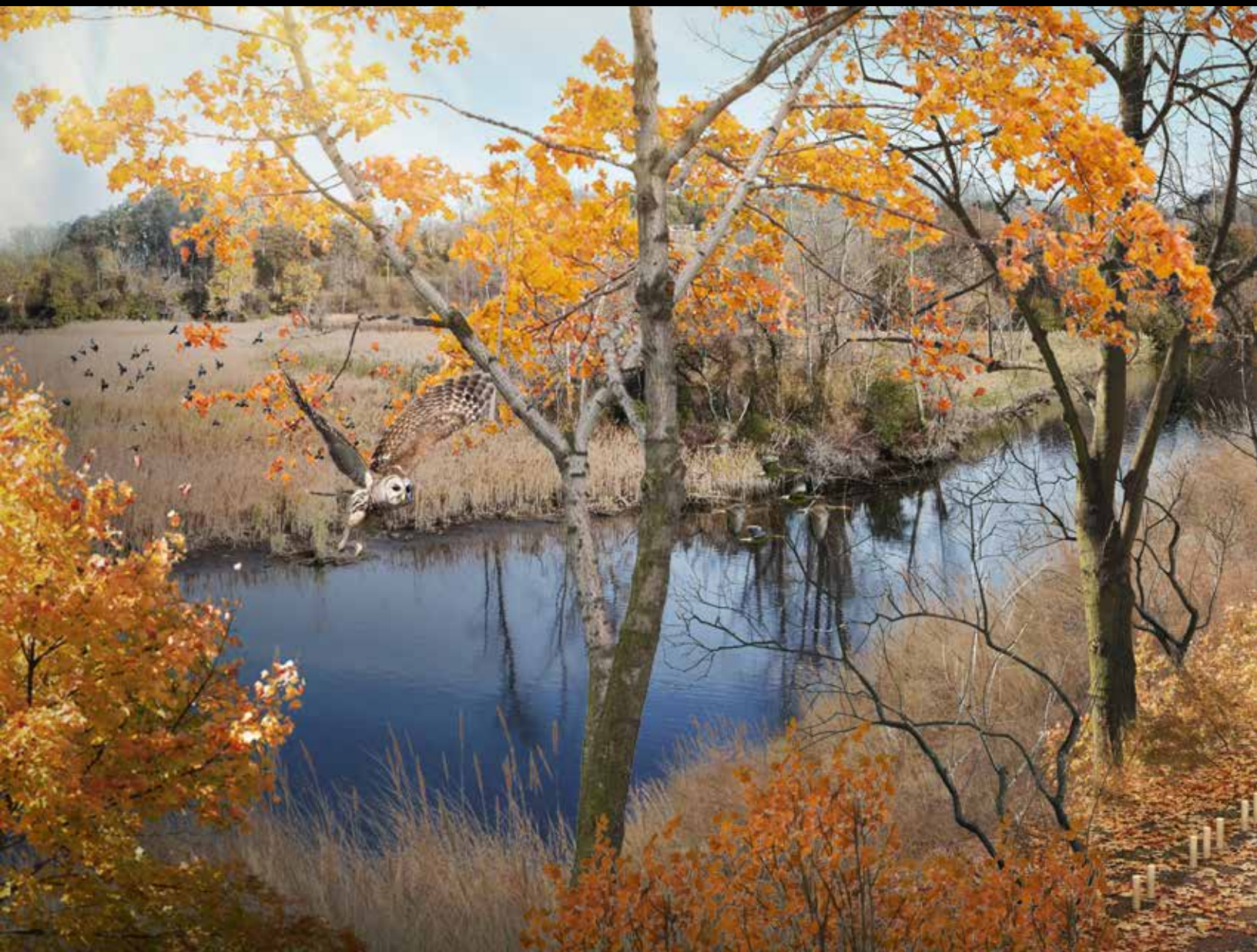
# TYPICAL OVERLOOK BANK SECTION, IN THE MARSH







OVERLOOK BANK













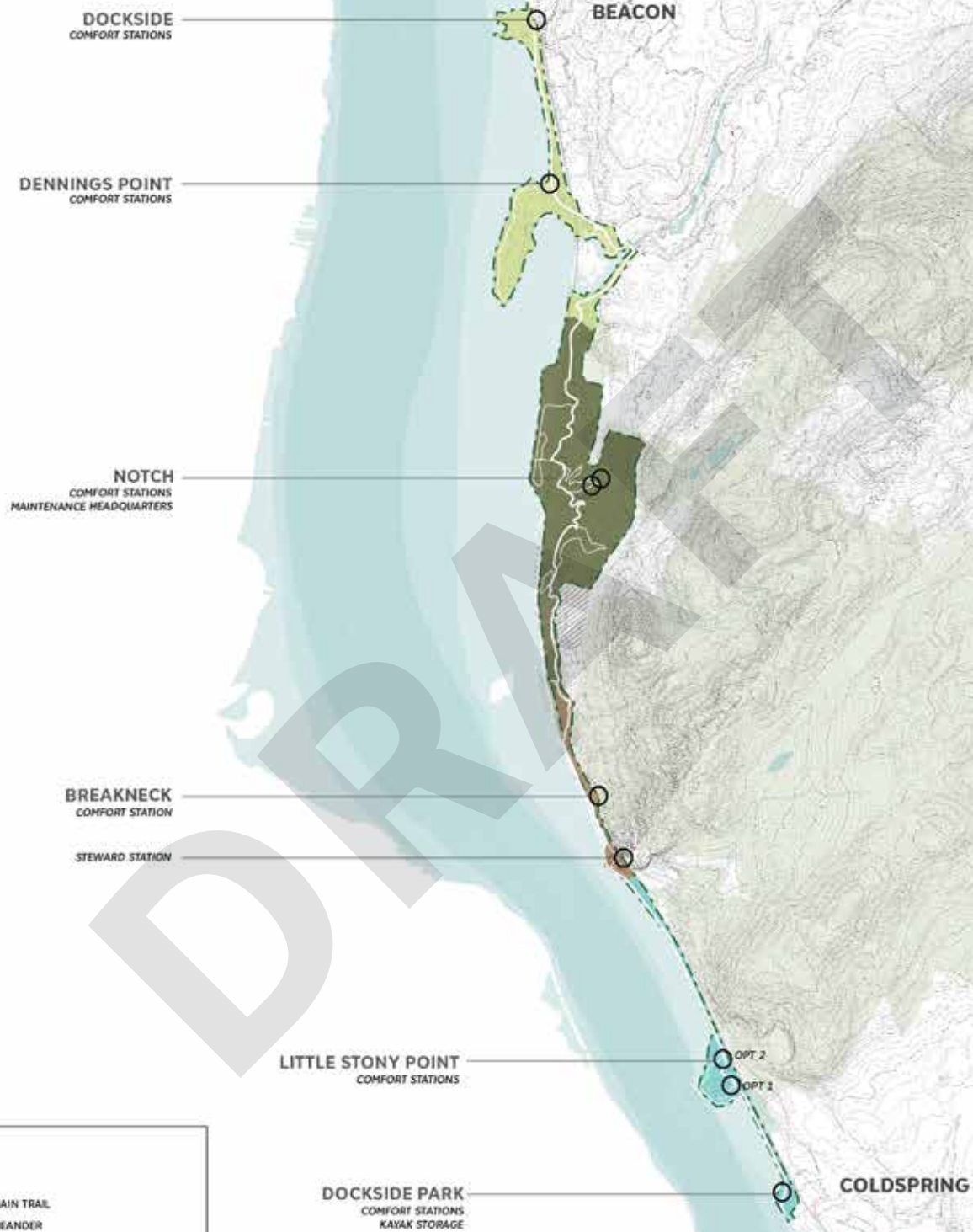


## BUILDINGS

Buildings are required along the Fjord Trail to accommodate specific programs and use. This section describes the general design guidelines for buildings along the Fjord Trail, specifically, the guidelines for the design of comfort stations.

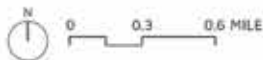
## BUILDING LOCATIONS

The areas called out on this map represent conceptual locations for buildings. Locations will be refined in future design phases.



### LEGEND:

- MAIN TRAIL
- MEANDER
- BUILDING LOCATION
- PROJECT AREA
- THE RIVER
- THE HIGHLANDS
- THE FOREST
- THE MARSH
- DUTCHESS MANOR





The buildings that populate the Fjord Trail act to enhance the landscape, drawing inspiration from the geological and cultural heritage of the Hudson Highlands. The form, organizational principles, and construction logic remain consistent throughout the trail although the scale and material may change from one location to the next depending on programmatic requirements and to reflect each site's surrounding landscape. The structures are designed to optimally cluster in the landscape aligning the scale, potential phasing, and use of the buildings to the program and site. All enclosed buildings should be lockable and visible from the Main Trail or meander and adjacent parking areas.

Building types identified to support the proposed program of the Fjord Trail are:

- Comfort Stations
- Steward Stations
- Shelters (for shade, wind and rain protection, and winter warming huts)
- Maintenance Storage / Staff Facilities

This section contains the design guidelines for comfort stations. The design of other building types will be addressed in future design phases, but the material selection and use for these buildings will draw inspiration from the surrounding landscape, like the comfort stations.



**BREAKNECK CONNECTOR COMFORT STATION**  
 View looking north at path along 9D



**BREAKNECK CONNECTOR COMFORT STATION**  
 View looking east from trail for all



## BUILDINGS: COMFORT STATIONS

Comfort stations are located at all major entrances to the Fjord Trail and serve as restrooms and as steward stations, with storage, wayfinding, and information booths. The comfort stations are ADA accessible from the trail and parking. The structures range in scale to meet program/fixture count, code and ADA requirements and contemplate gender neutral use, including a communal wash basin.

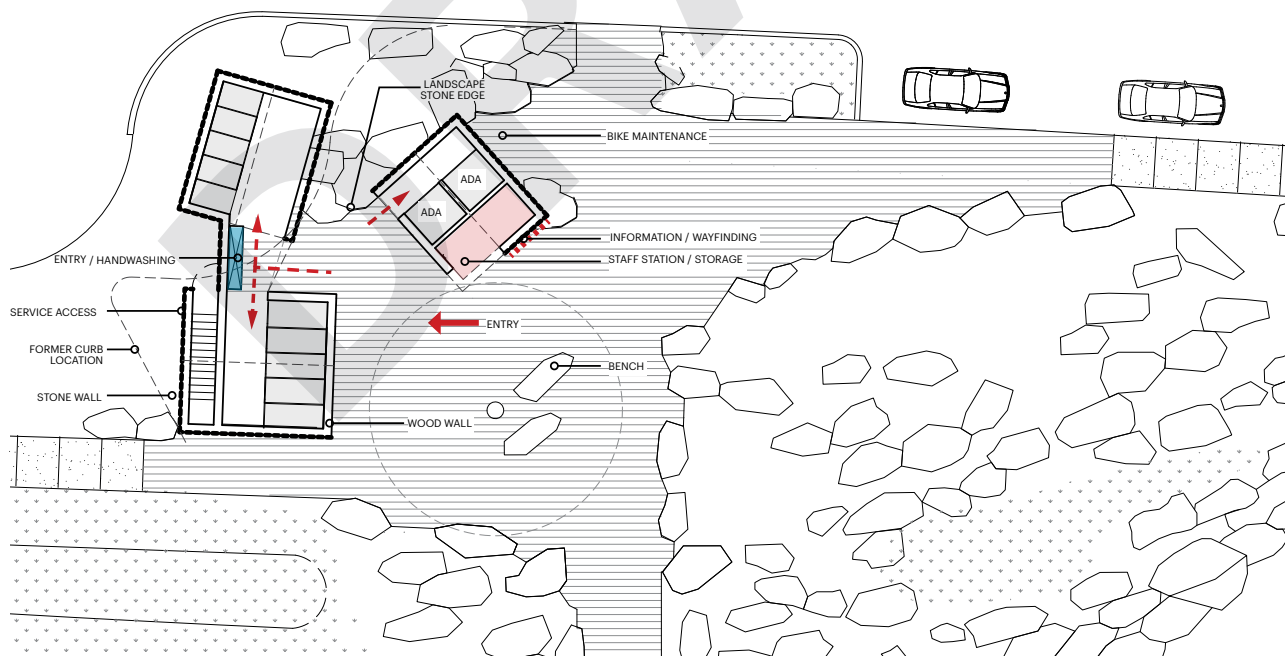
If required by programming the structures will contain an integrated steward station with a storage and shelter space for trail stewards. During special events or when a large volume of visitors are expected, this steward station can act as a welcome center/ information booth. The ideal clustering of the structures creates a gathering space for people to queue for the bathrooms and to wait for friends and family and gather information about the Fjord Trail.

### DESIGN STRATEGIES AND ELEMENTS

- Comfort stations provide restroom facilities that are ADA accessible from the Main Trail or accessible meander and adjacent parking areas.
- Comfort stations are sized to meet the

programmatic requirements of the Fjord Trail and ideally organize as a cluster of small gabled buildings to reduce the scale of the building and create a common place for gathering outside of the restrooms. The maximum size of the comfort stations will be 5-6 individual stalls each.

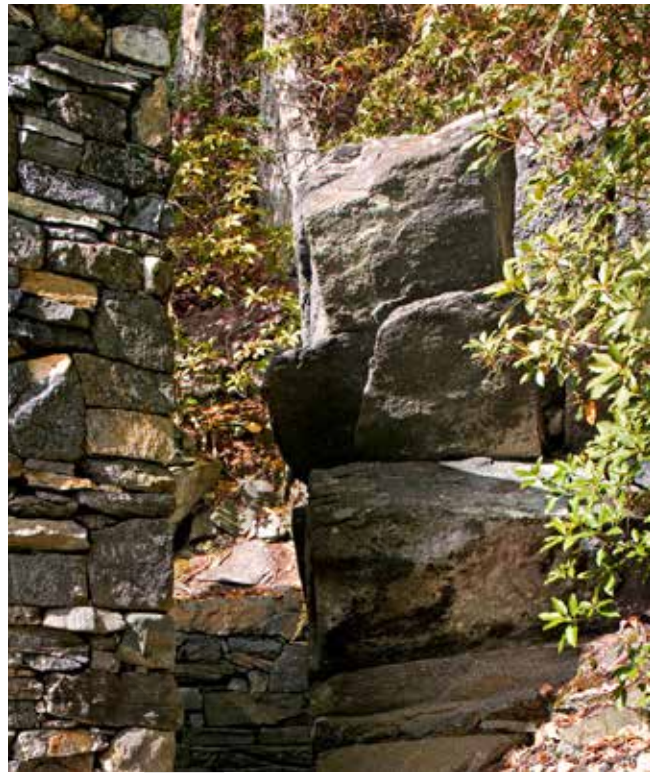
- Comfort station infrastructure may vary depending on anticipated use and the availability of utilities, specifically sewer and water. Permanent structures and fixtures requiring minimum maintenance are preferred.
- Comfort stations must be lockable.
- Comfort station siting considers the need for visual access from the trail and road where possible for security purposes.
- Comfort station design shall consider above average wear and tear, graffiti resistance and year-round use.



**COMFORT STATION PLAN**  
*Plan at Breakneck Connector*



**STONE EXTERIOR WITH WOOD INTERIOR**  
Wood lining provides a tactile change from exterior



**SITE SPECIFIC MATERIAL PALATTE**  
Exterior material reflects character of site



**POLYCARBONATE**  
Provides light and privacy



**STUD WALL**  
Provide structure and allow light into space



## COMFORT STATIONS: MATERIALS AND TYPICAL DETAILS

- The comfort station buildings combine site-built elements with prefabricated timber structural elements.
- The comfort station buildings are clad in a two-material system:
  - The exterior walls that form the outside faces of the cluster are clad in a material that relates to the prevalent landscape features of the area.
  - The exterior walls of the buildings that form the inner court of the cluster are more transparent and will be constructed of wood and translucent panels.
- The roof is constructed of exposed glulam structure clad in flat seam metal roofing.

## MAINTENANCE CONSIDERATIONS

- Final material selection shall be based on outdoor performance and life expectancy.
- The design shall allow for ease of safety and maintenance inspections in keeping with best practices and regulatory requirements. All bolted and welded connections will be visible for inspection.
- The design shall allow for regular unskilled repair and daily maintenance due to use and weathering.
- Anti-graffiti coating shall be utilized.







## SITE FIXTURES & FURNISHINGS

Site fixtures and furnishings, including seating, fences, screens, rails, and other elements, support the wide range of programs planned for the Fjord Trail. Some elements remain consistent in their material, form, and size along the entire route. Others vary and change with the landscape, their material, form, size, and site application merge and integrate with their surroundings. The following section identifies major elements along the Fjord Trail and provides typical schematic details, material guidelines and considerations, recommendations for siting and distribution, and appropriate application.

DRAFT



Consistent fixtures and furnishings do not change with the landscape and are generally distributed along the main trail, following the same consistent thread through the landscape. These elements support the program and function of the main trail and include:

- Typical Guardrails and Handrails
- Metro North Railroad Fence
- Picnic Tables
- Waste Receptacles
- Bike Facilities (bike racks, repair kiosks, rental)
- Water Access
- Wildlife Crossings

Other elements change as the landscape changes along the Fjord Trail and are generally associated with trail banks and meanders. These elements support the program and function of meanders, trail banks, and destinations and include:

- Seating
- Fences, Screens, and Blinds
- Unique furnishings (temporary or special elements)

The imagery in the following sections suggests a general material language for these elements but does not suggest a specific design or specific “off-the-shelf” fixtures. It is recommended that the consistent elements are developed and designed in collaboration with an industrial designer, to develop a custom Fjord Trail furnishings line for the family of consistent elements. Elements that change with each landscape zone will be more bespoke and draw from the look and feel and even literally from the materials of that landscape.

# SITE FIXTURES & FURNISHINGS: TYPICAL GUARDRAIL

## DESIGN STRATEGIES AND ELEMENTS

- A 42 in. guardrail is required on both sides of elevated trail to meet code requirements for fall heights greater than 30 in.
- An integrated 36 in. handrail may be required at elevated trails that exceed slope requirements for Outdoor Recreation Access Routes as defined in AGODA.
- The guardrail is comprised of prefabricated elements including the posts, subframe, infill and railings.
- Metal guardrail design shall have no gaps greater than 4 in.
- The design of the guardrail shall minimize joints at post and railing locations to maximize performance.

