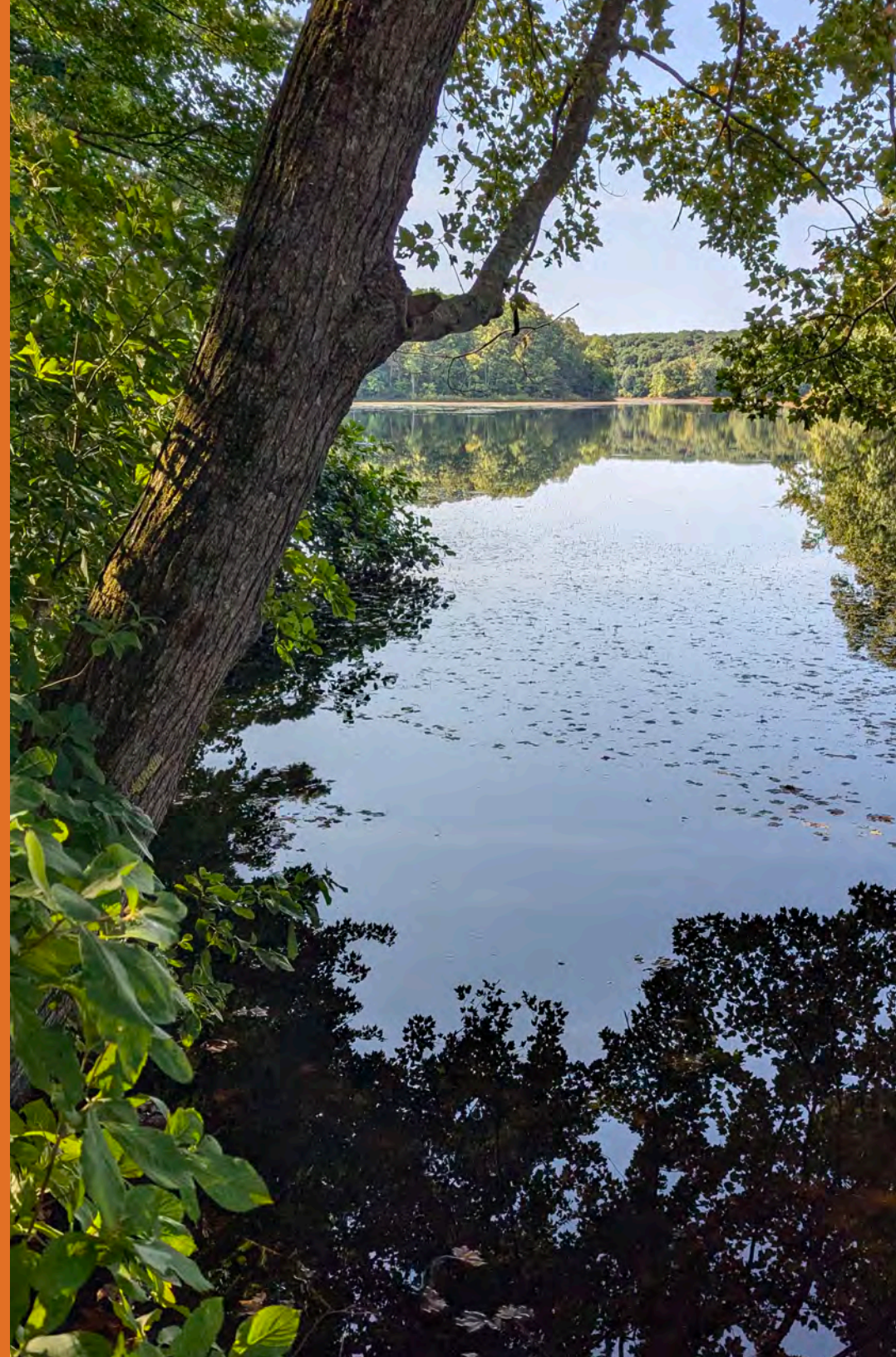


MONO POND STATE PARK TRAILS MASTER PLAN

COLUMBIA, CT
FEBRUARY 2026



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ACKNOWLEDGMENTS

PREPARED FOR:

TRUST FOR PUBLIC LAND



CONNECTICUT DEPARTMENT OF ENERGY &
ENVIRONMENTAL PROTECTION



FRIENDS OF MONO POND STATE PARK



PREPARED BY:

INTERNATIONAL MOUNTAIN BICYCLING
ASSOCIATION – TRAIL SOLUTIONS



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PROJECT TEAM

01

IMBA TRAIL SOLUTIONS

IMBA Trail Solutions is the international leader in developing trails, with experience in over 1,000 projects in North America, Europe, and Asia. Our staff excels at planning, design, and construction of trail systems that provide high-quality experiences for local riders and destination visitors while simultaneously minimizing environmental impacts.

IMBA Trail Solutions is a fee-for-service based arm of the International Mountain Bicycling Association (IMBA), a 501(c)(3) nonprofit organization. IMBA's mission is to create, enhance, and protect great places to ride mountain bikes. Based in Boulder, Colorado, and with staff distributed across the country and the world, IMBA meets its goal to create great mountain bike experiences through its IMBA Trail Solutions program. IMBA Trail Solutions employs approximately twenty professional trail planners and builders. In addition to being industry professionals and exceptional mountain bike riders, IMBA Trail Solutions staff hold a broad base of applicable skills and knowledge from planning, landscape architecture, and environmental sciences to GIS systems, CAD, and graphic design.

Our wealth of experience has allowed us to develop the gold standard guidelines for the creation of both sustainable and enjoyable singletrack trails. These guidelines have influenced all major federal land management agencies and a large number of state and local parks departments. We pride ourselves on the positive experiences IMBA Trail Solutions has provided to the millions of active trail users around the world and on the economic independence that communities have achieved through the development of destination trail systems.



TRUST FOR PUBLIC LAND (TPL)

A national nonprofit dedicated to creating parks, protecting open spaces, and expanding public access to the outdoors. TPL provided essential funding for the Mono Pond State Park trail planning project, helping make possible a community-driven vision for sustainable, inclusive, and high-quality recreation.

CONNECTICUT DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION (CT DEEP)

Connecticut Department of Energy and Environmental Protection, the state agency responsible for conserving natural resources, managing state parks, and promoting outdoor recreation. CT DEEP's support and guidance have been key to ensuring the trail network is designed with environmental stewardship, long-term sustainability, and public access in mind.

FRIENDS OF MONO POND STATE PARK (FOMP)

A volunteer-led nonprofit representing the Town of Columbia, dedicated to enhancing, maintaining, and promoting Mono Pond State Park. Their close connection to the community and hands-on involvement have helped shape a trail plan that reflects local values, recreational needs, and a shared commitment to the park's future.

TOWN OF COLUMBIA OPEN SPACE COMMITTEE

The Open Space Committee dedicates itself to safeguarding natural resources, historic, and cultural sites in the community, understanding their vital role in residents' quality of life. The committee advises the Board of Selectmen on preserving, recreational use, and acquiring key parcels within the town. Its efforts are crucial for the sustainable preservation of natural resources over the long term.

NEW ENGLAND MOUNTAIN BIKE ASSOCIATION (NEMBA)

NEMBA is a nonprofit, mountain-biking-focused organization covering 6 states across New England. It has 36 chapters across the region, with over 10,000 members. Its mission is to promote responsible mountain biking and to protect and preserve New England trails and open spaces.

INTRODUCTION

02

PROJECT BACKGROUND

Mono Pond State Park is a 650-acre rural state park in eastern Connecticut, located approximately 25 miles east of Hartford. Formerly a 218-acre reserve, the park was more than tripled in size when Trust for Public Land partnered with the State of Connecticut and the communities of Columbia and Lebanon to permanently protect over 400 acres of forestland at risk of future development. TPL negotiated with the landowners, got the properties under contract, secured the funding, conducted due diligence, and finally conveyed the land to the State as an expansion of the State Park. This expansion safeguarded forest, wetlands, and wildlife habitat and created an opportunity to establish a large, connected public recreation landscape in eastern Connecticut. It also positioned the park to connect directly to the Air Line State Park Trail, an officially designated Connecticut Greenway spanning more than 50 miles that supports hiking, biking, and equestrian use.

TPL engaged IMBA Trail Solutions as the primary lead to develop a comprehensive Master Plan for the Mono Pond State Park trail network. CT DEEP, FOMP, Columbia Open Space Committee, and NEMBA served as key stakeholders, providing input and local knowledge throughout the planning process. The project aimed to create a sustainable, connected, and enjoyable trail system that accommodates a variety of users while protecting the park's natural resources.

In September 2024, the IMBA Trail Solutions team conducted an initial site visit to gather reconnaissance data, hold stakeholder meetings, and engage with the community to better understand existing conditions, recreational needs, and local priorities. This work informed the development of the concept plan, which





proposes approximately 12 miles of new trail, the selective decommissioning of unsustainable routes, and the establishment of three distinct experience zones: hiking-focused, shared-use, and mountain bike-focused, paired with identified access points and trailhead.

Following completion of the concept plan, the team returned in April 2025 to begin the trail design phase, translating the vision into detailed, buildable alignments. A second round of community engagement took place in November 2025, helping identify community priorities for phasing and implementation. In this plan, trail corridors are identified based on a range of desired trail user experiences within Mono Pond State Park. Modern trail systems use specific trail types to manage users and deliver the best possible visitor experience. The resulting plan reflects community feedback, sound environmental stewardship, and sustainable trail design practices, providing a clear framework for the future of Mono Pond State Park's trail system.

Implementation of this trail network plan is contingent upon CT DEEP's review and adoption. Continued reliance on partnerships for funding, construction, and maintenance will be key to advancing this project through the next steps, given CT DEEP's limited budget and staffing resources.