## MATERIALS AND TYPICAL DETAILS

- The primary structural and fall protection elements will be constructed of steel for durability and strength.
- Guardrails will include steel posts or stanchions connected by a continuous top rail and handrail. The subframe and infill will be woven stainless steel cables and mesh providing longevity of materials and fall protection.
- The woven stainless-steel mesh will be non-scalable and will have a minimum cell dimension of 2 in. x 2 in. and a maximum gap of 4 in.

## MAINTENANCE CONSIDERATIONS

- Guardrail elements are designed to be easily replaced and maintained without trained labor or heavy equipment.
- Materials will be finalized based on based on outdoor performance and life expectancy.



**STAINLESS STEEL MESH**

*Infill panel mesh stretched taut by rail support*



**TYPICAL DECK**

*Rail mounts to seams between glulam members*



# SITE FIXTURES & FURNISHINGS: METRO-NORTH RAILROAD FENCE

Portions of the project run parallel or near the Metro-North Railroad (MNR). For the safety of all users, a fence is required at these locations.

## DESIGN STRATEGIES / DISTRIBUTION

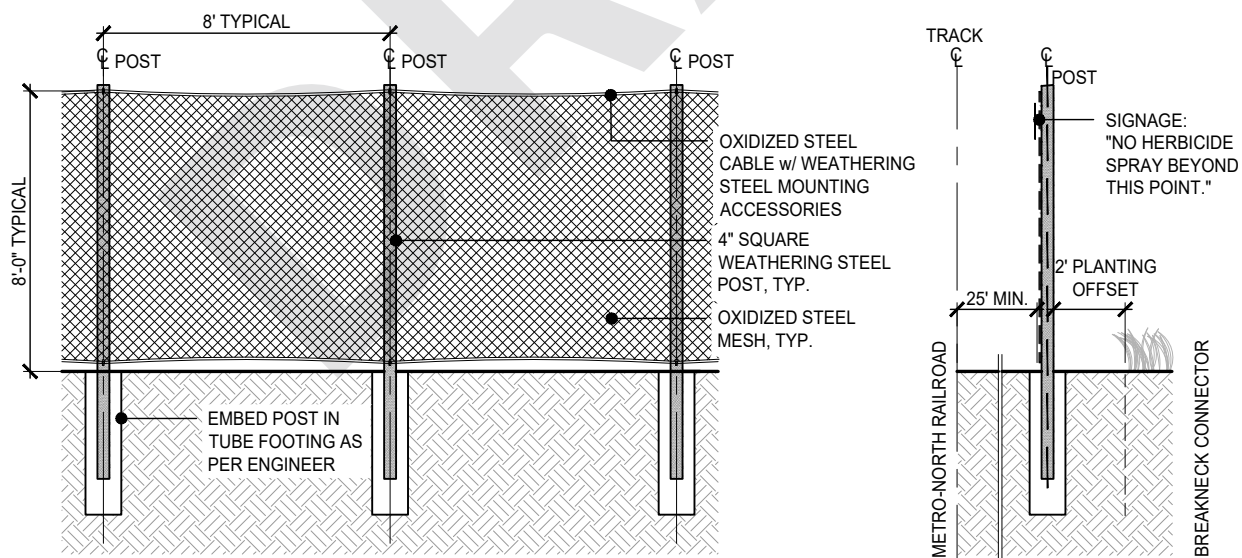
- The fence occurs where the Fjord Trail exists on grade and adjacent to the rail tracks. The exact offset distance from the rail tracks which necessitates a fence will be determined in collaboration with Metro-North Railroad.
- The fence is 8'-0" tall and is non-scalable.
- The minimum offset is 25' from the centerline of the closes rail tracks.
- Access points for MNR and emergency responders will occur where needed and are to be controlled by rapid access Knox Boxes.
- The fence design is consistent along the trail.
- The fence is to be visually unobtrusive.

## MATERIALS

- Infill: A fine, oxidized steel mesh is proposed as the infill material which successfully disappears against the landscape. The fineness of the mesh makes climbing uncomfortable.
- Sub-Frame: A black steel cable joins the mesh and the structural posts, omitting the need for a legible top rail. The lack of top rail results in a flexible panel that is difficult to get over when climbing is attempted
- Posts: Weathering steel posts are durable, cost effective and match other Fjord Trail elements.
- Design Alternative: In areas where Metro-North Fence will not be visible to trail users, black chain link fence can be provided to reduce project costs.

## MAINTENANCE

- The fence is designed to be maintained entirely from the track side, so that MNR personnel do not need to move through the Fjord Trail areas.



## METRO NORTH FENCE DETAILS

*Preliminary Details for Engineering & MNR input required.*

# SITE FIXTURES & FURNISHINGS: PICNIC TABLES

Pack-in, pack-out table facilities provide places for individuals or groups to gather, eat, learn, or conduct other activities. As a consistent element, picnic tables will be periodically placed at key moments along the Fjord Trail.

## DESIGN STRATEGIES / DISTRIBUTION

- Picnic tables range from typical length to longer than industry standard. The extended length allows for more people to gather around a single table and gives the area a more civic feeling.
- Picnic tables are placed at key destination moments, signature programmed trail banks, and entries. Some areas may include: Madam Brett Park, Notch, Breakneck Picnic Grove, Little Stony Point, and Dockside Park.
- Use tables at outdoor learning environments to provide working surfaces for educational groups.
- Picnic tables must meet accessibility requirements as defined in AGODA (see document resources for guidelines).

## MATERIALS

- When possible, construct tabletops and seats of picnic tables from hardwood debris and large trees removed from the project area for trail construction. Properly dry and prepare materials before reuse.
- The frame is constructed of raw, durable weathering steel. Fasteners are to be concealed from view.

## MAINTENANCE

- Picnic tables will require regular maintenance and repairs due to high volumes of anticipated use.
- To promote pack-in, pack-out, do not place waste receptacles near picnic tables, except at trail entries.
- Picnic table design to be standardized to reduce complexities in regular maintenance schedules.



### PICNIC TABLES

*Picnic tables are constructed from large, thick, durable wood slabs and sturdy steel frames.*



# SITE FIXTURES & FURNISHINGS: WASTE RECEPTACLES

Due to high volume of anticipated use, waste receptacles are required, selectively, to reduce the amount of trash and litter present in the landscape. The Hudson Highlands State Park preserve discourages food and litter and promotes a pack-in, pack-out system to promote landscape stewardship and environmental awareness.

## DESIGN STRATEGIES / DISTRIBUTION

- To enforce the pack-in, pack-out system, place receptacles at entries to the Main Trail only. Additional placement of waste receptacles at destinations will be addressed in future design phases.
- To reduce environmental disturbance, the waste receptacles are wildlife proof, as appropriate.
- Provide separate receptacles for landfill, compost, non-recyclable materials and recyclable materials.

## MATERIALS

- Developed in collaboration with an industrial designer, waste receptacles shall be constructed of durable, natural steel and securely anchored to prevent removal. Durable materials resist vandalism and theft.

## MAINTENANCE

- Ensure waste receptacles are accessible to both trail users and maintenance staff, both by foot and vehicle.
- Consider daily trash removal and regular maintenance.
- Provide signage and information at waste receptacles to education trail users on pack-in, pack-out system and trail and landscape stewardship.
- Materials selected for waste receptacles shall be resistant to vandalism and easily washable, repairable.



### WILDLIFE PROOF WASTE RECEPTACLES

*Wildlife proofing techniques recommended at Fjord Trail entries.*

# SITE FIXTURES & FURNISHINGS: BICYCLE FACILITIES

The Main Trail is a fully bikeable trail. Bicycle facilities are provided along the main trail to accommodate safe passage, for both bikers and pedestrians, along the trail.

## DESIGN STRATEGIES / DISTRIBUTION

- Bicycle racks are placed at entries and meander intersections. Additional placement of bike racks at destinations will be addressed in future design phases. Place racks in highly visible locations with proper clearance from other elements when in use.
- Ensure proper amount of racks is placed at locations. Consult local, state, and federal codes for count requirements / recommendations and installation regulations.
- Place bicycle repair stations at trail entries in proximity to bicycle racks.
- Bicycle rental facilities are recommended at Long Dock Park, Notch, and Dockside Park.

## MATERIALS

- Bike racks are constructed of durable, raw weathering steel and securely anchored to prevent removal. Durable materials resist vandalism and theft.
- Bike repair kiosks are to be developed in future design phases.

## MAINTENANCE

- Ensure bicycle repair kiosks are properly equipped and functional at regular time intervals.
- Consider staggered repair intervals for bike racks.
- Bike racks shall be accessible to trail users.
- Bikes are not to be left overnight.



**BIKE RACKS**



## SITE FIXTURES & FURNISHINGS: WATER ACCESS

In select locations, facilities enabling water access bring people closer to the water or provide the infrastructure to launch a kayak.

### DESIGN STRATEGIES / DISTRIBUTION

- Where feasible and accessible to the Main Trail, kayak launches, and water access amenities shall comply with accessibility standards.
- If determined feasible through future coordination with OPRHP and other project stakeholders, specific, defined areas along the Fjord Trail could provide designated, supervised, safe areas for swimming.
- Provide water access amenities at designated stopping points along the Hudson River Water Trail, as shown on project site plan.
- Infrastructure may include enhancements to shoreline, providing an accessible path to intertidal area, or a fully accessible floating platform with kayak launch.

### MATERIALS

- Consult accessibility standards for accessible kayak launches for material selection and use.

### MAINTENANCE

- Ensure accessible areas are free and clear of debris and intertidal surfaces are regularly maintained to reduce slippery material accumulation.
- Water access amenities to be accessible to maintenance staff and trail users. Ensure access amenities are accessible by emergency vehicles.
- Ensure seasonal structures are easily removed for winter months and in storm events.



#### **KAYAKING ON THE HUDSON**

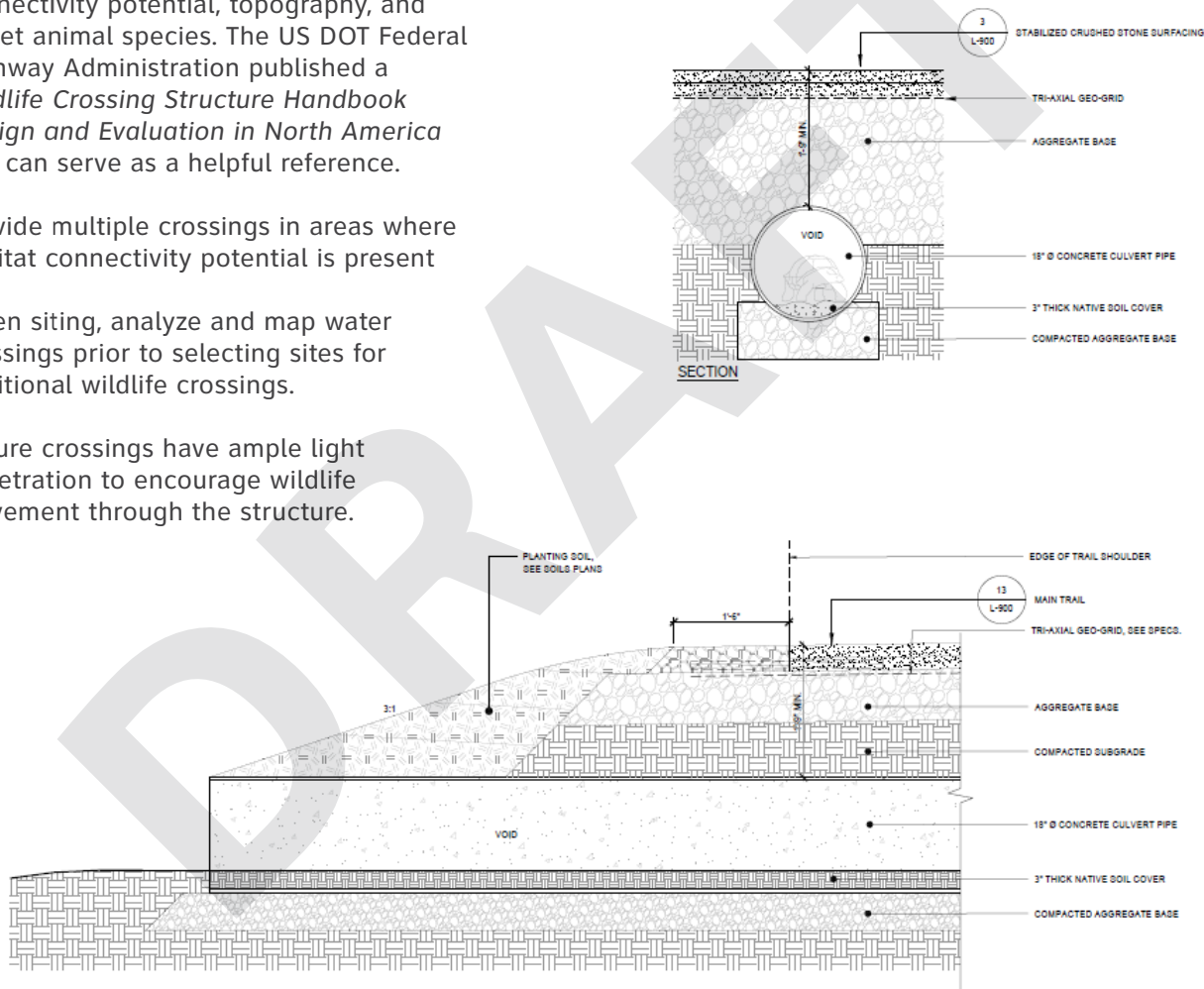
Kayaking is a popular activity on the Hudson River in this area. Kayak rentals are available in the area.

# SITE FIXTURES & FURNISHINGS: WILDLIFE CROSSINGS

Wildlife crossings facilitate safe passage of animal species underneath trail infrastructure. Determining a wildlife crossing type depends on several criteria, including adjacent habitat types and topography of the area. Further analysis is required to select the most appropriate wildlife crossing type and should occur when further environmental review and surveys have been conducted.

## DESIGN STRATEGIES / DISTRIBUTION

- Size crossing based on wildlife habitat connectivity potential, topography, and target animal species. The US DOT Federal Highway Administration published a *Wildlife Crossing Structure Handbook Design and Evaluation in North America* and can serve as a helpful reference.
- Provide multiple crossings in areas where habitat connectivity potential is present
- When siting, analyze and map water crossings prior to selecting sites for additional wildlife crossings.
- Ensure crossings have ample light penetration to encourage wildlife movement through the structure.



SECTION

1 WILDLIFE CROSSING AT MAIN TRAIL  
SCALE: 1" = 1'-0"

### STREAM CULVERT

Culverts tend to follow streams as mammals and amphibians are moving around water crossings.



# SITE FIXTURES & FURNISHINGS: SEATING

The Main Trail is 7.5 miles long (meanders add to that distance), so providing places to sit and rest along the trail is necessary to both meet accessibility standards and maintain a comfortable and enjoyable environment. Seating elements change with the landscape and manifest in different forms along the Fjord Trail landscape.

## DESIGN STRATEGIES / DISTRIBUTION

- Provide seating elements at entries, near comfort stations, trail banks, intersections, and destinations.
- Seating elements must consider accessibility standards and comfort requirements. Provide a mix of custom seating, seating with backs and arm rests, and provide companion seating where possible.
- Where space permits, seating arrangements should support both social groups and individuals.
- Ensure seating elements are placed a safe distance from the main trail, minimum of 36 inches.
- Strategically place seating elements to orient to views or to promote programmatic activities planned for the area.

## SEATING: THE RIVER

### Materials

- Seating along the river is comprised of three elements: boulders, driftwood, and large, durable, chunky wood beams.
- Driftwood pieces are collected from the project site, stacked, arranged, and woven in a manner to promote comfortable seating. Details for fixing these elements to be considered in future design phases.
- Boulder seating should be smooth and weathered to reflect the glacial process that formed the river. Tone and color of boulder seating to match the existing exposed bedrock in the landscape.

### Maintenance

- Inspect woven wrack lines following flood events and re-stack and weave as required.
- Woven wrack lines may need to be replenished on a regular basis. Woven wrack lines are selectively used to frame beaches and provide seating.



### WOOD BENCHES

*Comprised of large, chunky, durable wood beams*



# SEATING: THE HIGHLANDS

## Materials

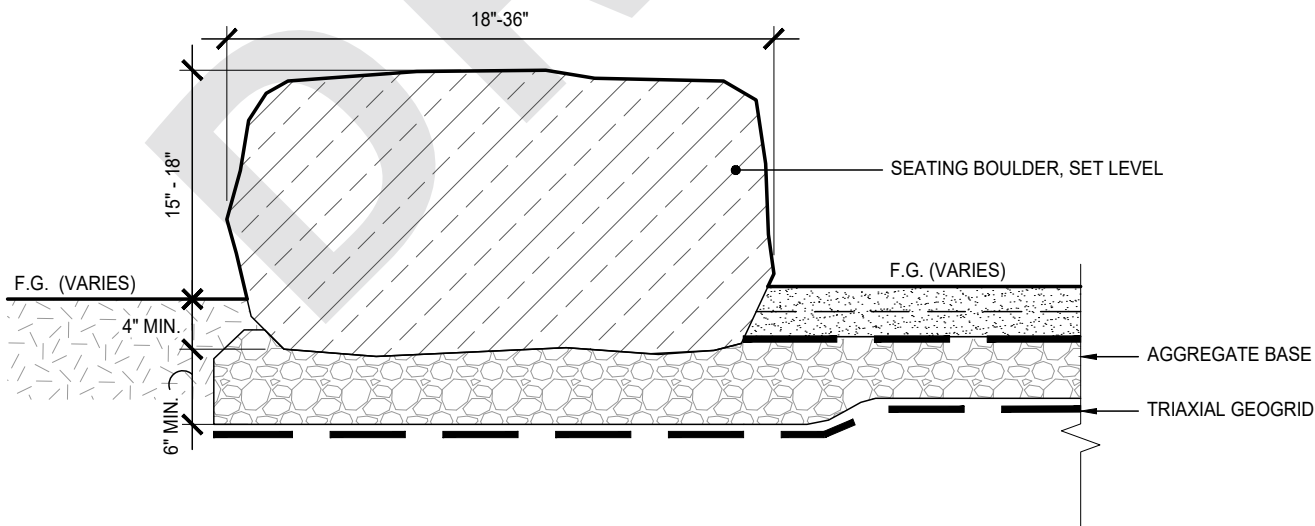
- Seating consists of durable, large boulders or dimensioned quarry block sourced from local quarries. Stone is primarily granite.
- Boulders or quarry blocks can be stacked to provide tiered seating or scrambles to promote social seating configurations or placed in isolation to provide shaded areas for contemplation and reflection.
- The tone and color of the stone matches the stone in the landscape around it. This is critical to maintaining the overall concept of “artful camouflage.”