SITE ANALYSIS

03

MONO POND STATE PARK RESERVE

EXISTING SITE SUITABILITY ANALYSIS

Columbia, CT – January 2025

Legend

- Existing Site**

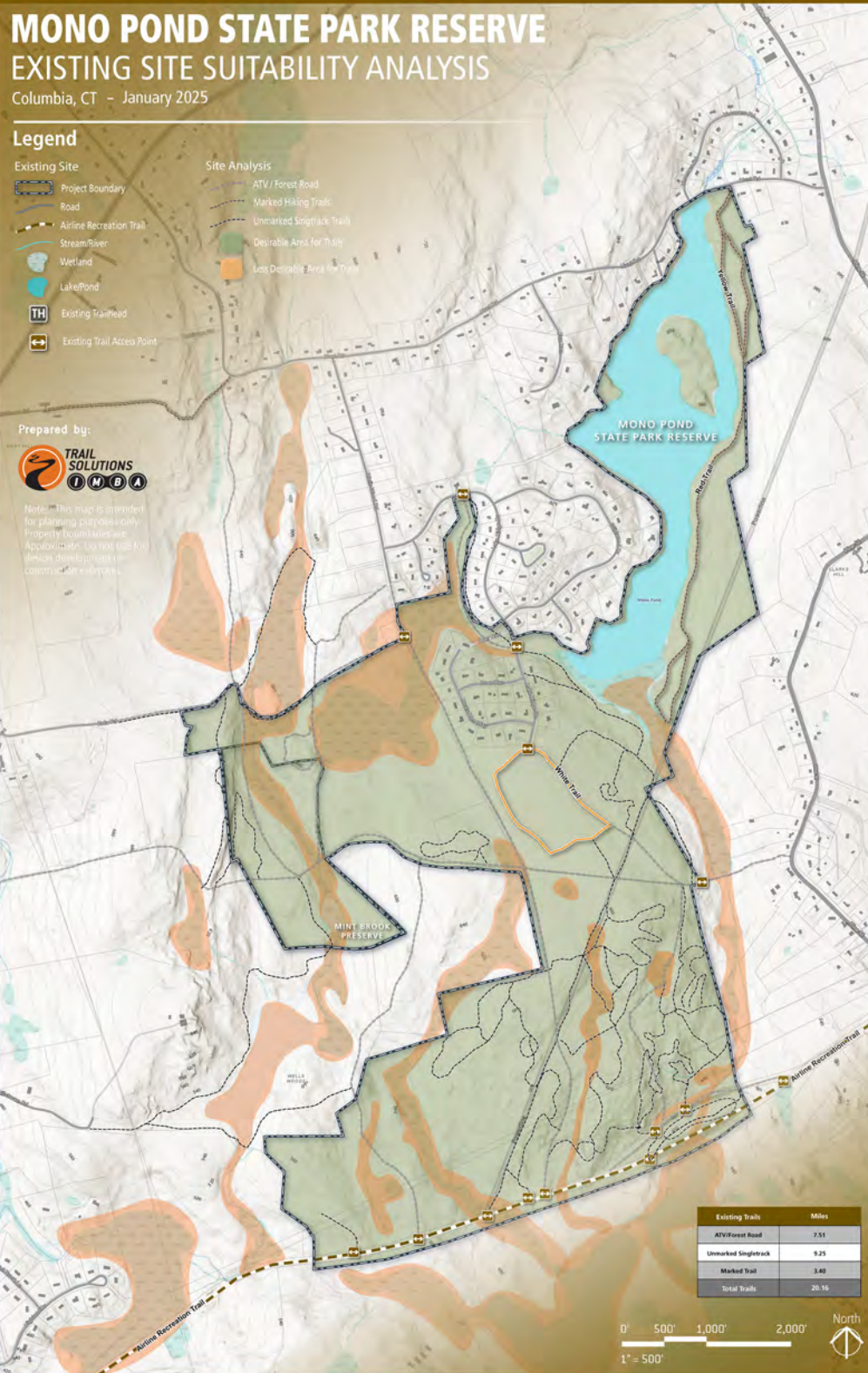
 - Project Boundary
 - Road
 - Airline Recreation Trail
 - Stream/River
 - Wetland
 - Lake/Pond
 - Existing Trailhead
 - Existing Trail Access Point
- Site Analysis**

 - ATV / Forest Road
 - Marked Hiking Trails
 - Unmarked Singletrack Trails
 - Desirable Area for Trails
 - Less Desirable Area for Trails

Prepared by:



Note: This map is intended for planning purposes only. Property boundaries and other features shown are not guaranteed. All rights reserved. © 2025 Trail Solutions, Inc.



EXISTING CONDITIONS ANALYSIS

DESIRABLE TERRAIN FOR RECREATION TRAILS

- **Stable, Well-Drained Soils:** Sandy loam, gravelly soils, or other well-draining materials reduce erosion and maintenance.
- **Natural Contours and Rolling Terrain:** Gentle slopes and rolling hills allow for sustainable trail alignment and natural flow.
- **Natural Obstacles:** Rocks, logs, and boulders can be used to create interesting and challenging features.
- **Scenic Features:** Vistas, water features, rock formations, and diverse vegetation enhance the user experience.





- **Natural Shade:** Tree canopies provide shade and improve trail comfort during hot weather.
- **Consistent Moderate Trail Grades (5%-10%):** Ideal for sustainable trail grades that prevent erosion and accommodate diverse users.
- **Accessible Entry and Exit Points:** Locations that allow for convenient trailhead access and parking.
- **Natural Drainage Paths:** Opportunities to integrate existing drainage for sustainable water management.
- **Durable Rock Outcrops or Ledges:** Useful for constructing technical features or scenic viewpoints.
- **Connectivity to Existing Trails or Amenities:** Provides opportunities for extended networks and user convenience.

UNDESIRABLE TERRAIN FOR RECREATION TRAILS



- **Poorly Drained or Saturated Soils:** Clay-heavy or marshy areas are prone to erosion, rutting, and trail damage.
- **Steep Trail Grades (>15%):** Increases the risk of erosion and may require excessive construction or switchbacks.
- **Highly Erodible or Unstable Soils:** Fine silts, loose sand, or soils lacking vegetation cover are prone to washouts.
- **Flood-Prone Areas:** Low-lying terrain near rivers or streams may experience seasonal flooding and damage.
- **Sensitive Ecosystems:** Wetlands, riparian zones, or habitats of endangered species should be avoided or carefully mitigated.
- **Rocky or Jagged Terrain Without Natural Flow:** Difficult and costly to build through and may deter casual users.
- **Areas with High Water Table:** Leads to muddy, unstable trail conditions and frequent maintenance needs.

EXISTING & POTENTIAL TRAIL MILEAGE

Existing Trails	Miles
ATV/Forest Road	7.51
Unmarked Singletrack	9.25
Marked Trail	3.40
Total Trails	20.16

Decomission	Miles
ATV/Forest Road	3.40
Unmarked Singletrack	8.75
Re-purposed Trail	0.75 - 1.00

Concept Trails	Miles
Shared-Use Trail	8.55
Hike-Only Trail	1.00
Bike-Optimized Trail	3.40
Total New Trails	12.95

MONO POND STATE PARK RESERVE CONCEPT TRAIL SUITABILITY ANALYSIS

Columbia, CT - January 2025

Legend

- Existing Site

 - Project Boundary
 - Road
 - Existing ATV / Double track Trail
 - Airline Recreation Trail
 - Stream/River
 - Wetland
 - Lake/Pond
 - Desirable Area for Trail
 - Less Desirable Area for Trail
 - Existing Trail Access Point
 - Existing Trailhead
- Concept Trails

 - ATV Trail Decommission
 - Unmarked Trail Decommission
 - Hiking-Only Trail
 - Shared-Use Trail
 - Beginner Bike-Optimized Trail
 - Intermediate Bike-Optimized Trail
 - Advanced Bike-Optimized Trail
 - Community Trail Access Point
 - Boardwalk / Bridge

Prepared by:

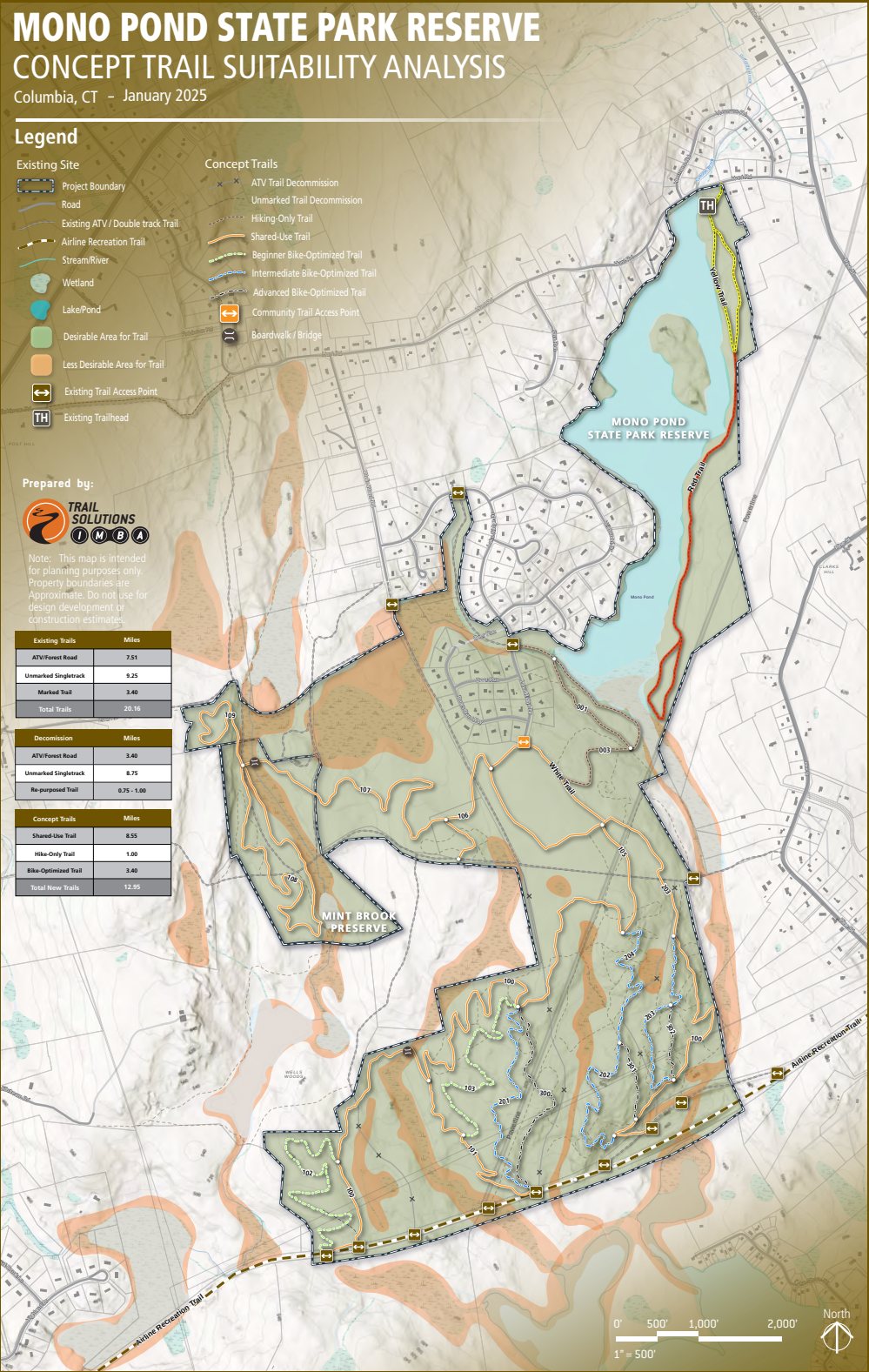


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Concept Trails	Miles
Shared-Use Trail	8.55
Hike-Only Trail	1.00
Bike-Optimized Trail	3.40
Total New Trails	12.95



CONCEPT PLANNING

04

CONCEPT PLAN OVERVIEW

The Mono Pond State Park Concept Plan proposes approximately 13 miles of thoughtfully designed new trails, paired with the selective decommissioning of unsustainable or redundant routes currently present on the property. This balanced approach improves user experience while protecting the park's natural resources and reducing long-term maintenance needs.

The plan is informed by a detailed site analysis, which assessed soil types, slope conditions, drainage patterns, and ecological sensitivities to identify the most sustainable locations for trail development. This analysis guided trail alignment to areas with stable, well-drained soils, moderate grades, and scenic features, while avoiding wetlands, erosion-prone slopes, and sensitive habitats.

The proposed network is organized into three distinct experience zones:

- **Hiking-Focused Zone** – Trails designed to highlight Mono Pond's scenic views, natural features, and interpretive opportunities, providing an immersive, nature-rich walking experience.
- **Shared-Use Zone** – A central portion of the network accommodating hikers, runners, and mountain bikers, offering connections between key access points, neighborhoods, and natural features.
- **Mountain Bike-Focused Zone** – Purpose-built singletrack designed for riders of all skill levels, incorporating natural terrain features and opportunities for skill progression while minimizing user conflict.

The plan also identifies and formalizes appropriate access points and trailheads to support these zones, ensuring clear, convenient, and well-distributed entry for park visitors. By integrating sustainable trail design principles, community priorities, and site-specific opportunities, the concept plan creates a framework for a high-quality, connected, and accessible trail system that will serve a broad spectrum of users for years to come.



MONO POND STATE PARK RESERVE

TRAIL PLANNING

Columbia, CT – December 2024

Legend

Existing Site

- Project Boundary
- Road
- Existing ATV / Double track Trail
- Airline Recreation Trail
- Stream/River
- Wetland
- Lake/Pond
- DEEP Owned Property
- Town Owned Property
- Existing Trailhead

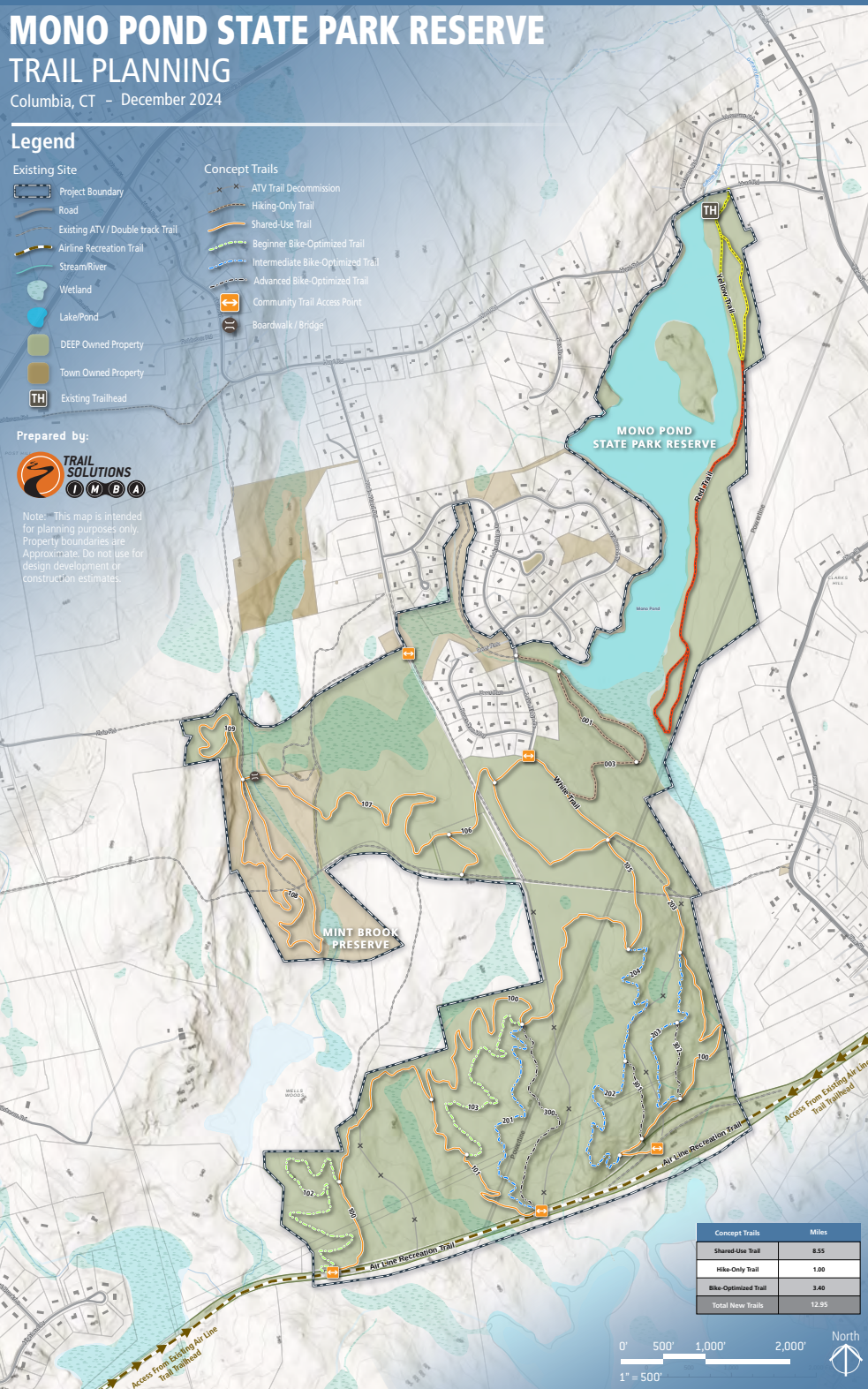
Concept Trails

- ATV Trail Decommission
- Hiking-Only Trail
- Shared-Use Trail
- Beginner Bike-Optimized Trail
- Intermediate Bike-Optimized Trail
- Advanced Bike-Optimized Trail
- Community Trail Access Point
- Boardwalk / Bridge

Prepared by:



Note: This map is intended for planning purposes only. Property boundaries are approximate. Do not use for design development or construction estimates.



SITE ACCESS RECOMMENDATIONS

Air Line Trail

The Air Line Trail offers multiple connection points into the park, with parking available to the west and east. The west trailhead, located 1 mile from the park, provides greater parking capacity, while the east lot, 0.5 miles away, offers a smaller number of spaces. The southern zone of the park is designed as the primary mountain bike experience area, making these connections especially well-suited for riders entering from the Air Line Trail. The trail's consistent grades and direct approach also make it a convenient route for trail runners and other non-motorized users accessing the park.

Community Access

Neighborhood access points provide valuable local entry into the park, supporting regular use by nearby residents. The access at the end of Lake Ridge Drive connects directly to the White Trail and is well-used by the community for walking, running, and other non-motorized activities. Another access point at the end of Wells Woods Road is also popular, but has been impacted by illegal OHV activity, which poses safety and maintenance challenges. Establishing a formal parking area on the adjacent state-owned land could improve the functionality of this entry, encourage appropriate use, and provide better oversight.

Mono Pond Boat Launch

The Mono Pond Boat Launch is a small but popular access point, offering limited parking intended for boating and fishing activities. Despite this intended use, it is also regularly used as an informal trailhead, with visitors parking here to access the Red and Yellow trails. The location provides scenic water views but does not have a connection to the south west portion of the park. Expanding parking capacity would improve access for both water-based and trail-based recreation, making this a more versatile gateway into the park if a connection is constructed.

Zola Road

Zola Road, once overgrown and largely impassable, has undergone initial clearing to establish a visible route into the Mint Brook Preserve area of the park. This access point holds strong potential for non-motorized entry, particularly for hikers, with further vegetation management and tread improvements. Enhancing this route would create another functional gateway into the park, expand user access from the surrounding area, and strengthen connections to the preserve's natural features.



EXPERIENCE ZONES & PREFERRED-USE TRAILS

Experience zones and preferred-use trails are showing up in trail systems around the world. Experience zones divide management areas into special-use zones designed around specific activities: one zone may be preferred for mountain biking and another for accessible, interpretive trails. Implementation of such zones can provide a variety of visitor experiences and recreational opportunities that reduce conflict between differing user groups while providing sustainable, long-lasting trails.