## Maintenance

- The durability of granite alleviates the need for regular maintenance. Seating boulders and scrambles should be inspected at regular intervals to ensure safety and stability.

NOTE:

BOULDERS SHALL BE SELECTED IN THE FIELD BY LANDSCAPE ARCHITECT.



**BOULDER SEATING DETAIL**

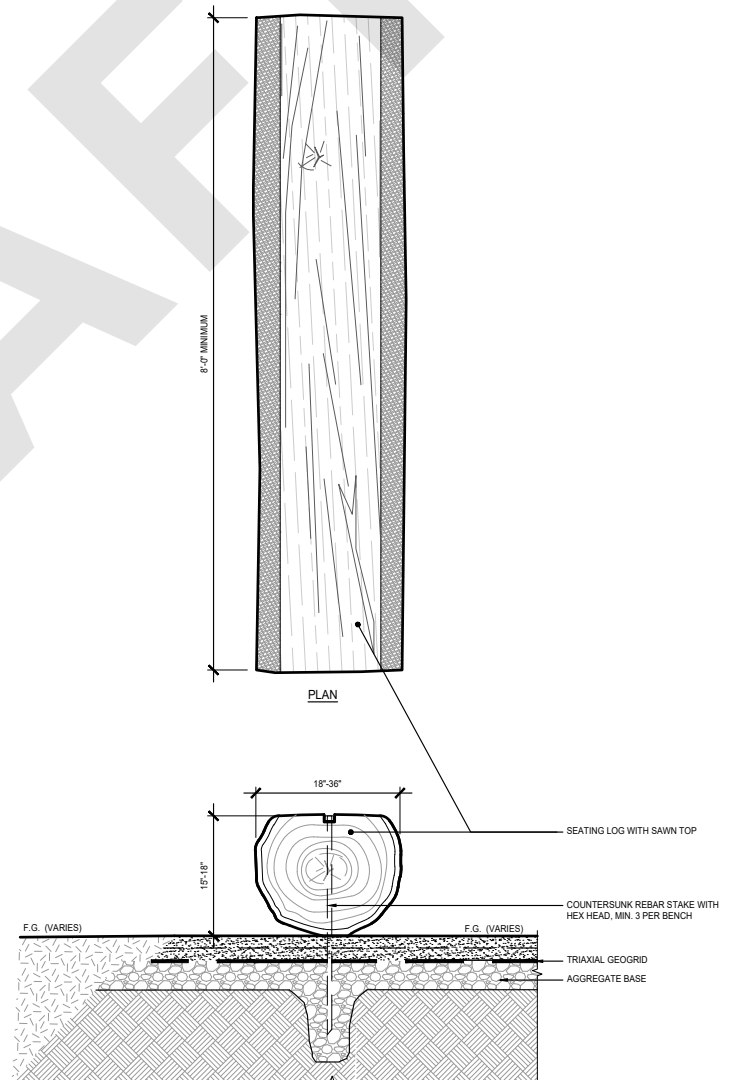
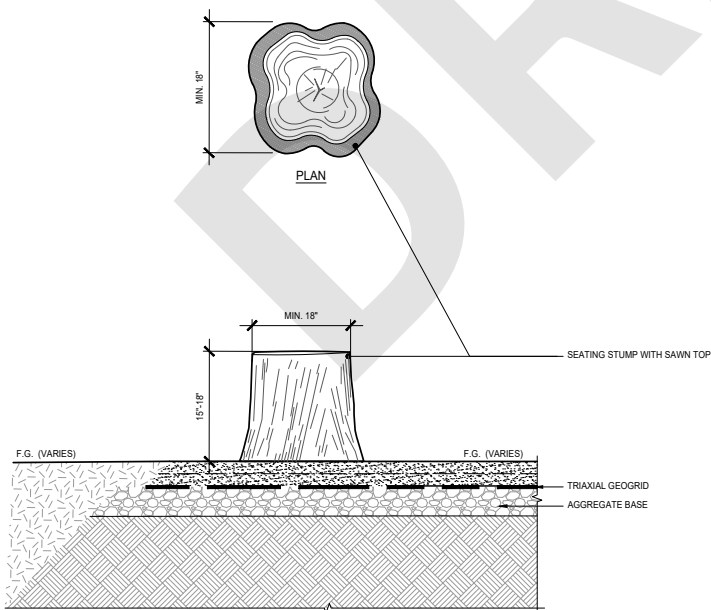
## SEATING: THE FOREST

### Materials

- Forest benches are large, sawn logs constructed from hardwood debris collected from the site, left over from trail clearing, where possible. Log seating can consist of longitudinally sawn logs or transversely sawn logs, as depicted in the detail (below).
- Secure seating in place, as shown in detail (below).
- Provide adequate subbase material and structure in a concealed manner which also manages drainage and moisture to slow the process of wood breakdown and decay.
- Properly dry and prepare materials before reuse.

### Maintenance

- Regular inspections of log benches required to maintain safe seating elements. As needed, replace log benches with hardwood tree material as it becomes available from the project area.
- Ensure design strategy allows for the addition of seating as needed.



### SAWN LOGS

Details of longitudinally sawn logs and cross cut logs.



## SEATING: THE MARSH

### Materials

- Marsh benches secured in place and are constructed of durable, monolithic wood blocks.
- Benches may line elevated marsh boardwalks or be set on grade.

### Maintenance

- Regular inspections of benches required to maintain safe seating elements.



### SAWN LOGS

*Details of longitudinally sawn logs and cross cut logs.*



**DRIFTWOOD FENCE**

*Woven pieces of driftwood draw separations in very select moments.*



# SITE FIXTURES & FURNISHINGS: FENCES, SCREENS, BLINDS

Fences, screens, and blinds create layers of separation between Fjord Trail users and adjacent landscapes and wildlife. These elements define space, conceal wildlife enthusiasts from view, and help to manage people and keep them out of sensitive landscapes and ecologies. These elements should be used selectively.

## DESIGN STRATEGIES / DISTRIBUTION

- Elements should not impede the passage of wildlife. Maintain permeable layers of separation.
- Bird blind structures must be tall enough to effectively obscure a human being from the bird's view, if required.
- Use low fences, screens, blinds to restrict access to landscapes, but maintain views.
- Tall screens provide shelter from wind and warm spaces to seek refuge from harsh elements.
- Use temporary fencing to close off designated areas of the trail, or adjacent ecological areas undergoing restoration.

## MATERIALS: RIVER'S EDGE

- Screens and fences in the river may be constructed of woven pieces of driftwood collected from the site, contained in a structural system that allows for smooth replacement and replenishment. Concept to be piloted and further explored for feasibility in future design phases and used selectively.
- Low fences and edges are constructed of woven or stacked pieces of driftwood, or larger boulders / river rock.

## MATERIALS: HIGHLANDS

- With the exception of the Metro-North Fence, lower dividers can be constructed of stacked stone, engineered stone clad walls, or larger boulders all matching the tone and color of existing rock in the area.
- Low path fencing is sometimes required in high-use areas with parallel paths. Posts are permitted to be round hardwood or weathering steel.

## MATERIALS: FOREST

- Elements in the forest are to be constructed of horizontally stacked or woven logs, collected from the site. Use smaller trail clearing debris for these elements. Permanent structure to be durable and provide a structural system where elements can be easily replaced and replenished.

## MATERIALS: MARSH

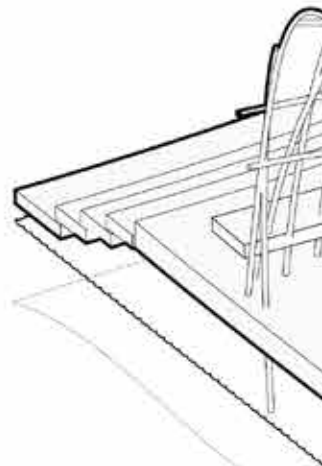
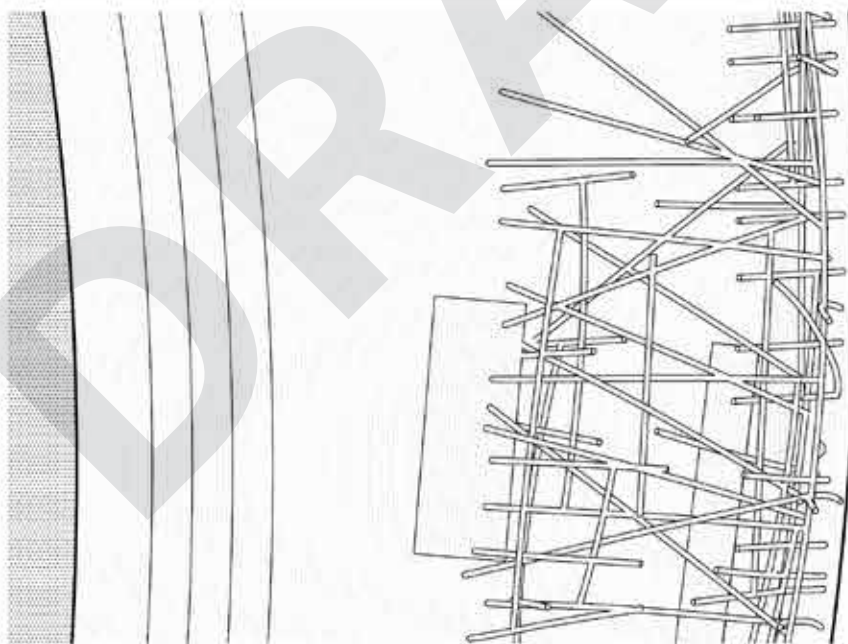
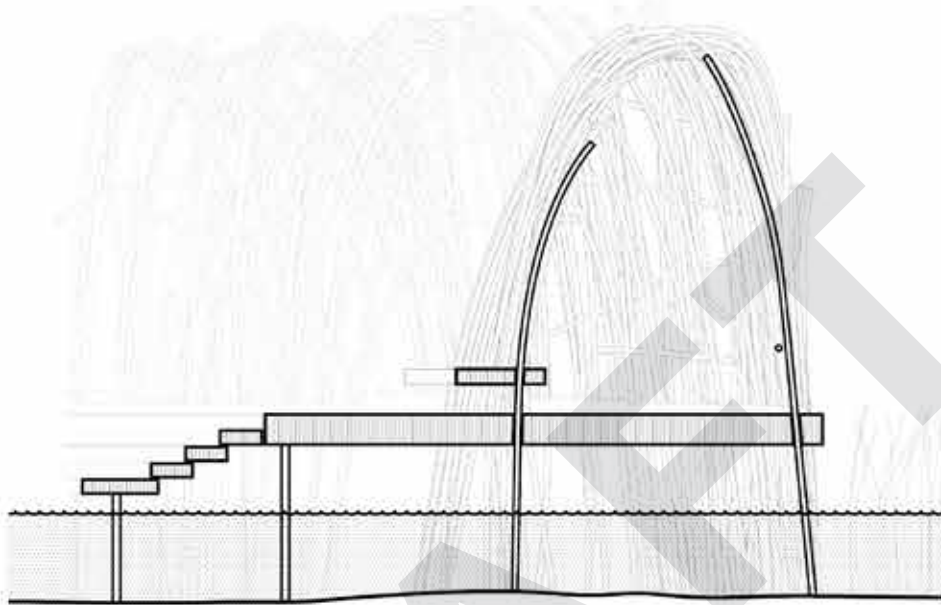
- Marsh screens, blinds, and fences constructed of smaller, delicate pieces of wood or steel. The material arrangement and density shall reflect the texture of the vegetation in the marsh landscape around it.

## MAINTENANCE

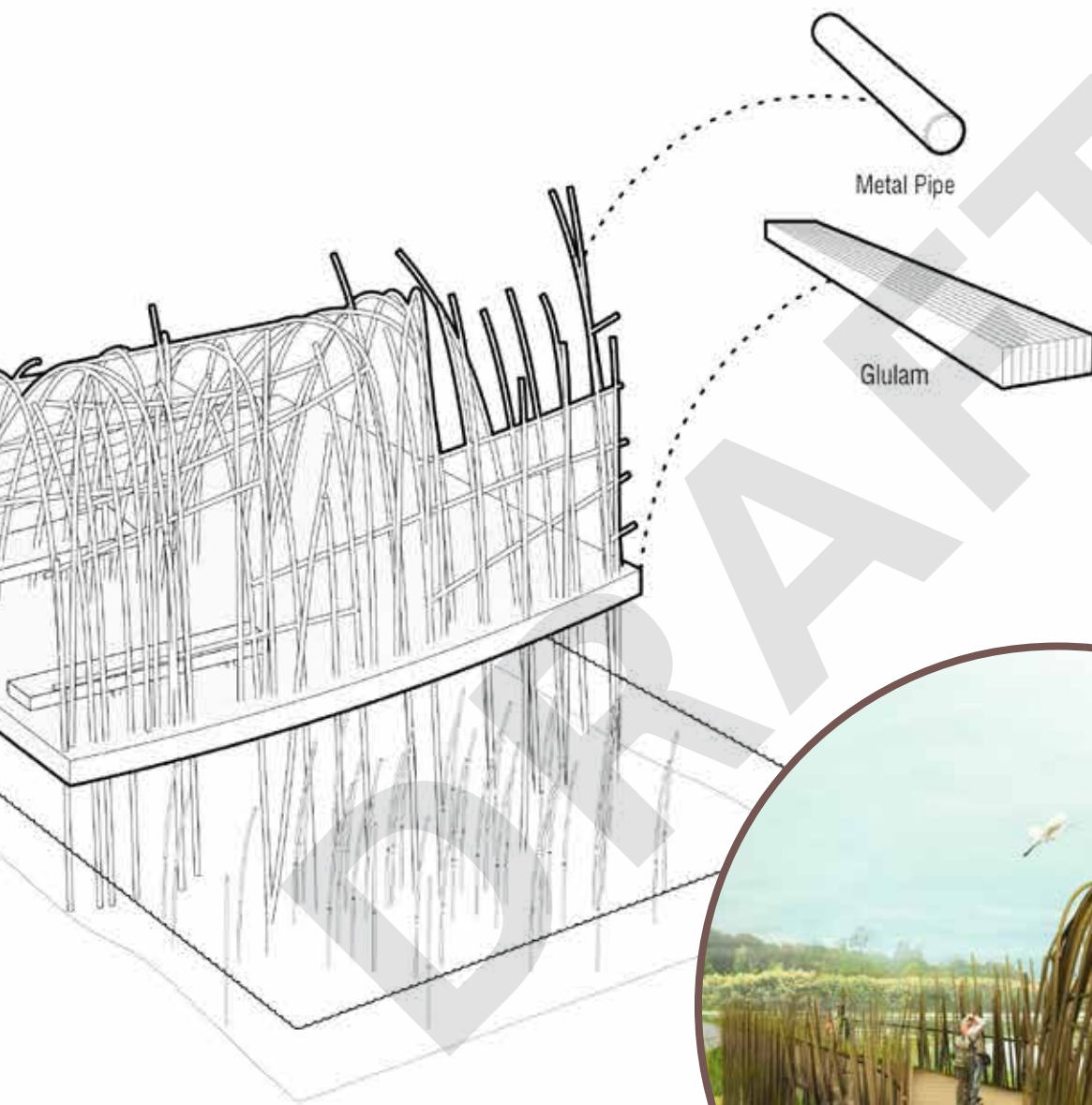
- Regular inspection required to ensure structural stability and safety.
- For elements that require replenishment on irregular basis, provide access to maintenance staff to replenish material contents.

### CONCEPTUAL MARSH BLIND

A bird blind in the marsh landscape integrates with its surroundings, using slender members to create a woven, reed-like structure. Using a combination of slender metal and wood, the structure would create a light and delicate intervention similar to marshy grasses. This approach seeks to visually conceal users from the local wildlife, allowing them to get closer to the animals they are observing without disrupting their natural habits.









**LOG PLAY STRUCTURES**



**PLAYFUL NETS**



## UNIQUE FURNISHINGS

Temporary, seasonal, or special furnishings and fixtures may be installed along the trail to enhance specific programs. The design of these elements will change with the landscape and their materials and form will be influenced by their direct surroundings.

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## SIGNAGE & WAYFINDING

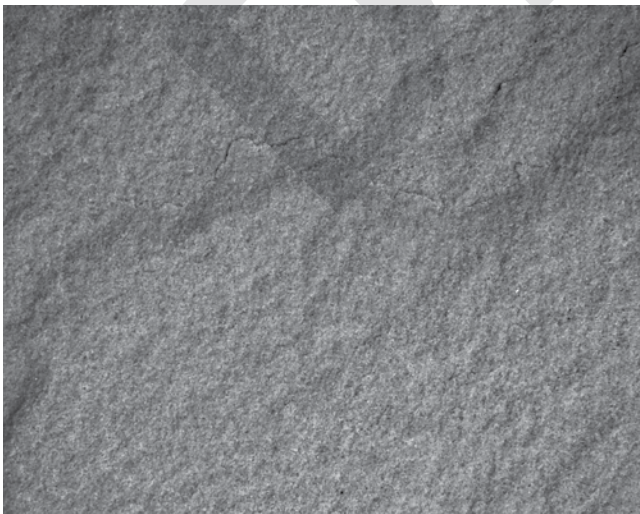
The signage and wayfinding along the Fjord Trail is organized into three categories: **Main Trail signs, meander signs, and special signs.** This section describes the general design guidelines for sign materials, information, and placement along the Fjord Trail.