Single use challenges the notion that all trails must be all things to all people. In this case, land managers designate certain trails as “preferred” for certain activities. For example, a trail that is single use for mountain bikers might be designed to be fast and flowing through open terrain, with swooping turns and dips. Hiking-preferred trails, meanwhile, may be more about travel efficiency with stairs, tight switchbacks, short distances, or other qualities that would be less attractive to bikers and equestrians. Visitors will be drawn to routes that match their desired experience.

Each trail system should, of course, include a variety of trails. One way to include numerous types of trails is to have shared-use trails at the beginning of the network near parking lots, with preferred-use trails branching off farther along. The number of trails designated for each mode of travel should be based on the habits and needs of the user groups being managed.

MONO POND STATE PARK RESERVE USER EXPERIENCE ZONES

Columbia, CT – January 2025

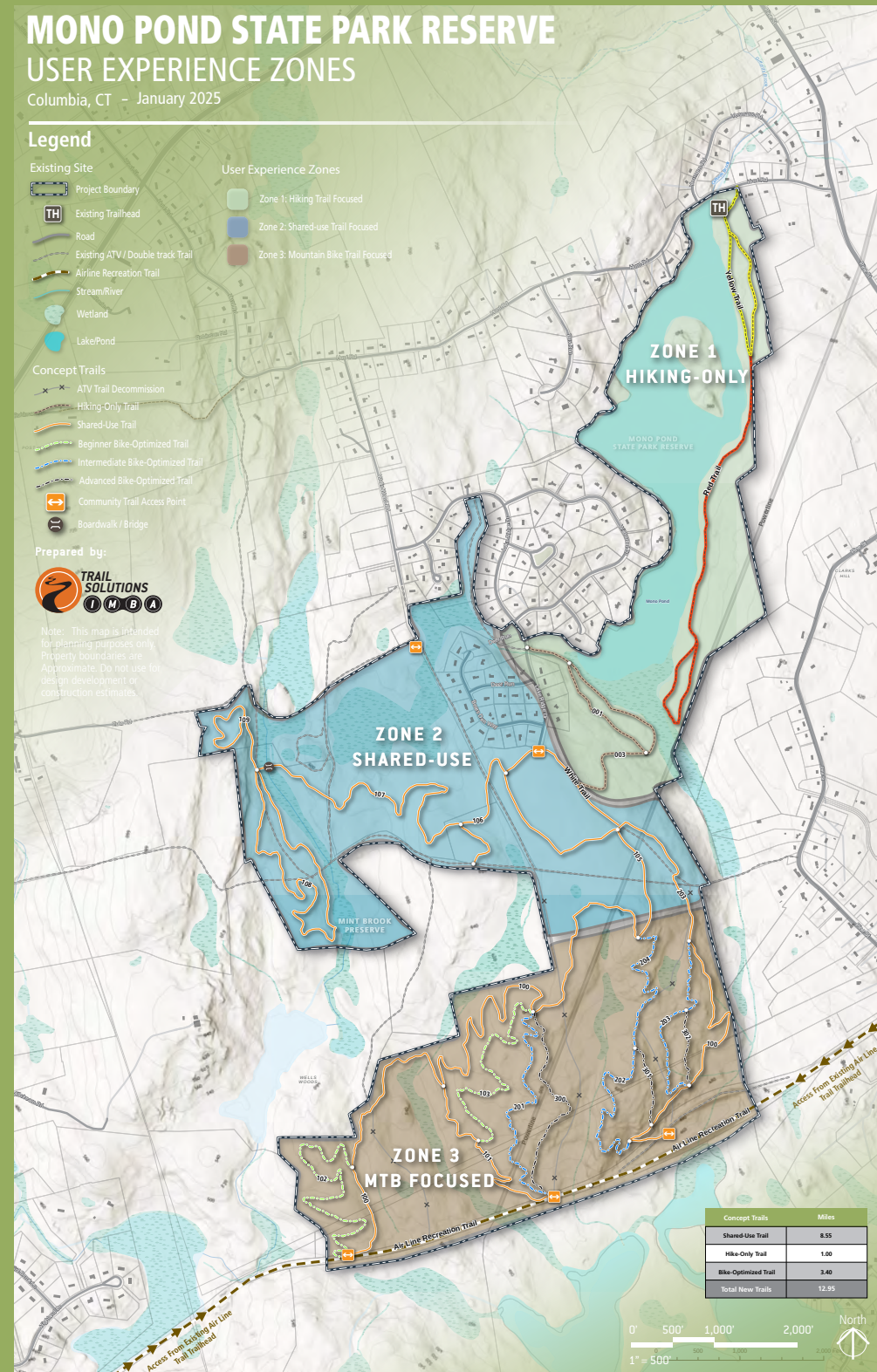
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Prepared by:



Note: This map is intended for planning purposes only. Property boundaries are approximate. Do not use for design development or construction estimates.





TRAIL TYPES

Shared-Use Singletrack

These trails can serve walkers, hikers, runners, cyclists, and equestrians. Trails should be constructed and maintained according to sustainable trail construction practices and employ techniques that minimize user conflict. Multiple user types travel these routes; therefore, care should be taken to avoid obstacles such as jumps or water bars which may lead to undesirable trail experiences for some. Turns are constructed sustainably, but are generally not cambered like bike-optimized turns that improve cornering traction. Keeping trail grades within certain ranges ensures both a positive trail experience for users and enables proper stormwater drainage with minimized erosion. Depending on soil conditions, these trails may need surface hardening techniques to provide a durable four-season trail.



Hiking Trail

These trails are purpose-built to optimize the hiking experience by providing a safe, scenic, and immersive connection with the natural environment. Hiking-only trails are typically designed as narrow, natural-surface paths that meander through diverse landscapes, offering a sense of solitude and tranquility. Depending on terrain and management goals, they may be designed as unidirectional loops or bidirectional out-and-back routes to balance user flow and minimize environmental impact. Trail features may include stone steps, switchbacks, boardwalks over sensitive areas, and gradual grade changes to enhance accessibility and reduce erosion. Trail alignments are carefully planned to highlight natural features such as vistas, water bodies, and unique vegetation while avoiding steep grades and environmentally sensitive zones. Wayfinding signage, rest areas, and interpretive markers can be integrated to enrich the hiker's experience. These trails should cater to a variety of users, from casual walkers to seasoned hikers, with optional spur trails or overlooks offering additional challenges and points of interest.



Mountain Bike-Optimized Singletrack

These trails are purpose-built to optimize the experience of riding a mountain bike. The trails can either be unidirectional or bidirectional depending on the type of trail, preferred circulation of users, and management decisions. This type of trail is constructed with features such as rock gardens, berms, grade reversals, cambered turns (typically wider than turns on traditional singletrack trails), and modest jumps. These trails should make use of gravitational forces and, where possible, be managed to enhance trail flow for descending riders. These trails may need surface hardening to provide a durable four-season trail. They should be designed for a range of users from beginner to advanced skill levels. Optional advanced features can be located along the side of the trail to provide challenges for intermediate and advanced riders. This allows many skill levels to experience the full trail mileage, while providing for skill progression within a smaller trail footprint.



Adaptive Mountain Bike Trails

Adaptive mountain bike trails are natural surface trails that feature specific design parameters to accommodate adaptive mountain bikes (aMTBs) while providing a high-quality experience for “different-abled” riders. Adaptive mountain bikes are equipped with the proper positioning and geometry to allow the millions of Americans that have a mobility disability to enjoy the outdoors. The bikes have three wheels (trikes) or four (quads) and may position the riders in a laid back, recumbent position for most cross country style bikes or face-forward with the riders back to the sky which is common for all-mountain style bikes. The style and make of the bikes vary, but all are wider, larger, and heavier than traditional mountain bikes which results in significant changes to acceleration, deceleration, and the ability to change direction and corner.



TRAIL RATING GUIDELINES

CRITERIA TO CONSIDER

TREAD WIDTH - the average width of the active tread of the trail

TREAD SURFACE - the material and stability of the tread surface that is a determining factor in the difficulty of the trail. Some descriptive terms include: firm, stable, variable, widely variable, loose, and unpredictable

TRAIL GRADE - measured using a clinometer (or software that can display grades on GPS tracks) and always referenced as a percentage.

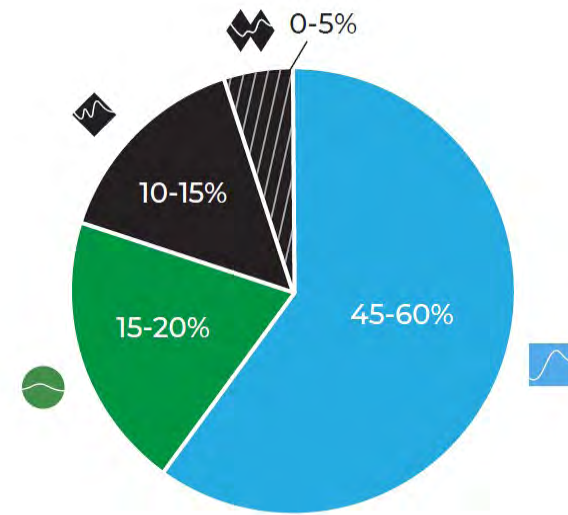
- **Average grade** – Average grade is the steepness of the trail over its entire length, calculated by total elevation gain of the trail divided by total length of the trail and multiplied by 100 to calculate the percent grade.
- **Maximum sustained grade** – Maximum sustained grade is defined as the steepest section of trail sustained for more than 10 feet in length.
- **Average climbing and descending grades** – It is helpful to define climbing and descending grades separately from one another to accurately assess the level of physical exertion required on the climbs as compared to the level of speeds potentially obtained on the descents.

IMBA Trail Difficulty Rating System					
	 EASIEST WHITE CIRCLE	 EASY GREEN CIRCLE	 MORE DIFFICULT BLUE SQUARE	 VERY DIFFICULT BLACK DIAMOND	 EXTREMELY DIFFICULT DBL. BLACK DIAMOND
TRAIL WIDTH	72" or more	36" or more	24" or more	12" or more	6" or more
TREAD SURFACE	Hardened or surfaced	Firm and stable	Mostly stable with some variability	Widely variable	Widely variable and unpredictable
AVERAGE TRAIL GRADE	Less than 5%	5% or less	10% or less	15% or less	20% or more
MAXIMUM TRAIL GRADE	Max 10%	Max 15%	Max 15% or greater	Max 15% or greater	Max 15% or greater
NATURAL OBSTACLES AND TECHNICAL TRAIL FEATURES (TTF)	None	Unavoidable obstacles 2" tall or less Avoidable obstacles may be present Unavoidable bridges 36" or wider	Unavoidable obstacles 8" tall or less Avoidable obstacles may be present Unavoidable bridges 24" or wider TTF's 2' high or less, width of deck is greater than 1/2 the height	Unavoidable obstacles 15" tall or less Avoidable obstacles may be present May include loose rocks Unavoidable bridges 24" or wider TTF's 4' high or less, width of deck is less than 1/2 the height Short sections may exceed criteria	Unavoidable obstacles 15" tall or greater Avoidable obstacles may be present May include loose rocks Unavoidable bridges 24" or narrower TTF's 4' high or greater, width of deck is unpredictable Many sections may exceed criteria

Trail Grade

The difference between a 5% and 8% stretch of intermediate trail is significant. The physical exertion required to climb a sustained 8% grade is significantly more challenging than what is required to climb a sustained 5% grade. Similarly, potential descending speed on an 8% grade is significantly faster than a 5% grade. For example, a one-way trail planned with 8% descents and 5% climbs will maximize speeds for the descending portions and minimize physical exertion on the climbs, creating a fast, flowy experience that focuses on speed and minimal exertion. Whereas a one-way trail planned with 5% descents and 8% climbs will reduce descending speeds and maximize physical exertion on the climbs, creating a more physically demanding trail experience with reduced descending speeds.

	BEGINNER/EASY	0%-5% Average Grade
	INTERMEDIATE/ MORE DIFFICULT	5%-8% Average Grade
	ADVANCED/VERY DIFFICULT	8%-12% Average Grade
	EXPERT/EXTREMELY DIFFICULT	10%-15% Average Grade



DIFFICULTY BALANCE

Balanced does not necessarily mean equal. Similar to the downhill ski industry planning guidelines, an appropriate trail distribution across ability levels looks like a bell shaped curve.

Achieving a balanced mix may mean looking beyond the individual trail system and considering the mix of trail types and difficulty levels across a region.

Progressing as a rider from one difficulty level to the next can be stressful and intimidating. One way to help bridge this gap is to have a practice facility (skills park) at the trailhead with trail features varying in skill level from beginner through expert, so that people can see, experience, and practice their skill progression in a controlled environment before making the leap out on the trail.

Trail Direction

TWO-WAY TRAILS

FLEXIBILITY - Trail users have more flexibility in how they move through the trail system, allowing them to customize their trail experience.

CONNECTIVITY - Two-way trails create more connectivity options.

QUANTITY - Two-way trails provide double the mileage of a one-way trail. A 1-mile trail that can be ridden in both directions provides two miles of riding.

ECONOMICS - Two-way trails allow more economical trail development, especially in a shared-use trail system.

DISRUPTIONS - Riders traveling in opposite directions on the same trail create more interactions between trail users, which can lead to disruptions in the ride experience.

DECISIONS - An intersection of two-way trails requires twice the number of route planning decisions when compared to an intersection of one-way trails. While offering more flexibility, having more decisions to make can also deter from the desire for minimal interruptions.

SIGNAGE - Two-way trails require that signs at intersections have information on both sides. This may also require having multiple sign markers at an intersection (whereas one-way trails might only require one sign marker).



One-Way Trails

DESIGN - A one-way mountain bike trail can be designed without compromise. (Designing a two-way mountain bike trail requires more complex design considerations such as how to slow down riders before a blind corner, how to reduce speeds to minimize consequences in a head-on collision, and how to blend trail features to work well in both directions.) If a trail is one-way, these considerations disappear, and bike-optimization can be maximized.

EXPERIENCE - Because trail design does not have to be compromised, directional trail provides an increase in rider-optimized experience. Having one-way trails reduces the number of times a trail user needs to stop, possibly pull out a trail map, and make decisions about which way to travel.

ONCOMING TRAFFIC - For one-way, bike-only trails, riders rarely have to stop or move off the trail for oncoming traffic, creating fewer disruptions to the trail experience.

ENCOUNTERS WITH OTHER USERS - The amount of times a trail user encounters another user on the trail is reduced significantly since all riders are traveling in the same direction. This contributes to a more relaxed, serene experience. Densely populated urban centers with high volumes of trail users can benefit greatly from a one-way trail system. For a shared-use trail or system where riders only travel in one direction but foot traffic can travel in both directions, there are more encounters but more flexibility for foot traffic to move through the system.

QUANTITY - The quantity of unique, rideable mileage is reduced by half with one-way trails. Directional trail provides an increase in optimized experience through fewer user interactions and more trail design options, which can be more valuable than length. Quantity does not always equal quality.



MONO POND STATE PARK RESERVE

ZONE 1: HIKING FOCUSED EXPERIENCE

Columbia, CT - October 2025

Legend

Existing Site

- Project Boundary
- DEEP Property
- Town Property
- Road
- Unmaintained Road
- Airline Recreation Trail
- Community Trail
- Stream/River
- Wetland
- Lake/Pond
- Existing Trailhead

Prepared by:



Note: This map is intended for planning purposes only. Property boundaries are approximate. Do not use for design development or construction estimates.

Proposed Trails

- Hiking-Only Trail
- Existing Trail Upgrades, Universal Access Trail
- Existing Trail Upgrades, Shared-Use Beginner Trail
- Shared-Use Beginner Trail
- Shared-Use Intermediate Trail
- Shared-Use Advanced Trail
- Bike-Optimized, Beginner Trail
- Bike-Optimized, Intermediate Trail
- Bike-Optimized, Advanced Trail
- Road Decommission
- Rock Armoring
- Rock Armoring
- Community Trailhead
- Trail Access
- Fishing Access
- Hub
- Boardwalk / Bridge



ZONE 1: HIKING FOCUSED EXPERIENCE



MONO POND BOAT RAMP PARKING



YELLOW TRAIL

OPPORTUNITIES

- Existing network of trails at the park
- Nature viewing opportunities
- Gentle slopes with good topography
- Potential for natural surface trail connectivity
- Existing access point
- Opportunity to provide additional amenities for nature trail users such as restrooms and parking
- Connectivity to existing recreation pathway
- Interpretive signage opportunities



INTERPRETIVE SIGNAGE EXAMPLE



VIEW ALONG YELLOW TRAIL

CONSTRAINTS

- Boat ramp parking conflict with recreation users
- Smaller site, not as much room for additional community amenities
- No connection to the other portion of trail network
- Constraints from private property adjacent to park
- Wetlands create a barrier to connectivity between parcels