**METAL**



**WOOD**



**STONE**





The Fjord Trail's wayfinding and signage is quiet and subdued; the trail's main purpose is to reveal the landscapes of the river to all people and for users to enjoy the Hudson Highlands landscape. Signage and graphics should not interrupt these experiences, but rather safely guide visitors along the trail to discover new destinations.

The landscape and architectural design of the trail is in many ways its own form of wayfinding. The change of materials that hint to new experiences and the consistency of the Main Trail remind visitors they are on the right path. The Main Trail is linear, with clear entries and exits, which make for easier navigation. The signs throughout the trail indicate to users the direction of travel, where destinations are located, and the time / distance to those destinations. Signage confirms to visitors that they have reached the trail and continues to reassure them while they are on it. Signage also appears at critical moments on the trail, providing essential information.

The design of the signage seamlessly merges into the environment and integrates with other designed elements of the project. The graphic language present on the signs (symbol, logo, typography, and iconography) will be consistent throughout the trail and will unify the entire system, regardless of material and landscape changes.

## STANDARDS

The Main Trail is designed as a fully accessible, bikeable, and walkable trail. Its signage should also serve all visitors of the trail and be welcoming and functional for all.

While there are not specific ADA code requirements for outdoor directional signage graphics, the design accounts for all elements of accessibility including color contrast, type style, character width, height, spacing and thickness when designing signs throughout the trail. The New York State Park System Trail Signage Guidelines (2010) document outlines general design guidance for signage along New York State greenways, hiking trails, and multi-use trails. These guidelines were referenced for the Fjord Trail signage package and should be consulted for specific accessibility identification and iconography.

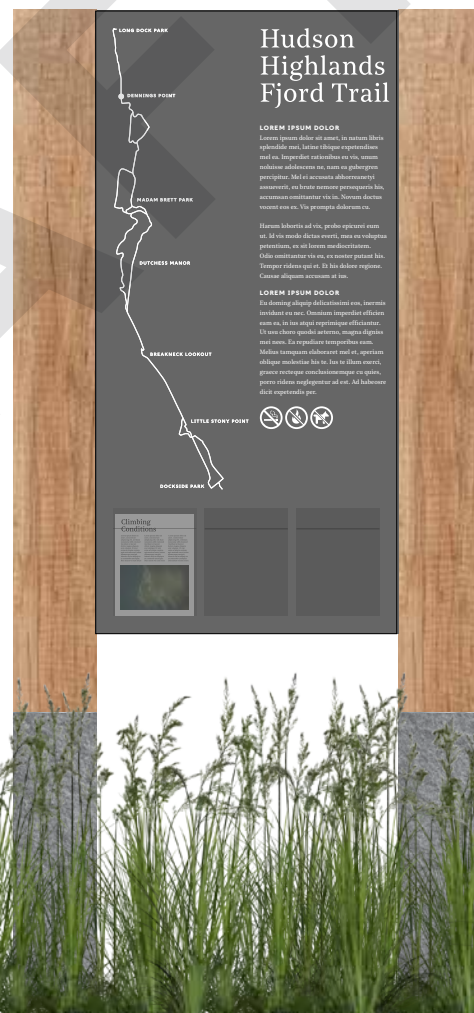
## MATERIALS

The materiality of the signage blends into the environment and coordinates with the other designed elements of the project. The material selection and use is derived from the general materiality of the landscape and other structures along the trail. The proposed materials of the signage include:

- Painted Metal
- Wood
- Stone

# MAIN TRAIL SIGNS

The Main Trail is the path for all, an accessible path that connects the four landscape zones. The signage along this trail are the primary wayfinding devices. They mark the entries, appear at key decision points, and act as guideposts along the trail. The materiality of these signs, like the materiality of the Main Trail, should be consistent along the length of the trail.



A. GATEWAY SIGN





**B. ENTRY CAIRN**

**C. DESTINATION  
SIGN**

**D. INTERSECTION  
SIGN**

**E. TRAIL  
MARKER**

## SIGN PLACEMENT & RELATIONSHIPS

The below diagram illustrates how the combination of Main Trail and meander sign types are applied in a typical destination area. Sign placement shall be useful, visible, and used strategically to avoid any unnecessary clutter.

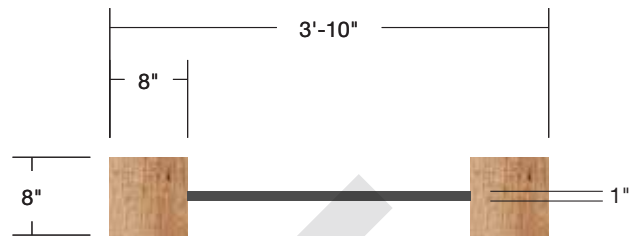
- ① GATEWAY SIGN
- ② INTERSECTION
- ③ ROAD SIGN
- ④ DESTINATION SIGN
- ⑤ DIRECTIONAL





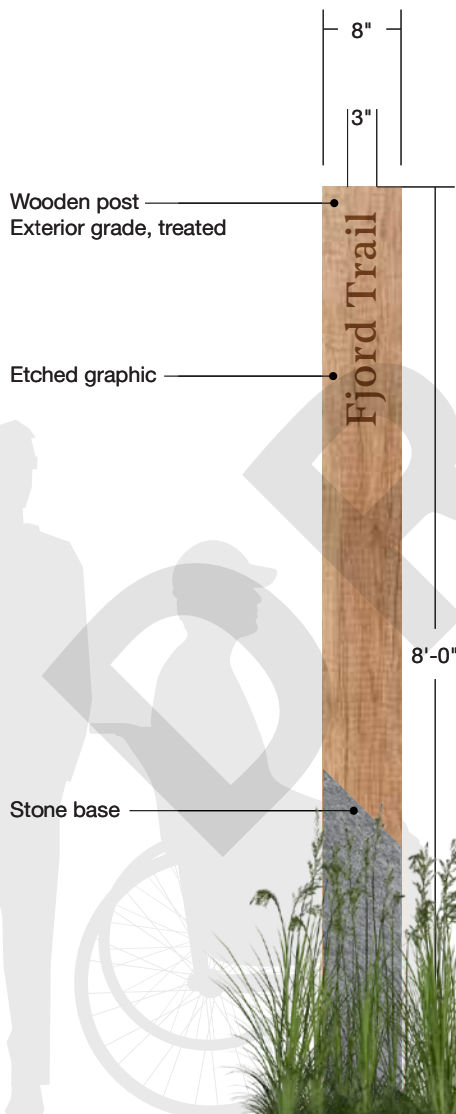


invidunt eu nec. Omnium n  
eam ea, in ius atqui reprimique  
Ut usu choro quodsi aeterno, magn  
mei nees. Ea repudiare temporibus ea  
Melius tamquam elaboraret mel et, ape  
oblique molestiae his te. Ius te illum exe  
graece recteque conclusionemque cu qui  
porro ridens neglegentur ad est. Ad habe  
dicit expetendis per.



PLAN VIEW

Painted metal panel  
Screenprinted graphics  
Exterior grade coating



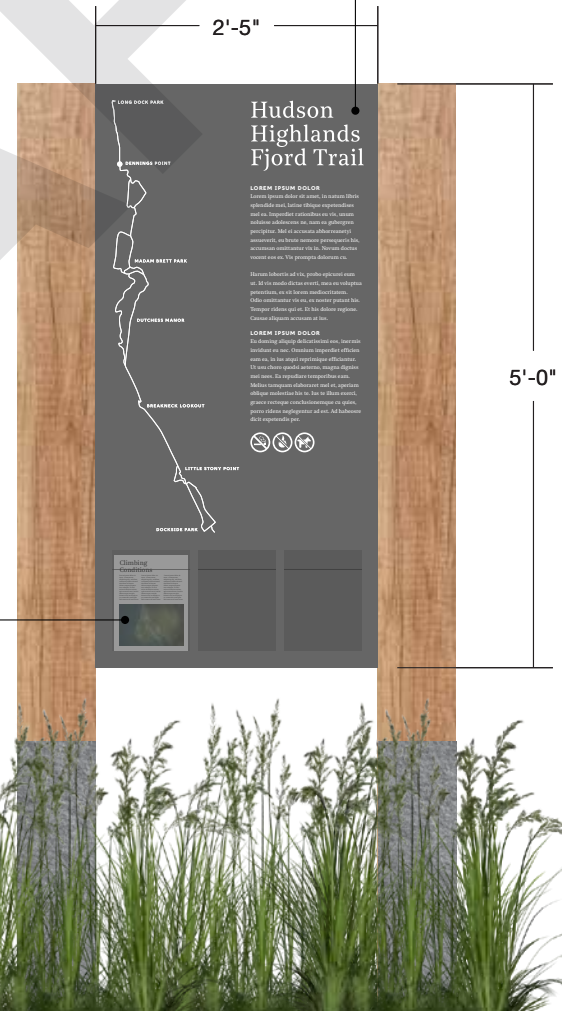
Wooden post  
Exterior grade, treated

Etched graphic

Stone base

8'-0"

8.75 by 11.25"  
Poster cases  
To hold 8.5  
by 11" sheets  
Exterior grade



2'-5"

5'-0"

SIDE VIEW

FRONT VIEW



## MAIN TRAIL SIGNS: GATEWAY

The purpose of the Gateway Sign is to introduce arriving visitors to the trail and provide information for trip planning. This sign also serves as a regulatory information center where any rules, regulations, notices, and programmatic information can be communicated.

This sign should be placed at all major entry points. Gateway signs should be oriented in the direction of travel to provide clarity for trail users and placed far enough away from the Main Trail so users can gather around without interrupting trail movement but remain in sight from the Main Trail.

The gateway sign is composed of a metal panel with two wooden posts with stone bases. The screen-printed metal panel provides space for a map of the entire trail from Beacon to Cold Spring

and to call out key highlights for that area. Exterior-grade poster cases can be adhered to the metal panel for frequently updated announcements, programmatic communications, and other notices.



**BREAKNECK ENTRY**



**FRONT VIEW**

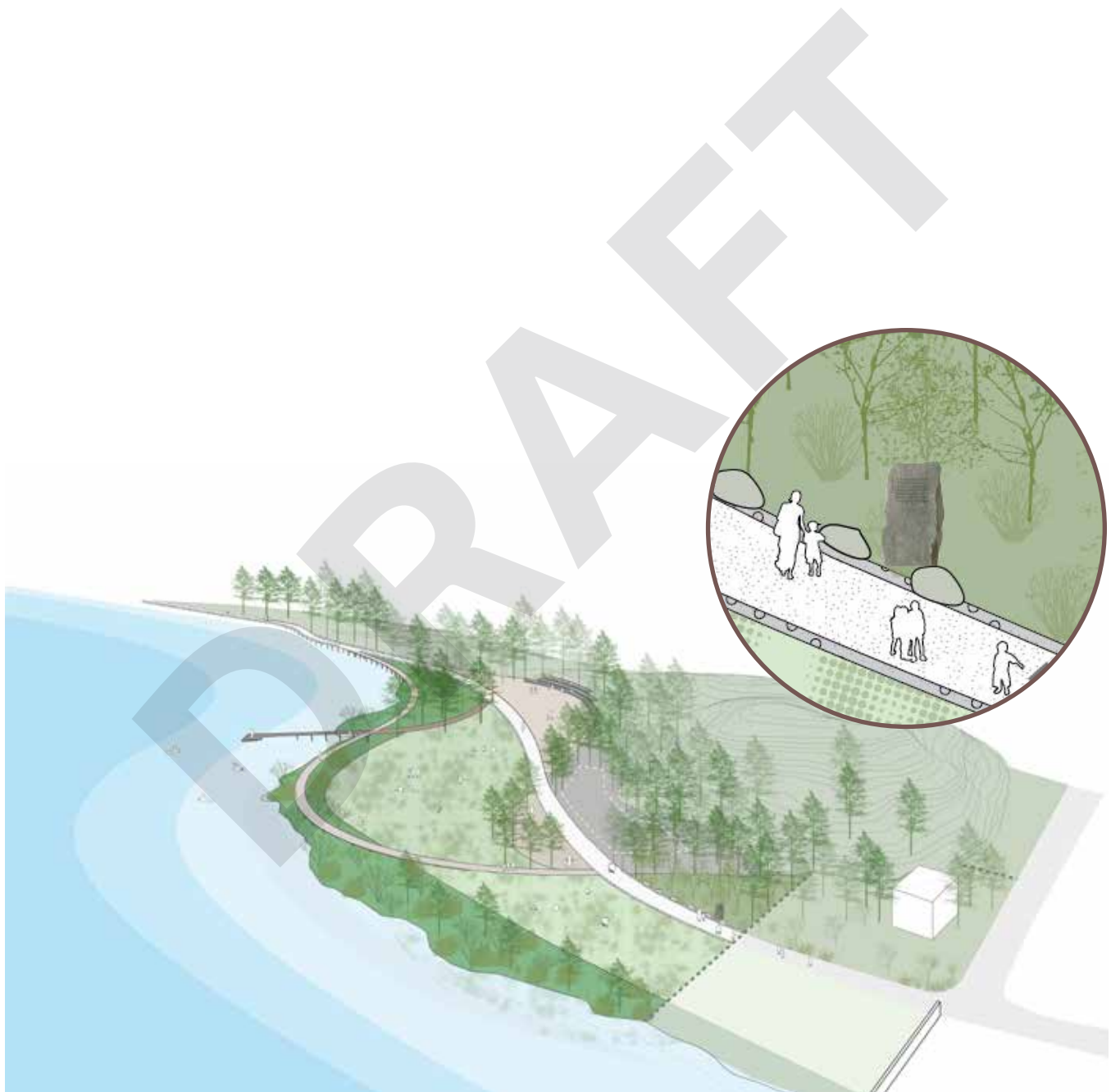
**BACK VIEW**



## MAIN TRAIL SIGNS: ENTRY CAIRNS

Cairns appear at the moment a person has arrived at the Fjord Trail. They do not call out detailed information. If desired, a welcome message can also be engraved on the cairn.

Cairns are large boulders sourced from the same quarries or region as other stone elements in the project. They are roughly six feet tall.



**DOCKSIDE PARK ENTRY CAIRN**





## MAIN TRAIL SIGNS: DESTINATION

Destination signs are meant to occur in a few select places along the trail. They could appear in Dockside Park, Little Stony Point, Breakneck, Notch, Dennings Point and Long Dock Park. These destinations have multiple programmatic uses and many trail banks within them. The signs at destinations will communicate to the visitor the types of activities, walks, and uses of the large destination.

Destination signs will appear at the intersection of the Main Trail and the entrance to the destination and shall be incorporated with intersection signs when possible.

Destination signs are composed of one wooden post and a metal panel.



**TYPICAL DESTINATION SIGN PLACEMENT, RIVER ZONE INTERSECTION AT LITTLE STONY POINT**





## MAIN TRAIL SIGNS: INTERSECTION

Intersection signs are placed where the Main Trail and meanders intersect. They let the visitor know that this is the moment to get off the Main Trail and see something different. Before they enter, the intersection sign will inform people of the length of the meander, what is and is not allowed on the meander (e.g., biking, pets, shoes, etc.), and any key destinations along it.

Intersection signs are tall etched wood posts with a stone base. A metal panel flush mounted to one side of the post displays a map of the upcoming meander and additional information for meander use.



**TYPICAL MEANDER INTERSECTION SIGN PLACEMENT, FOREST ZONE**





**TYPICAL APPLICATIONS OF TRAIL MARKERS IN CRUSHED STONE AND WOOD DECKING**

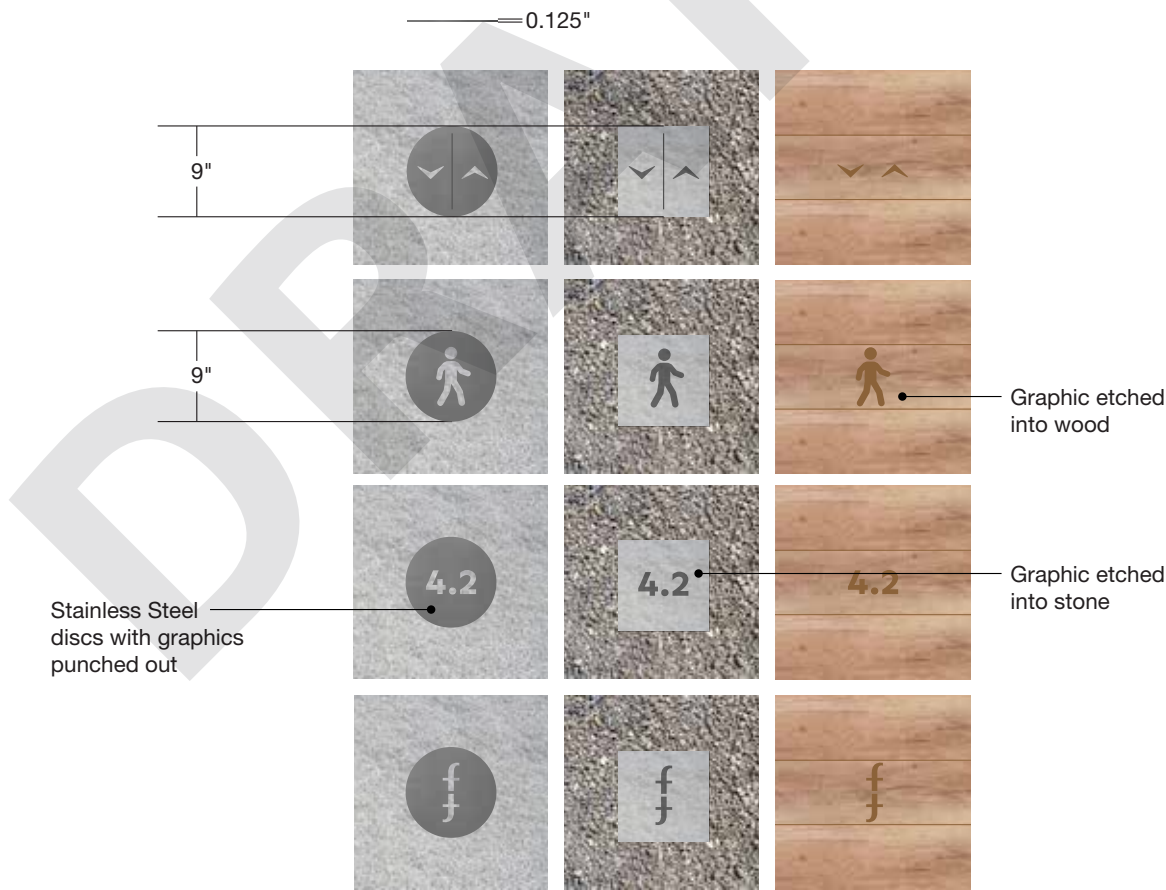


# MAIN TRAIL SIGNS: TRAIL MARKERS

Trail markers are embedded into the path material of the Main Trail. They have a few different functions and can be used on both crushed stone and wood decking. The graphics on the metal nine-inch discs can display traffic direction, trail use, distance, or branding. The graphics are cut out to reveal the material of the path and are large enough to account for wear and visibility.