MONO POND STATE PARK RESERVE

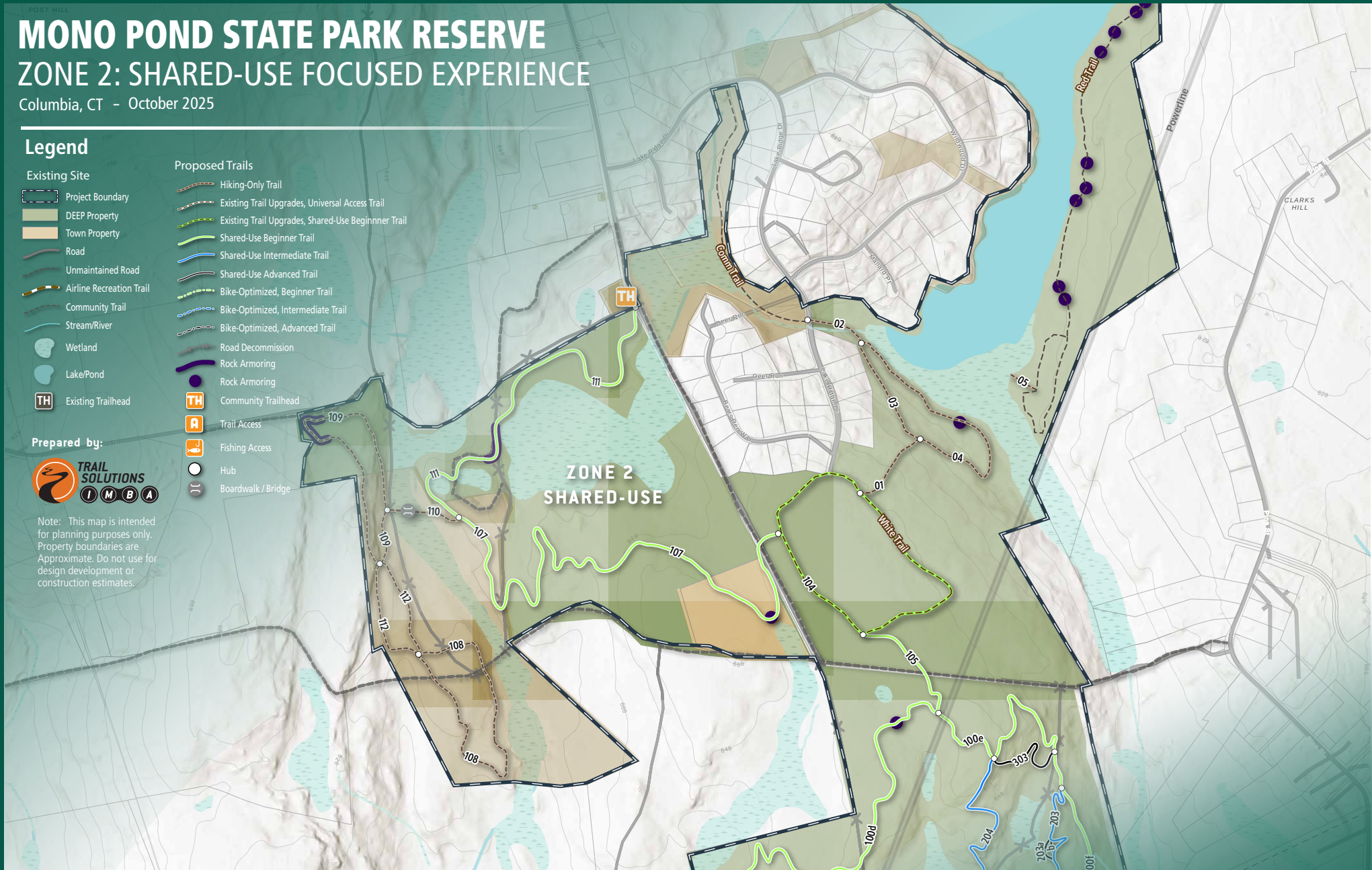
ZONE 2: SHARED-USE FOCUSED EXPERIENCE

Columbia, CT - October 2025

Legend

- Existing Site**
- Project Boundary
 - DEEP Property
 - Town Property
 - Road
 - Unmaintained Road
 - Airline Recreation Trail
 - Community Trail
 - Stream/River
 - Wetland
 - Lake/Pond
 - TH Existing Trailhead
- Proposed Trails**
- Hiking-Only Trail
 - Existing Trail Upgrades, Universal Access Trail
 - Existing Trail Upgrades, Shared-Use Beginner Trail
 - Shared-Use Beginner Trail
 - Shared-Use Intermediate Trail
 - Shared-Use Advanced Trail
 - Bike-Optimized, Beginner Trail
 - Bike-Optimized, Intermediate Trail
 - Bike-Optimized, Advanced Trail
 - Road Decommission
 - Rock Armoring
 - Rock Armoring
 - Community Trailhead
 - Trail Access
 - Fishing Access
 - Hub
 - Boardwalk / Bridge
- Prepared by:**
- TRAIL SOLUTIONS**
I M B A

Note: This map is intended for planning purposes only. Property boundaries are approximate. Do not use for design development or construction estimates.



ZONE 2: SHARED-USE EXPERIENCE



MINT BROOK PRESERVE



TRAIL RUNNER AT MONO POND



TRADITIONAL SHARED-USE EXAMPLE



FOREST ROAD AT MINT BROOK PRESERVE

OPPORTUNITIES

- Access to the trail network from neighborhoods
- Shared experience for all user types creating the core of the network
- Connection to Mint Brook Preserve
- Nature viewing opportunities
- Existing access points
- Historical infrastructure
- Connectivity to existing recreation pathway

CONSTRAINTS

- Wet areas that create restrictions for access
- Existing forest roads and ATV trails
- Limited access points

MONO POND STATE PARK RESERVE

ZONE 3: MOUNTAIN BIKE FOCUSED EXPERIENCE

Columbia, CT - October 2025

Legend

Existing Site

- Project Boundary
- DEEP Property
- Town Property
- Road
- Unmaintained Road
- Airline Recreation Trail
- Community Trail
- Stream/River
- Wetland
- Lake/Pond
- Existing Trailhead

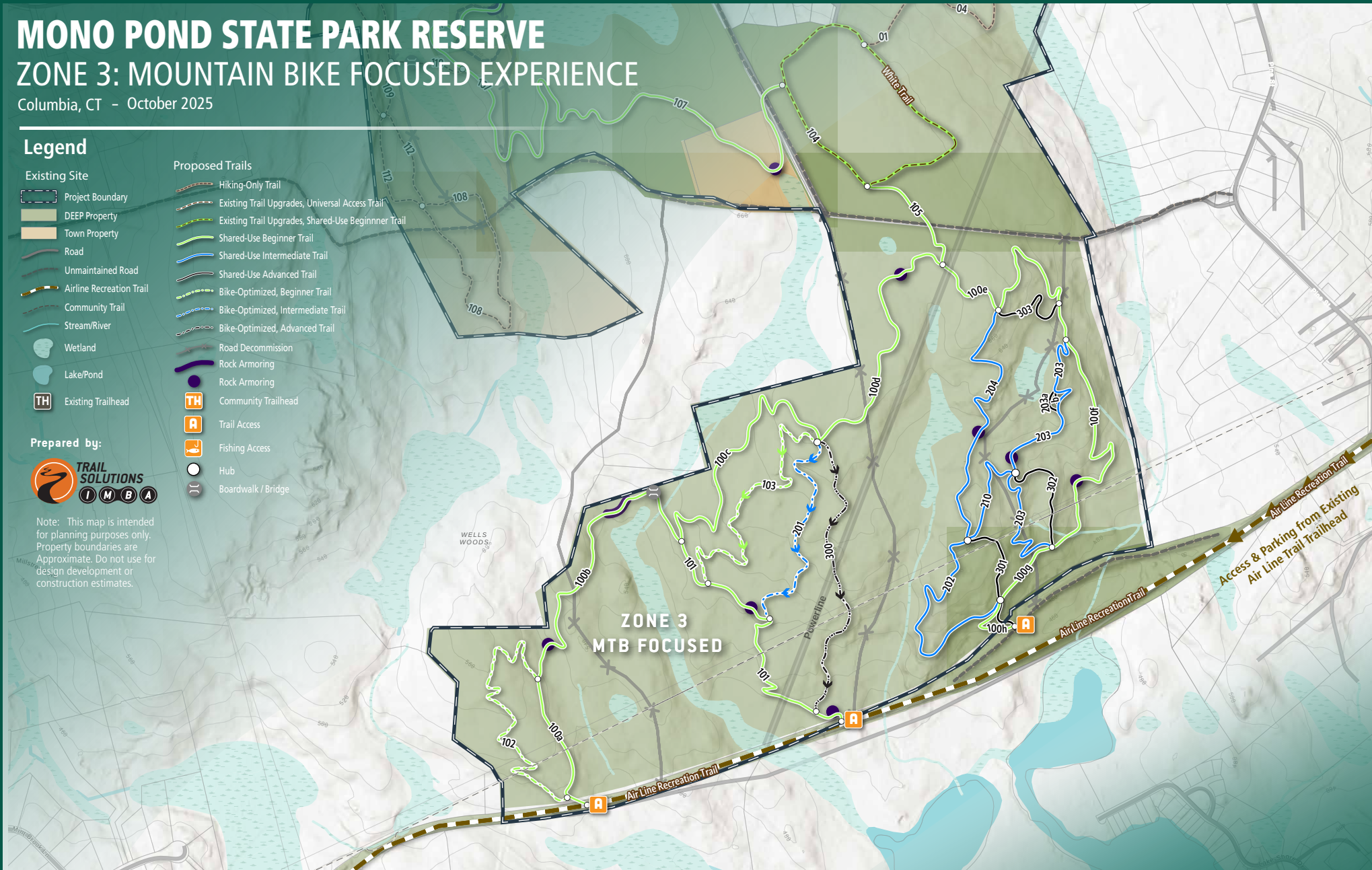
Proposed Trails

- Hiking-Only Trail
- Existing Trail Upgrades, Universal Access Trail
- Existing Trail Upgrades, Shared-Use Beginner Trail
- Shared-Use Beginner Trail
- Shared-Use Intermediate Trail
- Shared-Use Advanced Trail
- Bike-Optimized, Beginner Trail
- Bike-Optimized, Intermediate Trail
- Bike-Optimized, Advanced Trail
- Road Decommission
- Rock Armoring
- Rock Armoring
- Community Trailhead
- Trail Access
- Fishing Access
- Hub
- Boardwalk / Bridge

Prepared by:



Note: This map is intended for planning purposes only. Property boundaries are approximate. Do not use for design development or construction estimates.



ZONE 3: MOUNTAIN BIKE FOCUSED EXPERIENCE



Air Line TRAIL ACCESS



UNIQUE ROCK FORMATIONS



BIKE-OPTIMIZED FLOW TRAIL EXAMPLE



WET AREA OF FOREST ROAD

OPPORTUNITIES

- Terrain suitable for all ability levels
- Unique terrain for exciting and diverse riding experiences
- Gentle slopes with good topography
- Access via the Air Line trail is in-line with the goals of the Air Line State Park Trail Region Master Plan to provide connectivity to neighboring properties and trail systems.
- Existing access point
- Connectivity to existing recreation pathway
- Forest roads allowing access for maintenance and construction of trails.
- Separation of user types decreasing potential user conflict

CONSTRAINTS

- Wet areas creating restrictions on development of trails.
- Existing network of ATV, unmarked singletrack, and forest roads.
- Unsanctioned ATV access into the site.

TRAIL DESIGN

05



DESIGN METHODOLOGY

Trail design includes flagging trail corridors, capturing detailed notes, outlining trail specifications, taking accurate measurements, and recording GPS tracks for project review and construction teams.

The following section explains details of the design process completed by IMBA Trail Solutions for the Mono Pond Trails Plan design effort in April 2025.

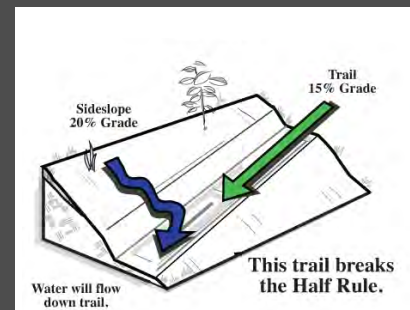
Flagged Trail Design

The IMBA Trail Solutions team flagged 10.8 miles of trail along with identifying an additional 2.4 miles of realignments and

5 ESSENTIAL TRAIL ELEMENTS

The Half Rule

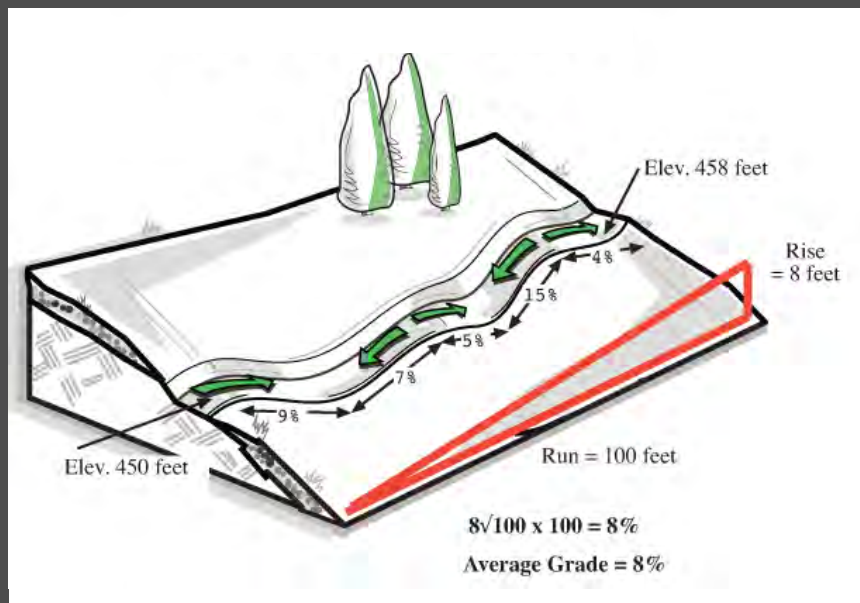
A trail's grade should not exceed half the grade of the hillside or side slope that the trail traverses. If the trail does exceed half the side slope, it is considered a "fall-line trail." Water will flow down a fall-line trail rather than run across it, and therefore cause significant rutting and erosion. There are exceptions to this rule, but those types of trails require significant expertise to execute and should be left in the hands of qualified professionals.



The Ten Percent Average Grade Guideline

Historically, the thought has been that an average grade of 10% or less minimizes erosion. This guideline has evolved and while a 10% average or less may be acceptable for an expert-level trail, the industry practices have become more specific to trail difficulty level: Beginner trails range

from 0-5% average grade, intermediate trails range from 5-7% average grade, and advanced trails average 7-9% (or higher) grade. Trail segment grades are directly related to the amount of exertion required when climbing, as well as the speeds that can be reached when descending. This is extremely important for planning rider experiences, as an average 7% or higher grade on a climbing trail can be excruciating for a newer, less fit rider and potentially turn them off completely from riding again. The same can be true for having a descent that is too steep for a less-skilled rider, also potentially scaring them away from mountain biking.

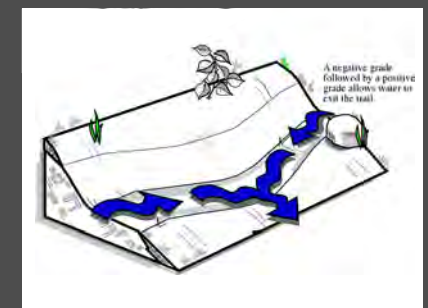
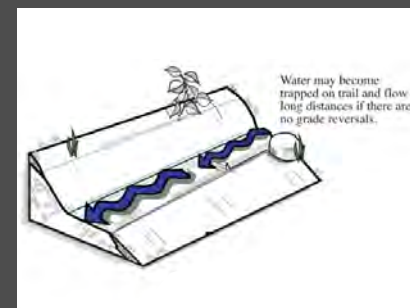


Maximum Sustainable Trail Grades

Maximum grade is the steepest section of trail that is more than 10 feet in length. This grade is soil composition dependent, but 15-20% maximum grade is considered typical. These grades can be exceeded if trail tread reinforcement techniques such as rock armoring are used.

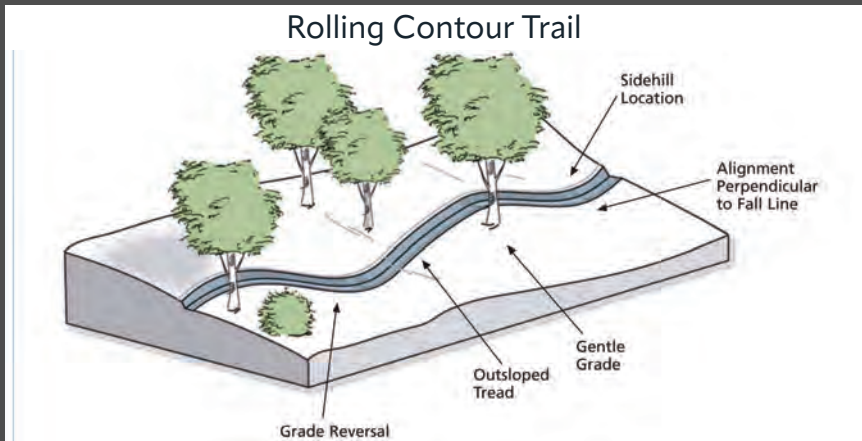
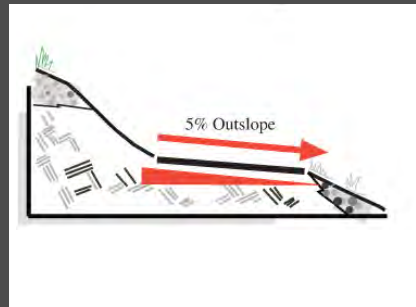
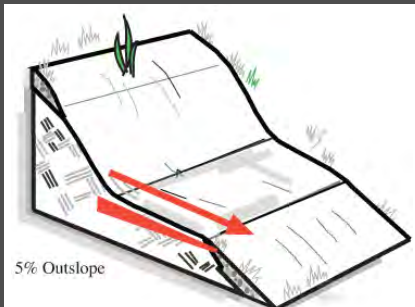
Grade Reversals

Grade reversals occur when a trail that is going down (negative grade) transitions into a trail that is going up (positive grade). This results in a low spot on the trail, which is commonly referred to as a drain, because this is where water exits from the trail. Frequent grade reversals every 20 to 100 feet are critical for a healthy trail system to ensure water can flow from the trail as frequently as possible. Grade reversals are also a critical element of the overall user experience.

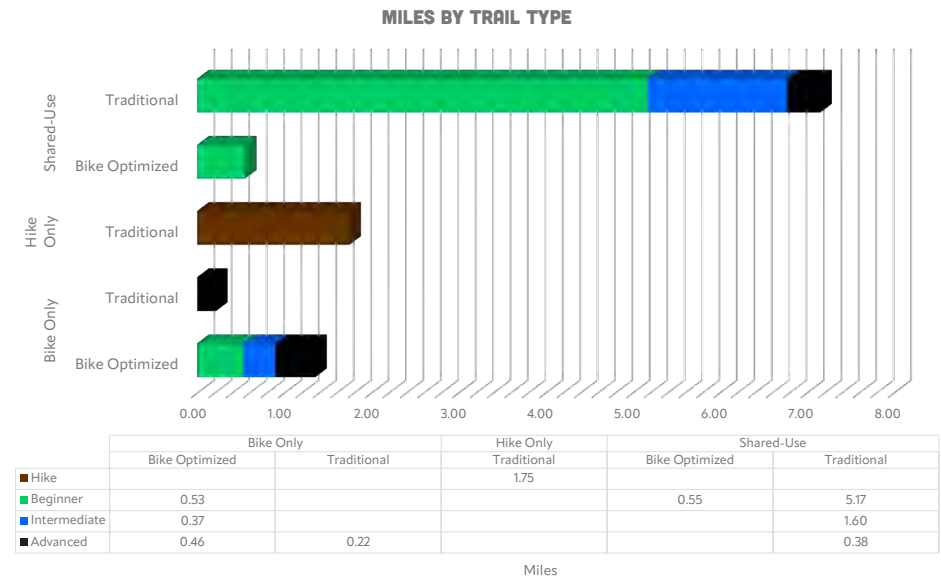


Outslope

As the trail contours across a hillside, the downhill or outer edge of the tread should slope slightly down and away from the inner/high side at about a 5% slope. This tilt is called "outslope," and it encourages water to sheet across and off the trail. Modern mountain bike trail building techniques focus heavily on insloped trails to maximize fun, but still rely on outslope at drains and any part of the trail where an inslope is not required to keep the rider on the trail.



improvements to existing trails. The flagged trails provide opportunities for hike only, shared-use, and bike-optimized trail experiences. The following chart shows the breakdown of mileage by type and ability level.



General Guidelines

The designed trails include bidirectional, shared-use singletrack, traditional hike only trails, and bike-optimized downhill only singletrack. Some segments may incorporate technical trail features, but overall, the trails aim to accentuate the natural environment of the forest while providing a range of user experiences. All trails follow IMBA Trail Solutions principles for sustainable trails with rolling contour alignments.

During this design process, particular care was taken to adhere to the prescribed trail grades for each trail difficulty level, and



integrate with existing forest infrastructure and trails while avoiding to the extent possible restrictive forest management areas, property boundaries, and sensitive resources. Drainage crossings were selected to minimize the crossing zones to the extent possible. Mitigation measures such as stone armoring, bridge, and boardwalk sections will be needed, these features are identified in the design details dataset and on the Phase 1 Design map.