In areas of high traffic, the directional version with the arrows helps direct trail users into a directional separation to avoid safety conflicts. In sensitive areas of the path, a walking or bicycle symbol can be embedded in the trail for usage control. The discs with the trail symbol reinforce user

confidence and awareness of the identity of the trail along its length. The mileage discs can indicate to users distance traveled along the Fjord Trail.



TOP VIEW:  
METAL MARKER

TOP VIEW:  
STONE MARKER

TOP VIEW:  
DECKING



# MEANDER SIGNS

The meanders are opportunities for visitors to escape from the shared space of the main trail and immerse themselves in a destination-based moment. For this reason, the signage in these areas is very subtle and appears embedded in the natural elements that change with the landscape. Their purpose is to nudge visitors in the right direction and towards destinations.



**F. DIRECTIONAL**



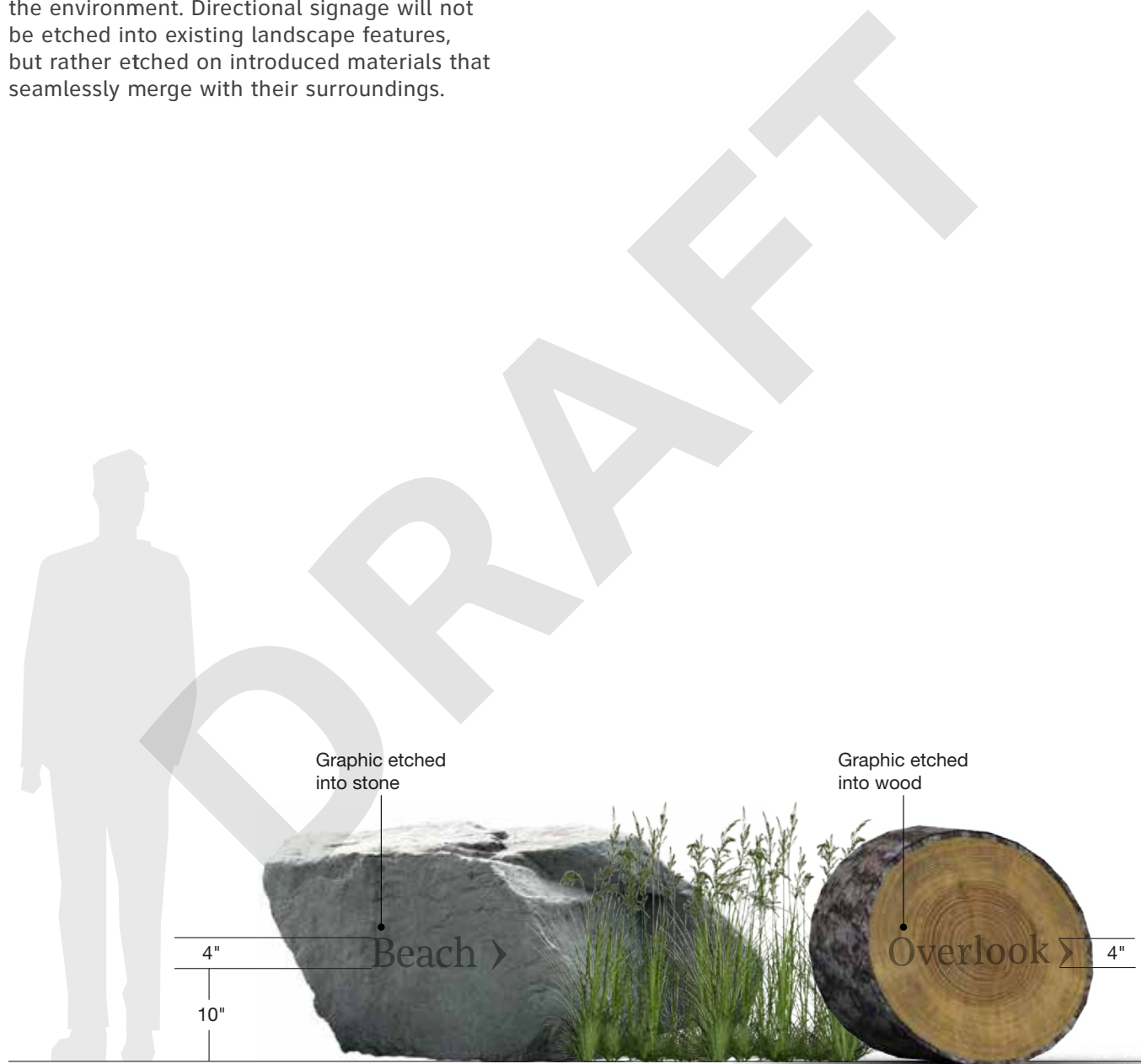


***G. TRAIL BLAZE***

## MEANDER SIGNS: DIRECTIONAL

Trail directionals along meanders serve as navigation devices and point users towards moments along the meander.

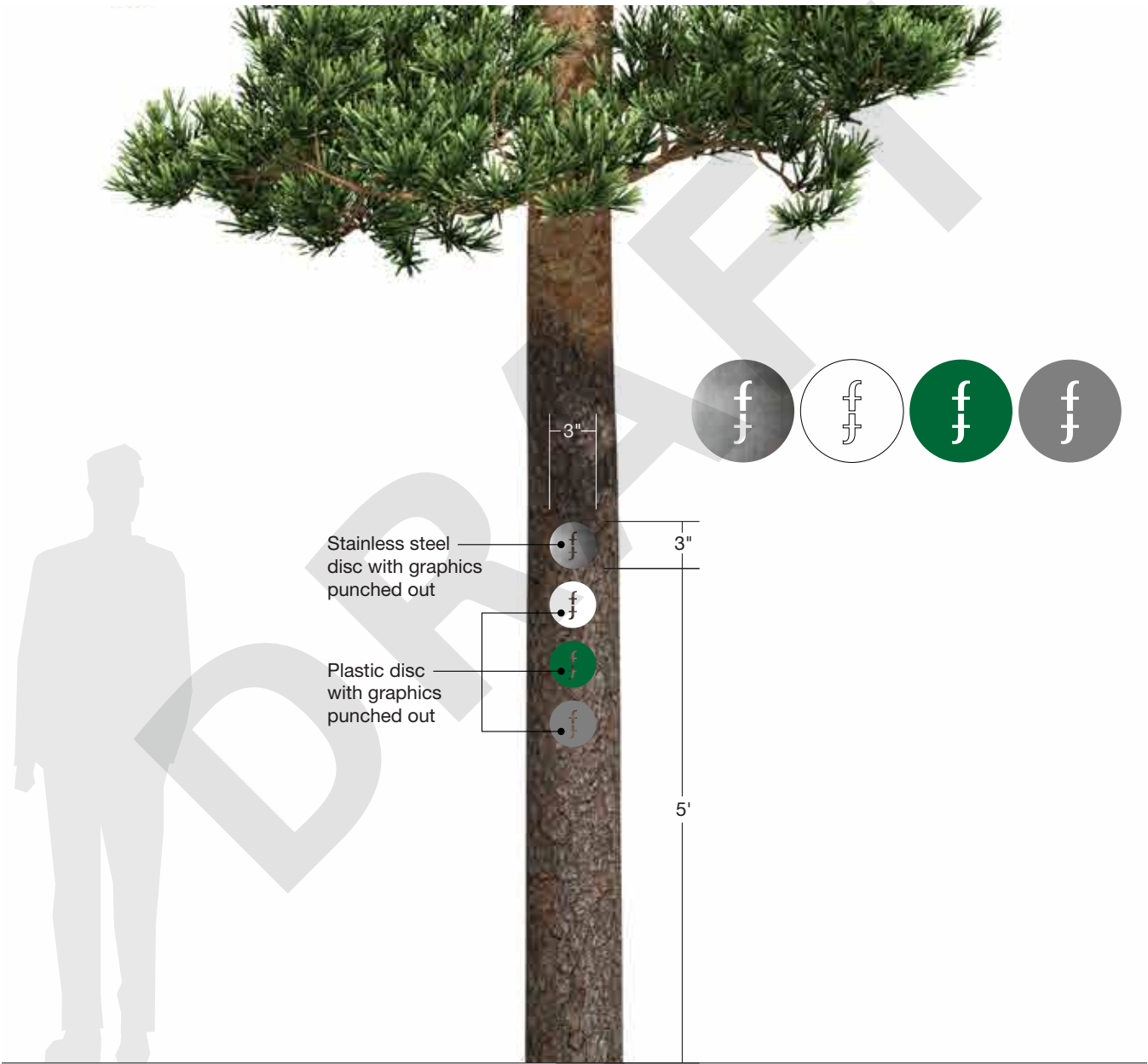
Trail directional signs are engravings or etchings into materials that reference the unique landscapes of the area. Apart from their functional use, they also provide a moment of surprise when uniquely incorporated with the materials of the environment. Directional signage will not be etched into existing landscape features, but rather etched on introduced materials that seamlessly merge with their surroundings.





# MEANDER SIGNS: TRAILBLAZE

Trailblazes are placed on trees along the meander and remind visitors they are headed in the right direction. These metal discs are 3 inches in diameter and should be placed on trees slightly above eye level of the user, when possible. Blazes should be within line of sight, meaning that the user should be able to see the next one when standing at a trailblaze.



# SPECIAL SIGNS

Special signs are signs along the Fjord Trail that do not fit into clear Main Trail or meander categories but help tell the story of the landscape, are visible from Route 9D, are visible from the water, or function as temporary notices when needed.



**H. INTERPRETIVE / I. WATER J. ROAD**  
**DONOR**





**K. STATE PARK PRESERVE ENTRANCE**

**L. TEMPORARY**



**EXAMPLE A - BOULDER**



## SPECIAL SIGNS: INTERPRETIVE, EDUCATIONAL, DONOR

Interpretive signs along the Fjord Trail can provide valuable context and education to visitors. Accounting for the immersive nature of the trail, interpretive signs shall not distract from the experience, rather enhance or emphasize it. Thus, non-traditional approaches to interpretive signs unearth the culture and history of the area.

Donor signs are integrated into design features of the trail, like benches and boulders without distracting from the trail or the functionalities of the features.

### **Example A - Boulder**

At the Breakneck Overlook, the large boulders in the area can be etched on to educate visitors about the landscape they are experiencing.



**EXAMPLE A - BOULDER**



---

**EXAMPLE B - LOG**



## SPECIAL SIGNS: INTERPRETIVE, EDUCATIONAL, DONOR

### *Example B - Log*

A metal plate is embedded into a log bench or buffer, acknowledging donors or displaying interpretive information of forest ecology or landscapes.



**EXAMPLE B - LOG**



EXAMPLE C - GUARDRAIL / HANDRAIL



## SPECIAL SIGNS: INTERPRETIVE, EDUCATIONAL, DONOR

### *Example C – Guardrail / Handrail*

Along the Shoreline Trail, the rails can display information about the view that visitors are experiencing. These messages can highlight past histories of the Fjord Trail.



**EXAMPLE C - GUARDRAIL / HANDRAIL**



**EXAMPLE D - RIVER / SEA LEVEL RISE**



**EXAMPLE E - BRICK**



## INTERPRETIVE, EDUCATIONAL, & DONOR SIGNS

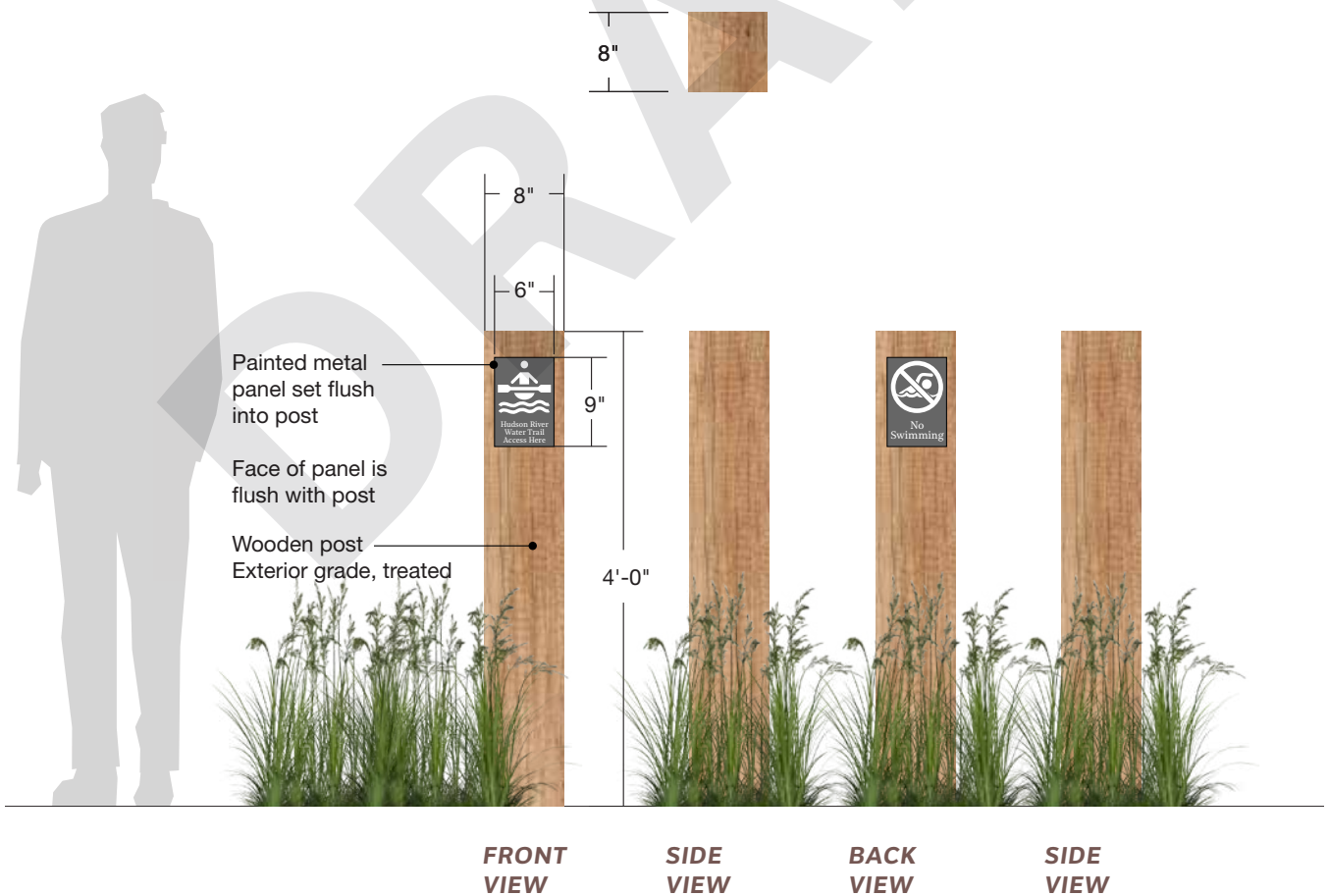
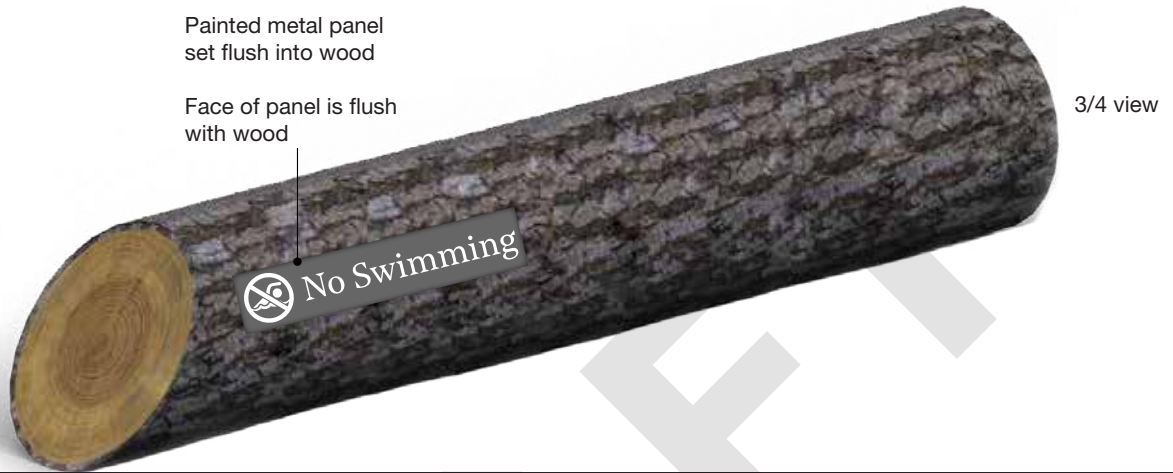
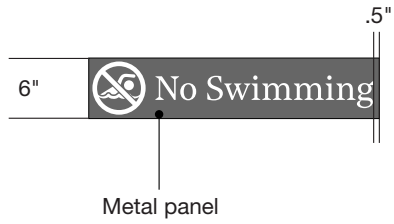
### ***Example D - River***

At moments where users are able to access the water, moments highlight the future of sea level rise and how it will affect the Hudson River and the Fjord Trail.

### ***Example E - Brick***

On the elevated trail above Brick Beach, an interpretive moment may include a viewing device through the walkway that uncovers the industrial past of the region and frames the bricks that line the shoreline, uncovering stories about the different factories along the shoreline through their stamping of the bricks.

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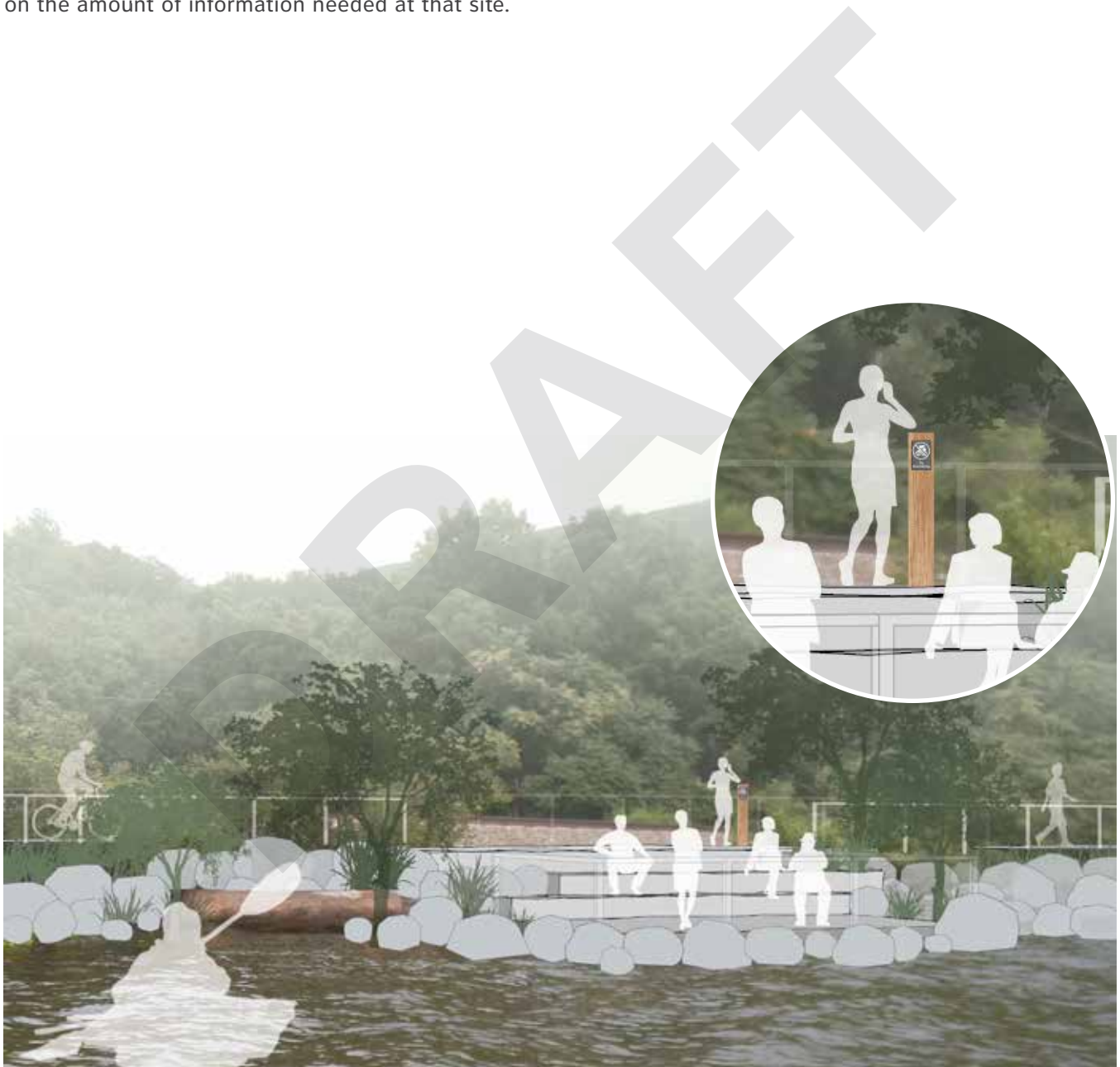




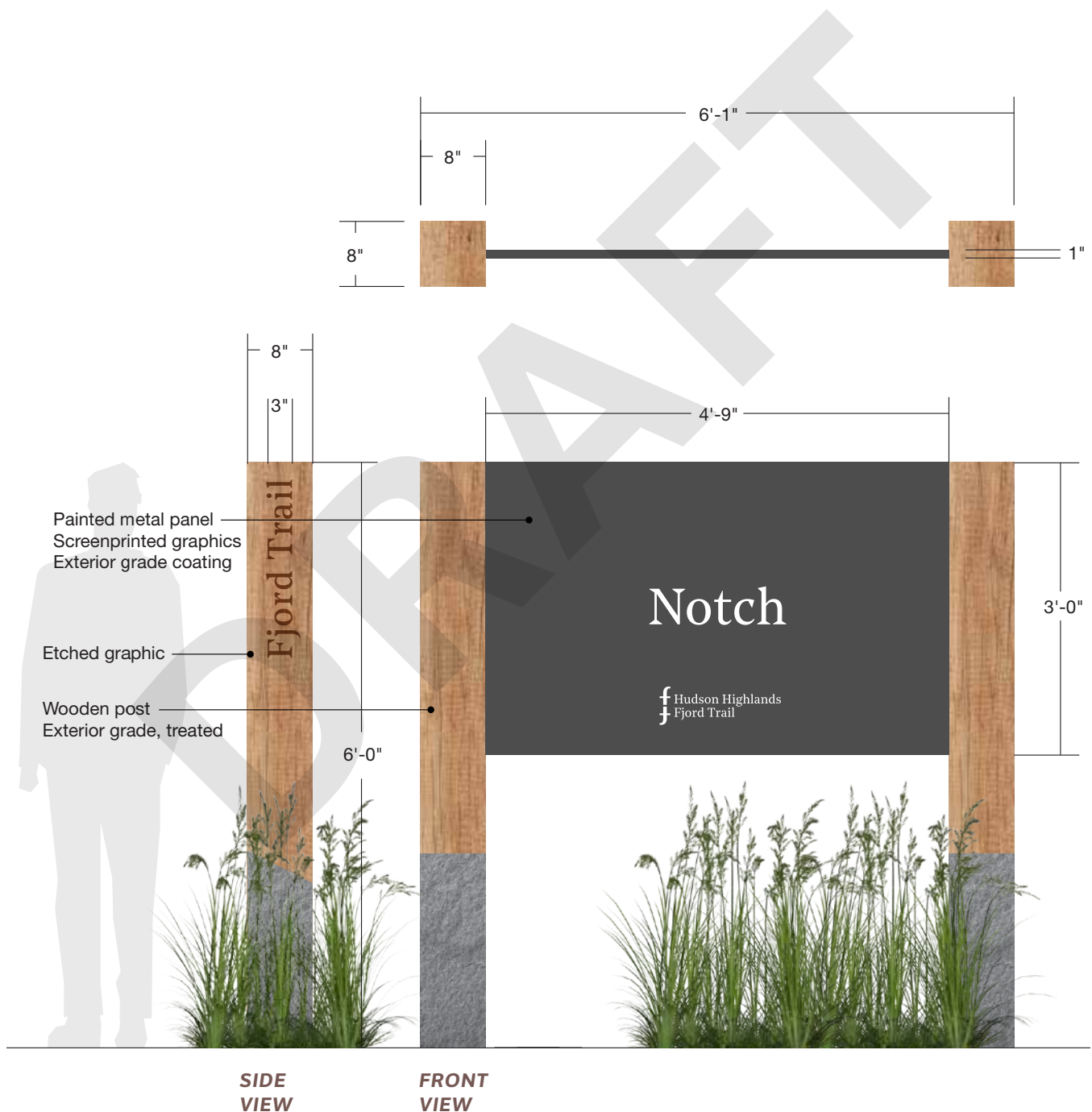
## SPECIAL SIGNS: RIVER ACCESS

These signs appear at water access points where regulation and programming information is needed. If there is an opportunity for embedding, the metal panels can be embedded into project elements, like driftwood.

The river access post signs are square wooden posts with flush-mounted metal panels. The number of panels can be adjusted from 1 to 3 depending on the amount of information needed at that site.



**RIVER ACCESS SIGN**





## SPECIAL SIGNS: ROAD

Road signs are intended as a primary trail identification sign for entry points to the Fjord Trail that have parking facilities. The sign should be within clear view of vehicles traveling along Route 9D as an indicator that the Fjord Trail is accessible from the road.

When possible, this sign should be placed outside of the road right of way and perpendicular to the road within the visual field of approaching vehicles in both directions of travel.

Local jurisdictions should be contacted to comply with local codes for placement, design, and required vegetation.

The road sign is composed of a metal panel with two wooden posts.



**ROAD SIGN**

## SPECIAL SIGNS: STATE PARK PRESERVE ENTRANCE

This sign welcomes visitors and users to the Hudson Highlands State Park Preserve. The sign should be within clear view of vehicles traveling along 9D. This sign should be placed outside of the road right of way and perpendicular to the road within the visual field of approaching vehicles in both directions of travel.

Local jurisdictions should be contacted to comply with codes for placement, design, and required vegetation.

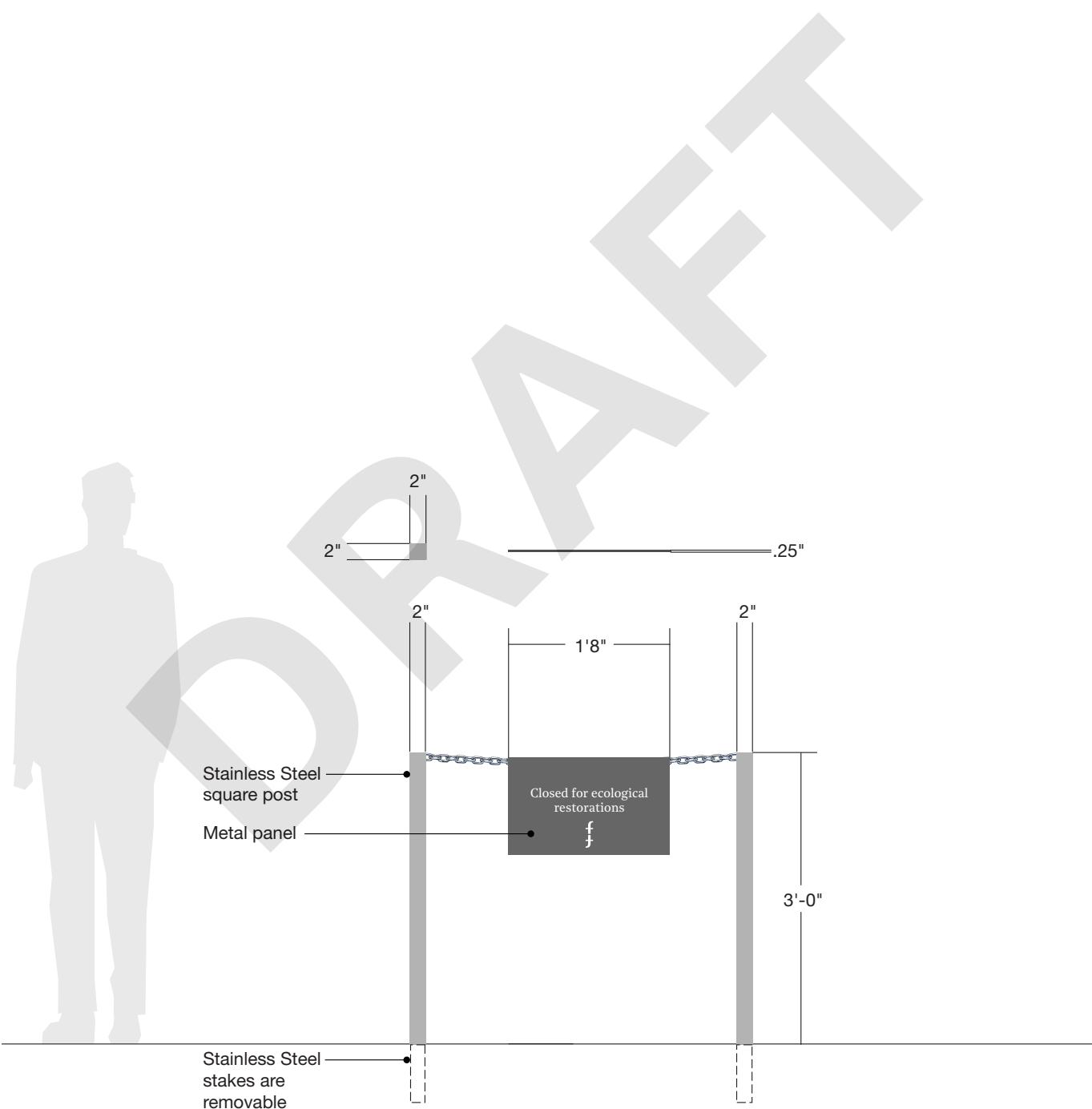
The State Park Preserve Entrance Sign is composed of a metal panel attached to two wooden posts with stone bases.





**SPECIAL SIGNS: TEMPORARY**

The function of these signs are for temporary closures of sections of the trail for ecological restoration, repairs, or weather damage. These waist height, lightweight metal signs can be attached to a chain and hung between two metal posts.









## SITE LIGHTING

Trail lighting shall be determined based on conditions specific to individual sites. When developing site lighting designs, it is recommended that habitat sensitivity, safety factors, emergency access / egress, and maintenance considerations are considered. The following section identifies a very high-level lighting strategy for the Fjord Trail.

# LIGHTING STRATEGY

Lighting shall be minimally applied and consider light pollution impacts on adjacent towns and undeveloped landscapes. The Fjord Trail will be open from dusk to dawn, but street and parking lot lighting may be required for increased pedestrian visibility and to assist with evening / dusk trail egress and wayfinding. All lighting must be environmentally sensitive and generally down-facing to minimize light pollution impacts. Additionally, daytime interior lighting at restrooms or other structures shall be considered for accessibility.

## DENNINGS POINT

*In addition to lighting already provided at Clarkson University facilities, provide lighting at comfort stations and Main Trail entry.*

## BEACON

## DENNINGS POINT

## NOTCH

## LONG DOCK

## NOTCH

*Due to lack of existing infrastructure at Notch, provide solar lighting at parking area and lighting at comfort stations and Main Trail entry for emergency egress and wayfinding.*

## LONG DOCK PARK

*In addition to lighting already provided at existing park, consider lighting at comfort stations.*



**BREAKNECK**

*Lighting at parking lots and comfort stations will assist with emergency egress and wayfinding.*

**COLD SPRING**

**LITTLE STONY POINT**

**DOCKSIDE PARK**

**BREAKNECK**

**DOCKSIDE PARK**

*Provide lighting at comfort stations and Main Trail entry.*

**LITTLE STONY POINT**

*Provide lighting at Main Trail entry, comfort stations, and potentially at Washburn parking lot (if not already provided).*

**LEGEND:**



LIGHTING AT ENTRY POST  
& BUILDINGS



SOLAR LIGHTING  
AT PARKING



0

25









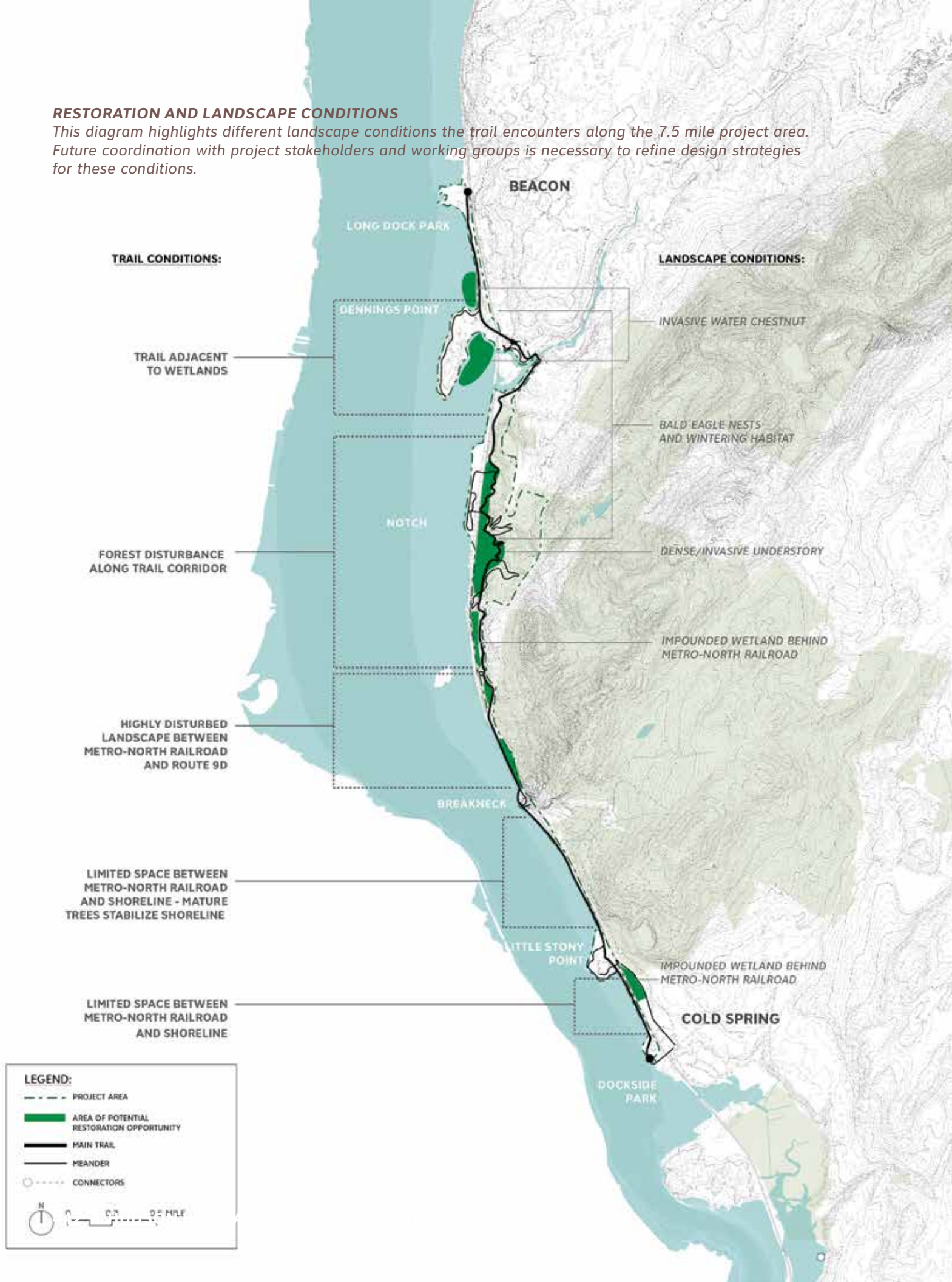


## PLANTING & RESTORATION

Planting strategies and landscape restoration is integral to the design and planning of the Fjord Trail. This section outlines high-level design guidelines and information for potential landscape planting and restoration opportunities. Future phases of the project will require extensive analysis, surveys, and collaboration with stakeholder and focus groups, like the Ecology Working Group, to determine site specific strategies for implementation.

## RESTORATION AND LANDSCAPE CONDITIONS

This diagram highlights different landscape conditions the trail encounters along the 7.5 mile project area. Future coordination with project stakeholders and working groups is necessary to refine design strategies for these conditions.





Due to the preservation efforts of OPRHP in establishing the Hudson Highlands State Parks Preserve, the landscape surrounding the Fjord Trail offers exciting passive recreation opportunities while preserving and protecting acres of land as habitat for native and rare plant and animal species.

A biodiversity inventory, produced by the New York Natural Heritage Program, characterizes and maps the natural and cultural plant communities in the Hudson Highlands State Park Preserve. Of the 30 ecological communities in the Preserve, eleven occur substantially within the project area and form the backbone of landscape identity.

The changes in the surrounding environment as visitors move along the Fjord Trail, both dramatic and subtle, define the immersive landscape experience. As such, planting and restoration efforts should enhance the existing landscape and work to strengthen its character, heal degradation, and heighten visitor experience of the environment.

The following illustrations and the map (left) illustrate areas with potential restoration opportunities. These zones will be evaluated and defined in future phases of the project, in collaboration with project stakeholders and the Ecology Working Group.

POTENTIAL RESTORATION OPPORTUNITIES: RIVER & HIGHLANDS



DOCKSIDE PARK



LITTLE STONY POINT





**SHORELINE TRAIL**



**BREAKNECK**



POTENTIAL RESTORATION OPPORTUNITIES: FOREST



*SOUTH FOREST AND POLLEPEL ISLAND*



*FOREST WETLAND NEAR DUTCHESS MANOR*





**NOTCH AND BRICK BEACH**



**NORTH FOREST AND WETLAND**



POTENTIAL RESTORATION OPPORTUNITIES: MARSH



FISHKILL MARSH TO MADAM BRETT PARK



MADAM BRETT PARK





**KLARA SAUER TRAIL**



**LONG DOCK PARK**







# PLANTING APPLICATIONS

The intensity of planting and restoration efforts along the Fjord Trail varies by site condition and intended use. Interventions can be broadly categorized in the following ways:

**Corridor Restoration:** The construction of the Fjord Trail will disturb the landscape, thus, reforestation and restoration along the trail corridor is the most common type of planting effort associated with the project. As such, corridor restoration must be implementable, maintainable, and affordable. In addition, the construction of the trail must minimize landscape disturbance.

**Habitat Restoration:** The Fjord Trail alignment passes through a state park preserve home to many native and rare plant and animal species, but also through a landscape that has been disturbed by the construction of major infrastructure. These areas present an opportunity for the implementation of the Fjord Trail to act as a catalyst for environmental enhancement through the targeted removal of invasive species, native plant restoration, and habitat enhancement.

**Moments & Destinations:** The Fjord Trail provides spaces designed for people to linger and engage with the surrounding environment (trail banks, entries, destinations, and intersections). The planting within these areas is more intensive and incorporates more designed, spatial configurations.

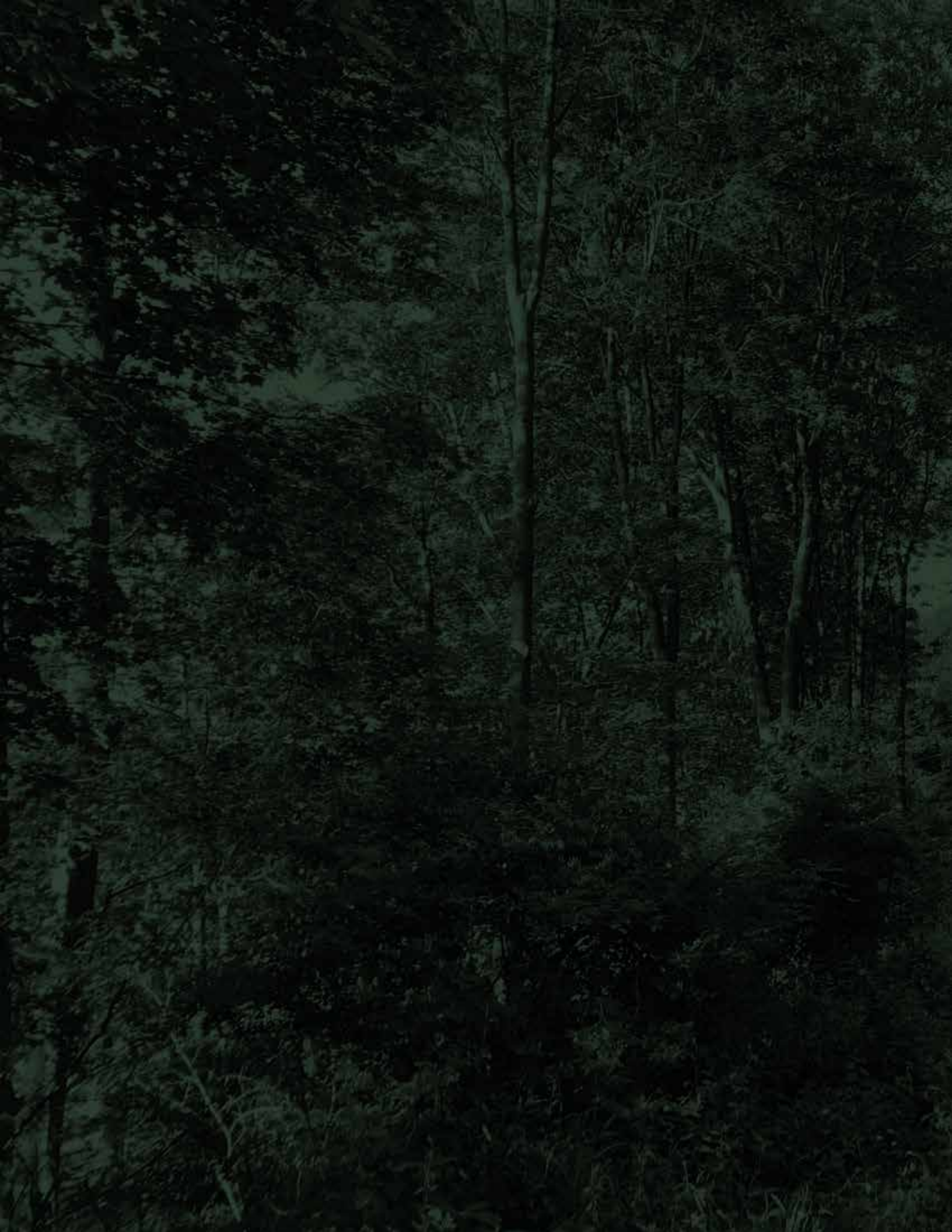
## DESIGN CONSIDERATIONS

To establish and preserve a robust, native ecology, planting applications must meet the below listed design criteria.

- **Site Specificity:** Revegetation should be based upon a closer field study of the native species present and adjacent to the specific segment of trail. Native plant material should be sourced regionally from native plant nurseries (i.e. Sonnenberg Gardens). The import of foreign fill should be limited to the greatest extent possible.
- **Establishment & Vigor:** Revegetation efforts should be designed around a mix of highly competitive and hardy natives

capable of suppressing the establishment of invasive species following disturbance.

- **Resilience:** Selected plantings must be vetted for disease and pathogen resistance, deer resistance, and (where applicable) adaptability to anticipated climate change impacts such as sea level rise, temperature increases, and precipitation increases.
- **Habitat Opportunity:** The needs of key species of fauna occupying the site should be considered and provided for in species selection and niche creation.
- **Aesthetic & Experiential:** A variety of further planting considerations, amongst others include; view framing or screening, shading, cultural significance, and seasonal interest.







# **IMPLEMENTATION & PHASING**

**PHASING STRATEGY**

**MAINTENANCE, SUSTAINABILITY, & STEWARDSHIP**







## PHASING STRATEGY

The Fjord Trail, from Cold Spring to Beacon, is approximately 7.5 miles. Due to its length, complexity, landscape diversity, regulatory jurisdiction, and funding availability, the trail will be constructed in phases. The following section contains an implementation roadmap and permitting considerations for future phases of the Fjord Trail.





#### **FOREST TRAIL SOUTH**

*Long stretches of this reach are characterized by steep slopes.*



#### **SHORELINE TRAIL**

*Reach located between Metro-North and shoreline, characterized by mature tree clusters.*



For the purpose of phasing and implementation, project components are divided into three categories: Main Trail, destinations, and meanders.

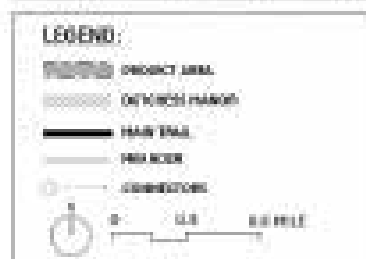
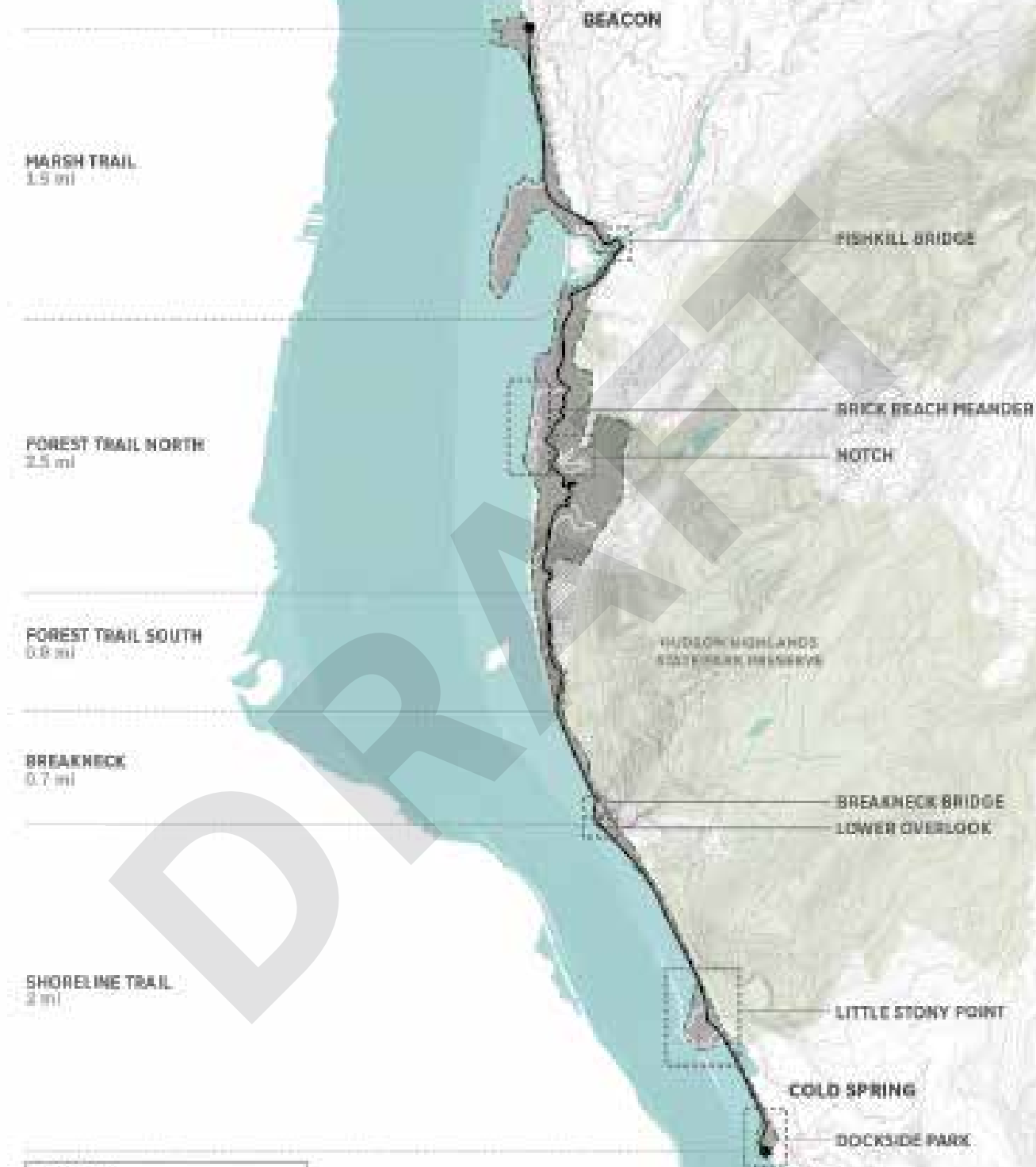
- Priority is given to the construction of the Main Trail first, including the trail banks, intersections, entries, and connectors.
- Destination improvements function as distinct projects, that may be constructed simultaneously with the construction of a “reach” (defined as a segment of the trail) of Main Trail or strategically prior to or after the construction of the adjacent reach of Main Trail.
- Meanders are typically smaller projects that may be constructed in partnership with stakeholder groups like the Jolly Rovers or NY / NJ Trail Conference. The construction of meanders will typically occur following the construction of the adjacent reach of Main Trail, but could also, and very well may, occur simultaneously with the construction of the adjacent reach of Main Trail in some areas.

Implementation of the Main Trail will be organized around the trail’s five clear reaches, described below in the order of their recommended phasing. Refer to the alignment section of the report for descriptions and drawings of each reach and associated meanders and trail banks.

Improvements to the destinations associated with each reach are generally assigned to that phase, though, as noted above, while they may be constructed in conjunction with the Main Trail, they are distinct projects that may be implemented independently of (before or after) the construction of the adjacent reach of Main Trail if that proves to be more feasible or advantageous due to funding availability, permitting, public desire, or other factor. The schedule on the following pages provides more information on the anticipated timeline for implementation.

## TRAIL REACHES

Phases are defined by reaches for the purposes of implementation





# PHASES (BY REACH)

## PHASE 1: BREAKNECK

**Main Trail:** The Breakneck Reach stretches from the existing Bannerman's overlook platform and existing Metro-North overpass to the north, to the Breakneck Bridge and Porch (trail bank connecting to the Breakneck Ridge hike) in the south. Breakneck is scheduled to be the first reach of trail constructed due to the high volume of use and existing safety concerns of this area.

**Destinations:**

- Breakneck

## PHASE 2: SHORELINE TRAIL I

**Main Trail:** The first length of the shoreline trail consists of the main trail and trail banks at Little Stony Point and Dockside Park.

**Destinations:**

- Little Stony Point
- Dockside Park

**Fair Street Meander:** This meander is the most urban segment of the Fjord Trail and provides an alternative route between Cold Spring and Little Stony Point.

## PHASE 3: FOREST TRAIL SOUTH

**Main Trail:** The Forest Trail South extends from the existing Bannerman's Overlook and existing Metro-North overpass in the south to Dutchess Manor in the north.

**Forest Meanders:** Meanders are proposed to be independent projects that will occur after the implementation of the main trail, trail banks, and destinations.

## PHASE 4: MARSH TRAIL

**Main Trail:** The scope of this area entails improvements and enhancements to existing infrastructure and does not require significant clearing to construct a trail.

**Destinations:**

- Denning's Point
- Long Dock Park

**Marsh Meanders:** Marsh meanders will follow the construction of the main trail improvements along this reach.

## PHASE 5: FOREST TRAIL NORTH

**Main Trail:** The Forest Trail North extends from Dutchess Manor to the Fishkill Bridge, completing the connection to Madam Brett Park.

**Destinations:**

- Notch

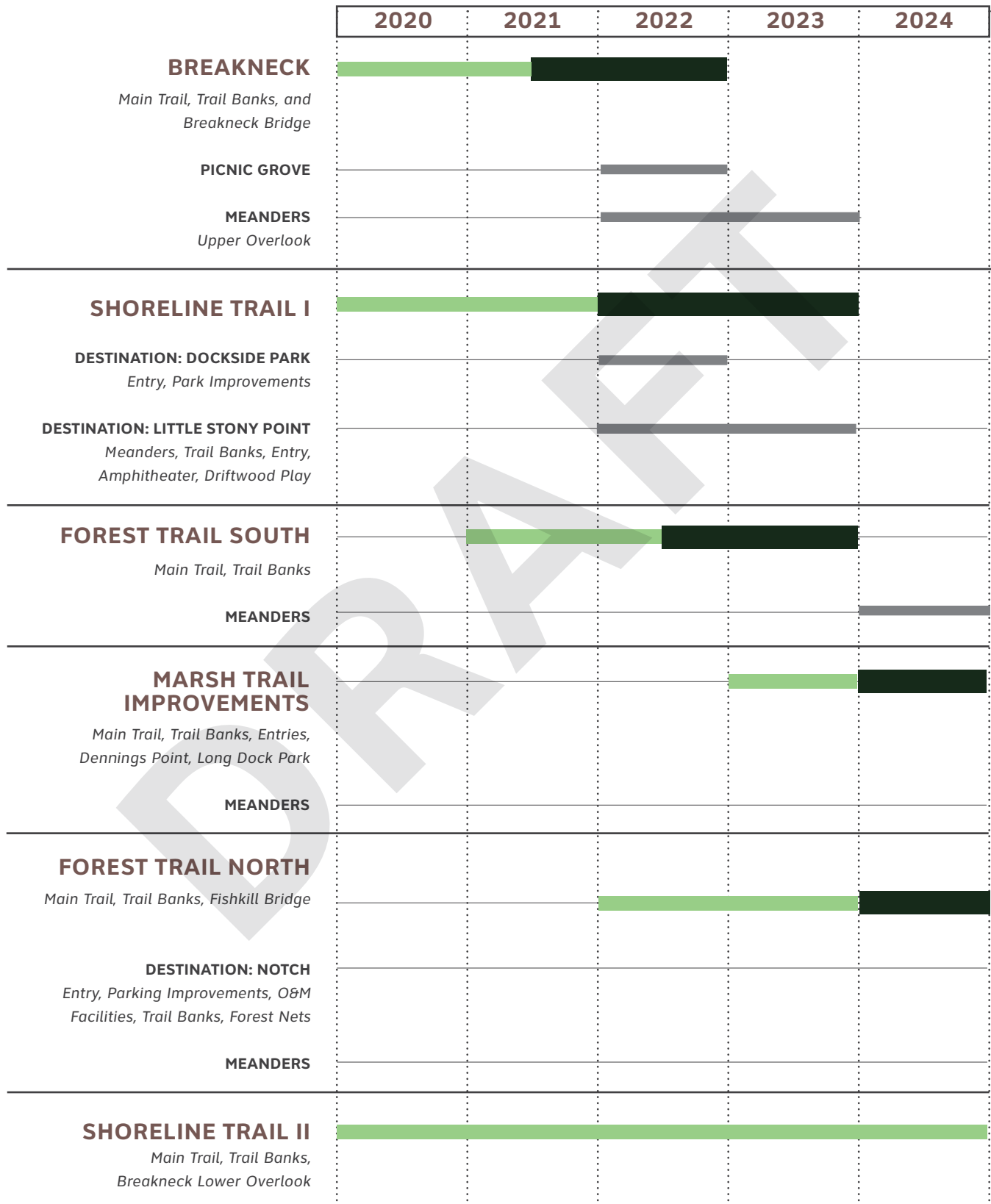
**Brick Beach Meander:** Unlike other meanders, brick beach is a significant project that includes the design and construction of at least one bridge (crossing Metro-North Railroad) and significant stretches of elevated trails.

**Forest Meanders:** Like the south forest meanders, the north forest meanders will be independent projects and occur after the construction of the Forest Trail North.

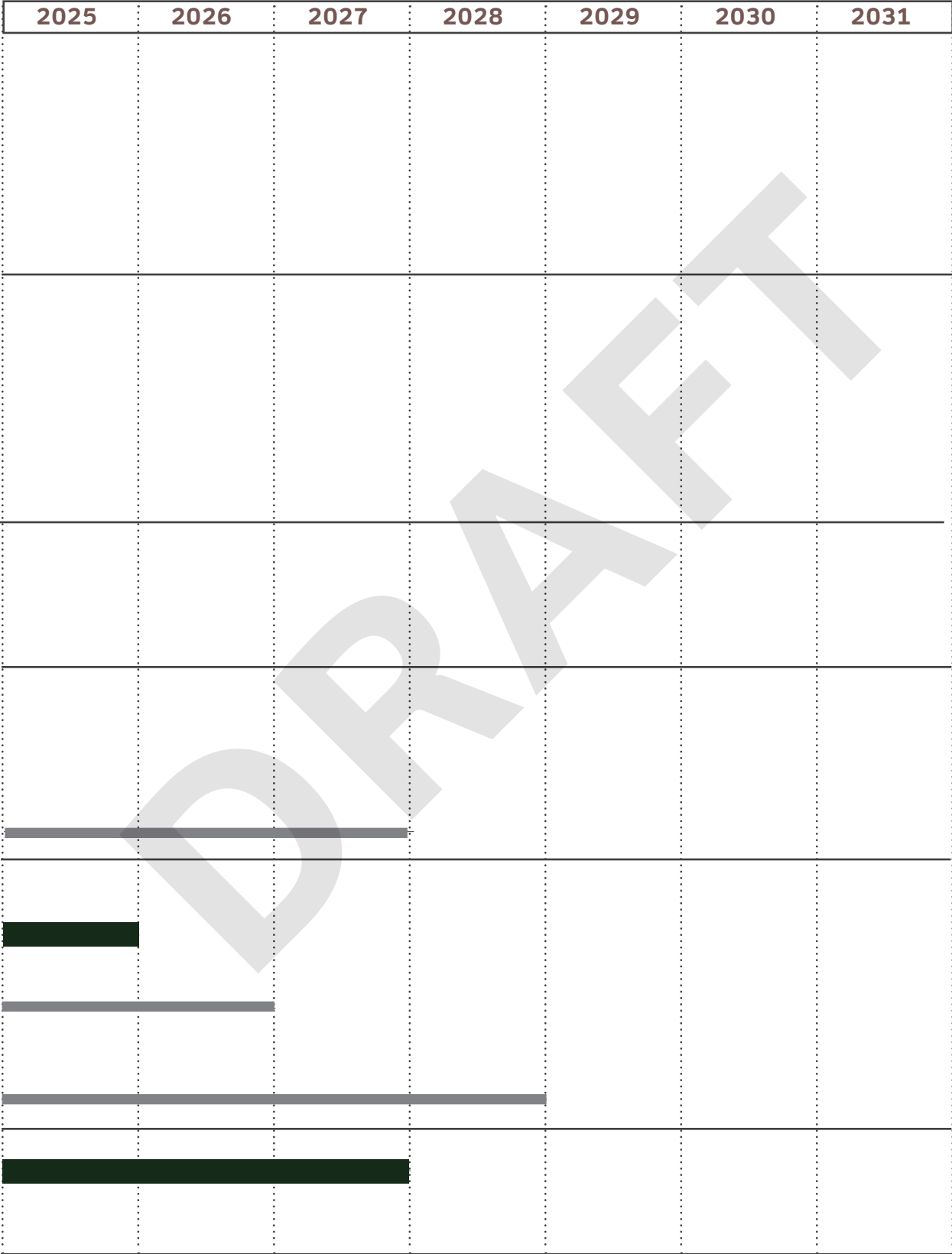
## PHASE 6: SHORELINE TRAIL II

**Main Trail:** The second part of the Shoreline Trail includes the elevated trail between the shoreline and Metro-North Railroad and includes the Breakneck Lower Overlook.

# IMPLEMENTATION AND PHASING ROADMAP







## PERMITS, APPROVALS, AND REGULATORY REVIEWS

The below table highlights the permits, approvals, and regulatory reviews that are likely required for the five reaches of the Fjord Trail.

TYPE	PERMIT / APPROVAL	PERMITTING AGENCY	REQUIREMENT / PREREQUISITES	APPROXIMATE TIMEFRAME
APPROVAL	PUBLIC DESIGN COMMISSION (PDC)	NYC DEP		3 mo - 1 yr
APPLICATION AND PERMIT	TIDAL WETLAND APPLICATION	USACE	Joint Application with NYS DEC - separate permits	3 -4 mo
APPLICATION AND PERMIT	TIDAL WETLAND APPLICATION	NYS DEC	Joint Application with USACE - separate permits	4 -6 mo
APPLICATION AND PERMIT	SPDES GENERAL PERMIT AND STORM WATER POLLUTION PREVENTION PLAN (SWPPP)	NYS DEC	Town of Fishkill SWPPP Approval SPDES NOI	3 mo
PLAN REVIEW	SWPPP APPROVAL	TOWN OF FISHKILL	Other applicable environmental permits have been acquired prior to approval of stormwater design plan.	TBD
PERMIT	HIGHWAY WORK PERMIT	NYS DOT		6 - 8 mo
PERMIT	UTILITY PERMIT	NYS DOT		6 - 8 mo
PERMIT	TRAFFIC SIGNAL PERMIT	NYS DOT		6 - 8 mo
APPROVAL	SITE PLAN REVIEW	MNR		6 - 8 mo
APPROVAL	SITE PLAN REVIEW	NYC DEP		8 - 12 mo
APPROVAL	COUNTY APPROVAL	DUTCHESS / PUTNAM COUNTY		TBD
APPROVAL	MUNICIPAL APPROVAL	TOWN OF FISHKILL, CITY OF BEACON, VILLAGE OF COLD SPRING, TOWN OF PHILIPSTOWN		TBD



## DESCRIPTION

Chapter 37 of the NYC Charter and the commissions rules and practices. As NYC's design review agency, the PDC has jurisdiction over permanent structures, landscape architecture, and art proposed on or over city-owned property.

Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) prohibits the obstruction or alteration of navigable waters of the United States without a permit from the USACE.

ARTICLE 25, ENVIRONMENTAL CONSERVATION LAW IMPLEMENTING REGULATIONS - 6NYCRR PART 661. Under the Tidal Wetlands Act, NYS DEC administers a permit program regulating activities in tidal wetlands and their adjacent areas.

ARTICLE 17 TITLE 8, ENVIRONMENTAL CONSERVATION LAW IMPLEMENTING REGULATIONS - 6NYCRR PART 750.

Town of Fishkill, Chapter 130 Stormwater Management and Erosion and Sediment Control. No application for approval of a land development activity shall be reviewed until the appropriate board has received a stormwater pollution prevention plan (SWPPP) prepared in accordance with the specifications of Chapter 130.

New York State Highway Law, Article 3, Section 52. Anyone who plans to do work on any part of the state highway system, its properties or right of way, must obtain a permit.

New York State Highway Law, Article 3, Section 52. Any utility work in State highway right of way requires a highway work permit from the NYS Department of Transportation, whether it is for construction and installation of facilities, or for repairs and maintenance.

New York State Highway Law, Article 3, Section 52.

For work within and adjacent to Metro-North right-of-way.

For work within and adjacent to NYC DEP property.









## MAINTENANCE, SUSTAINABILITY, & STEWARDSHIP

Maintenance, sustainability, and stewardship are critical in ensuring the Fjord Trail continues to provide access to the Hudson Highlands landscape for years to come. The following section describes very high-level conceptual plans for these concepts. As future project phases move into implementation and are constructed, these concepts will be further refined and documented in clear operations and maintenance manuals.

Task	Area							Frequency					Notes
	Main Trail	Shoreline Trail	Meanders	Trail Banks	Drainage Structures	Play Equipment	Buildings	Regularly	Quarterly	Seasonally	Annually	Event	
Keep clear of debris and tripping hazards	▲	▲	▲	▲		▲		•				•	
Check for damaged/deteriorating materials	▲	▲	▲	▲		▲			•			•	
Check for dead trees that pose a safety risk	▲	▲	▲	▲		▲			•			•	
Remove invasive species in planting areas	▲	▲	▲	▲		▲					•		
Monitor plant health	▲	▲	▲	▲		▲					•		
Mow or weed wack (as required) edge vegetation to prevent visual obstacles for viewsheds and signage 10-foot offset minimum.	▲	▲	▲	▲		▲				•			
Clear snow from parking areas and ADA accessibility routes.	▲			▲						•			Hard paved areas to be plowed. Crushed stone areas must be conducted in a non-destructive manner (i.e. motorized brush sweeper). Additional locations for snow removal can be added at the discretion of the maintenance entity. Snow shall not be cleared from meanders.
Resurface surface material	▲		▲	▲							•	•	Surface material in high traffic areas expexcted to be replaced approximately annually. Surface material in lower traffic areas to be replaced as needed.
Resurface asphalt parking lots	▲											•	Resurfacing every 5 years and patching as needed
Inspect stairs and steps for structural stability concerns.			▲	▲							•	•	Areas to be closed or replaced immediately if structural deficiencies are observed.
Check stone scrambles for silt accumulation				▲							•		
Inspect cut-fill slopes and areas of steep slopes adjacent to trails for erosion and rutting.	▲			▲							•	•	
Inspect gravity walls for structural stability concerns.	▲			▲							•	•	Inspections should be carried out by a registered engineer in the state of New York. Areas to be closed or replaced immediately if structural deficiencies are observed.
Inspect elevated trails for structural stability concerns.	▲	▲		▲							•	•	Inspections should be carried out by a registered engineer in the state of New York. Areas to be closed or replaced immediately if structural deficiencies are observed.
Inspect the ground around elevated trail piers for erosion and rutting.	▲	▲		▲							•		
Visually inspect swales for erosion and silt accumulation.	▲			▲	▲				•			•	
Check drainage structures for evidence of cracking or spalling and for damaged grates.	▲				▲				•				
Check drainage piping for silt accumulation and blockages.	▲				▲				•				
Inspect inlet grates and clear of debris.					▲				•			•	
Check connections and condition of netting for tears.						▲						•	Area to be closed or replaced immediately if structural deficiencies are observed
Replace play area bedding						▲						•	Per manufacturer's recommendations
Clean comfort stations.							▲	•				•	Comfort stations should be cleaned daily during periods of heavy use.
Service comfort stations							▲	•				•	Per manufacturer's recommendations
Inspect buildings for structural stability concerns.							▲				•	•	Inspections should be carried out by a registered engineer in the state of New York. Areas to be closed or replaced immediately if structural deficiencies are observed.
Events include heavy storm events, fires, other natural disasters, periods of extremely heavy use, and vandalism, as well as lower frequency maintenance as noted in the notes column.													

## MAINTENANCE ACTIVITIES

The table highlights recommended maintenance activities for the Fjord Trail, their locations, and frequency.



## MANAGEMENT AND OPERATIONS

A non-profit organization is being established to manage the Fjord Trail implementation, maintenance, and operations. The trail will be open to the public year-round from dawn to dusk.

## MAINTENANCE

The trail's operations and maintenance program will need to address the durability and sustainability of the trails—both at grade and elevated—as well as the trail banks, destinations, and associated features including drainage, structures, and other amenities. If deficiencies are observed, immediate repairs or replacement should be made, or the area should be closed for pedestrian safety. In addition to the general maintenance protocols listed below, a maintenance matrix is provided to describe different activities and the locations in which they should occur.

### General Maintenance

- Keep all accessible areas (Main Trail, meanders, trail banks, entries, destinations) clear of debris and tripping hazards.
- Check for damaged/deteriorating materials, and repair.
- Check for dead trees that pose a safety risk and remove those that do.
- Regularly collect and dispose of trash from trash receptacles. Frequency will vary by season due to seasonal fluctuations in use.
- Ensure all furnishings contain a consistent hardware “kit-of-parts” to standardize and facilitate maintenance procedures.
- Selectively remove snow from designated areas (to be defined) to maintain seasonal use. Proper protocols to minimize ice shall be implemented.

## SUSTAINABILITY & MATERIAL SOURCING CONSIDERATIONS

**Stone:** Stone should be sourced from quarries within the region to match the tone, color, texture, and composition of the existing stone of the area. This applies to all stone from boulders to aggregates and stone fines. Since the trail and destinations will be implemented in phases over the coming decade(s), it is important to identify a quarry or series of quarries that will be able to supply similar stone over the entire anticipated implementation timeframe.

**Wood:** To the degree possible, wood used should be collected from the site and repurposed. This may include debris left from trail clearing activities, downed trees, or areas cleared for trail improvements. Consideration should be given to providing area for staging and storage of wood material. While wood salvaged from the site will be usable for many trail elements, notable exception to this are likely to be for structural elements of built structures and bridges including mass timber. Such wood material should be sourced from sustainably harvested lumber and transport distances should be minimized to minimize carbon footprint.

## STEWARDSHIP PARTNERSHIPS

The fjord trail has many invested stakeholders and partners who have been integral to crafting the master plan whose involvement should not cease with the construction of the trail. Their knowledge investment and enthusiasm for the Fjord Trail, the Hudson Highlands State Park, and the regional landscape more broadly, should be engaged through partnerships to promote and sustain ongoing educations and stewardship associated with the Fjord Trail. Key partners may include:

- NY / NJ Trail Conference
- NYS OPRHP
- Scenic Hudson
- Beacon and Cold Spring
- Little Stony Point Citizens Association
- NYSDOT
- Metro-North Railroad







# **ACKNOWLEDGEMENTS & RESOURCES**

## RESOURCES

The Empire State Trail Design Guidelines, 2017.

<https://www.ny.gov/empire-state-trail/about-empire-state-trail#documents-amp-resources>

Trails Technical Document #1: Standards and Guidelines for Trail in NYS Parks, 2010.

<https://parks.ny.gov/recreation/trails/documents/TrailsTechnicalStandardsandGuidelines.pdf>

Trail Maintenance Manual, NY-NJ Trail Conference, Inc. 2007

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AASHTO. Guide for the Development of Bicycle Facilities, 4th Edition, 2012.

[https://nacto.org/wp-content/uploads/2015/04/AASHTO\\_Bicycle-Facilities-Guide\\_2012-toc.pdf](https://nacto.org/wp-content/uploads/2015/04/AASHTO_Bicycle-Facilities-Guide_2012-toc.pdf)

USDA Forest Service's Trail Construction and Maintenance Notebook, 2007.

<https://www.fs.fed.us/t-d/pubs/pdfpubs/pdf07232806/pdf07232806dpi72.pdf>

The United States Access Board Final Accessibility Guidelines for Outdoor Developed Areas, 2013.

<https://www.access-board.gov/guidelines-and-standards/recreation-facilities/outdoor-developed-areas>

NYSDEC Part 490, Projected Sea-level Rise - Express Terms, 6 NYCRR

<https://www.dec.ny.gov/regulations/103877.html>

NYS OPRHP Final Master Plan / Final Environmental Impact Statement for Clarence Fahnestock Memorial State Park and Hudson Highlands State Park Preserve, 2010.

<https://parks.ny.gov/inside-our-agency/documents/MasterPlans/ClarenceFahnestockHudsonHighlandsStatePark/CFHHStateParkMaster-Plan.pdf>



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