Trail Flagging

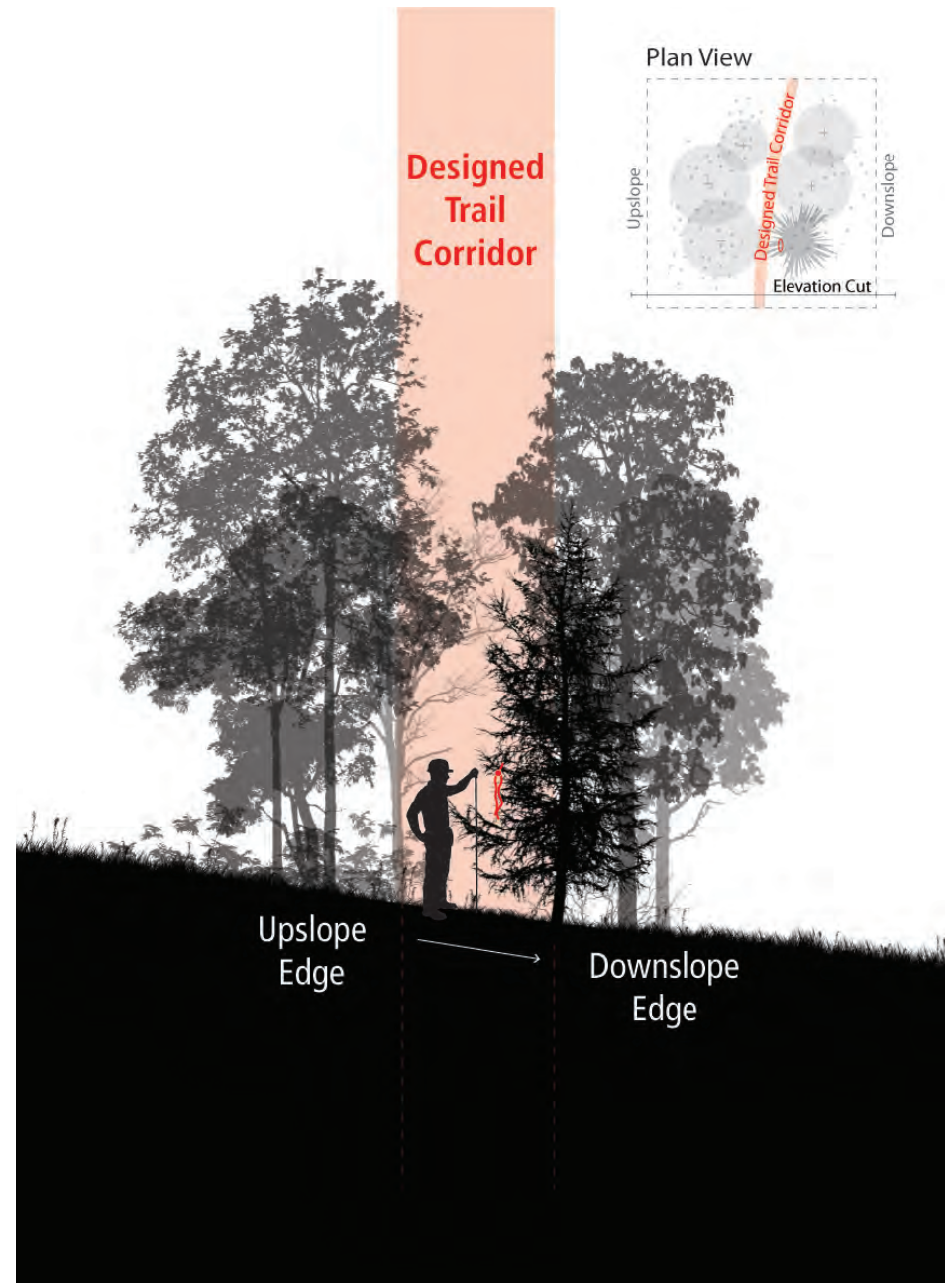
The trail flagging process includes tying colored outdoor flagging tape to trees that represent the downhill edge of the trail corridor. Typically, the knot in the tape faces uphill and is tied at eye level. This positioning enables designers, reviewers, and construction teams to utilize these markings as references for measuring trail grade with an inclinometer. The spacing between flags varies by tree canopy and underbrush type. Flags may be tied every ten feet or less in brushy areas or spaced 100 feet or more in an open canopy. The following graphics show general flagging practices. Field marking includes intersection marking on corrugated plastic signs. These small signs are intended to provide a detailed intersection layout in the field.



Turn and Hub Locations

Turn locations are marked in the field with two stacked flags. In addition to providing a more dynamic and enjoyable trail experience, turns are often designed to avoid property constraints and maintain sustainable trail grades. When possible, turns

TRAIL FLAGGING IDENTIFICATION





are situated on gentler side slopes to allow for more efficient construction and better management of water and soil erosion.

Hub locations are marked in the field with three stacked flags, designating key intersections of two or more trails in the network. These are meant to be wide, graded areas with wayfinding signage to orient trail users. Hubs also serve as rest spots, so they should be wide enough to fit a few trail users at a given time.

Constructed Tread Width

Constructed tread widths follow the trail difficulty rating standards developed by IMBA Trail Solutions. Wider constructed treads are prescribed to beginner trails with trails narrowing as the difficulty level increases. Tread widths are expected to narrow over time as the trail settles into the landscape.



Maximum and Average Grade

The flagged trails' maximum and average grades were calculated to ensure that each trail follows the grades prescribed by the IMBA Trail Solutions trail difficulty rating system. These grades were determined by uploading the trail alignment data to the IMBA Trail Solutions Elevation Profile Tool, which calculates the maximum grade of a trail over a 100-foot interval and the weighted average grade of the trails' ascending and descending segments.



Tread Armoring

Tread armoring is prescribed in areas where wet soils, drainage crossings, or otherwise more erodible surfaces are unavoidable. Tread armoring and materials may differ between project areas according to the specific location requirements, the project budget, and materials (e.g., loose rocks) available in the surrounding landscape.

Water was observed in some of the drainages, swales, and low-lying areas within the Phase One design zone. Areas, which are prone to water flow during intense precipitation events, were identified as potential sites for rock armoring. Additional armoring may be necessary on north facing slopes which are more prone to holding moisture. Armoring in these areas should be identified and mitigated during construction. Suitable rock is available on-site in most of these areas to create a durable sustainable tread surface to mitigate erosion and manage water flow effectively.

Rock armoring is installed such that water easily sheets over the surface without catching sediment or debris. Rock armoring techniques are discussed in great detail in resources found on IMBA's website as well as various IMBA publications.



MONO POND STATE PARK RESERVE

Trail Planning & Design - Flagged Trails

Columbia, CT - October 2025

Legend

- | Existing Site | Proposed Trails |
|---------------------------|--|
| Project Boundary | Hiking Only Trail |
| DEEP Property | Existing Trail Upgrades, Universal Access Trail |
| Town Property | Existing Trail Upgrades, Shared-Use Beginner Trail |
| Road | Shared-Use Beginner Trail |
| Unmaintained Road | Shared-Use Intermediate Trail |
| Air Line Recreation Trail | Shared-Use Advanced Trail |
| Community Trail | Bike-Optimized, Beginner Trail |
| Stream/River | Bike-Optimized, Intermediate Trail |
| Wetland | Bike-Optimized, Advanced Trail |
| Lake/Pond | Road Decommission |
| Existing Trailhead | Rock Armoring |
| | Community Trailhead |
| | Trail Access |
| | Fishing Access |
| | Hub |
| | Boardwalk / Bridge |



Prepared by:



Note: This map is intended for planning purposes only. Property boundaries are approximate. Do not use for design development or construction estimates.

MONO POND STATE PARK TRAILS PLANNING & DESIGN – FLAGGED TRAILS

Name	Style	Skill	User	Direction	Status	Flag Color	Miles
100a	Traditional	Beginner	Shared-Use	Bidirectional	Flagged	Blue	0.22
100b	Traditional	Beginner	Shared-Use	Bidirectional	Flagged	Blue	0.50
100c	Traditional	Beginner	Shared-Use	Bidirectional	Flagged	Pink	0.51
100d	Traditional	Beginner	Shared-Use	Bidirectional	Flagged	Pink	0.44
100e	Traditional	Beginner	Shared-Use	Bidirectional	Flagged	Pink	0.13
100f	Traditional	Beginner	Shared-Use	Bidirectional	Flagged	Pink	0.77
100g	Traditional	Beginner	Shared-Use	Bidirectional	Flagged	Pink	0.12
100h	Traditional	Beginner	Shared-Use	Bidirectional	Flagged	Pink	0.10
101	Traditional	Beginner	Shared-Use	Bidirectional	Flagged	Pink	0.51
102	Bike Optimized	Beginner	Shared-Use	Bidirectional	Flagged	Orange	0.55
103	Bike Optimized	Beginner	Bike Only	Downhill	Flagged	Pink Stripe	0.53
105	Traditional	Beginner	Shared-Use	Bidirectional	Flagged	Pink	0.19
107	Traditional	Beginner	Shared-Use	Bidirectional	Flagged	Blue	1.03
108	Traditional	Hike	Hike Only	Bidirectional	Flagged	Blue	0.55
109	Traditional	Hike	Hike Only	Bidirectional	Flagged	Red	0.59
110	Traditional	Hike	Hike Only	Bidirectional	Flagged	Blue	0.11
111	Traditional	Beginner	Shared-Use	Bidirectional	Flagged	Blue	0.66
112	Traditional	Hike	Hike Only	Bidirectional	Flagged	Blue	0.33
201	Bike Optimized	Intermediate	Bike Only	Downhill	Flagged	Blue	0.37
202	Traditional	Intermediate	Shared-Use	Bidirectional	Flagged	Blue	0.41
203	Traditional	Intermediate	Shared-Use	Bidirectional	Flagged	Blue	0.56
203a	Traditional	Advanced	Bike Only	Downhill	Flagged	Orange	0.04
203b	Traditional	Advanced	Bike Only	Downhill	Flagged	Pink	0.02
204	Traditional	Intermediate	Shared-Use	Bidirectional	Flagged	Blue	0.45
210	Traditional	Intermediate	Shared-Use	Bidirectional	Flagged	Red	0.18
300	Bike Optimized	Advanced	Bike Only	Downhill	Flagged	Pink Dot	0.46
301	Traditional	Advanced	Shared-Use	Bidirectional	Flagged	Orange	0.20
302	Traditional	Advanced	Shared-Use	Bidirectional	Flagged	Orange	0.19
303	Traditional	Advanced	Shared-Use	Bidirectional	Flagged	Orange	0.16

Total

10.85

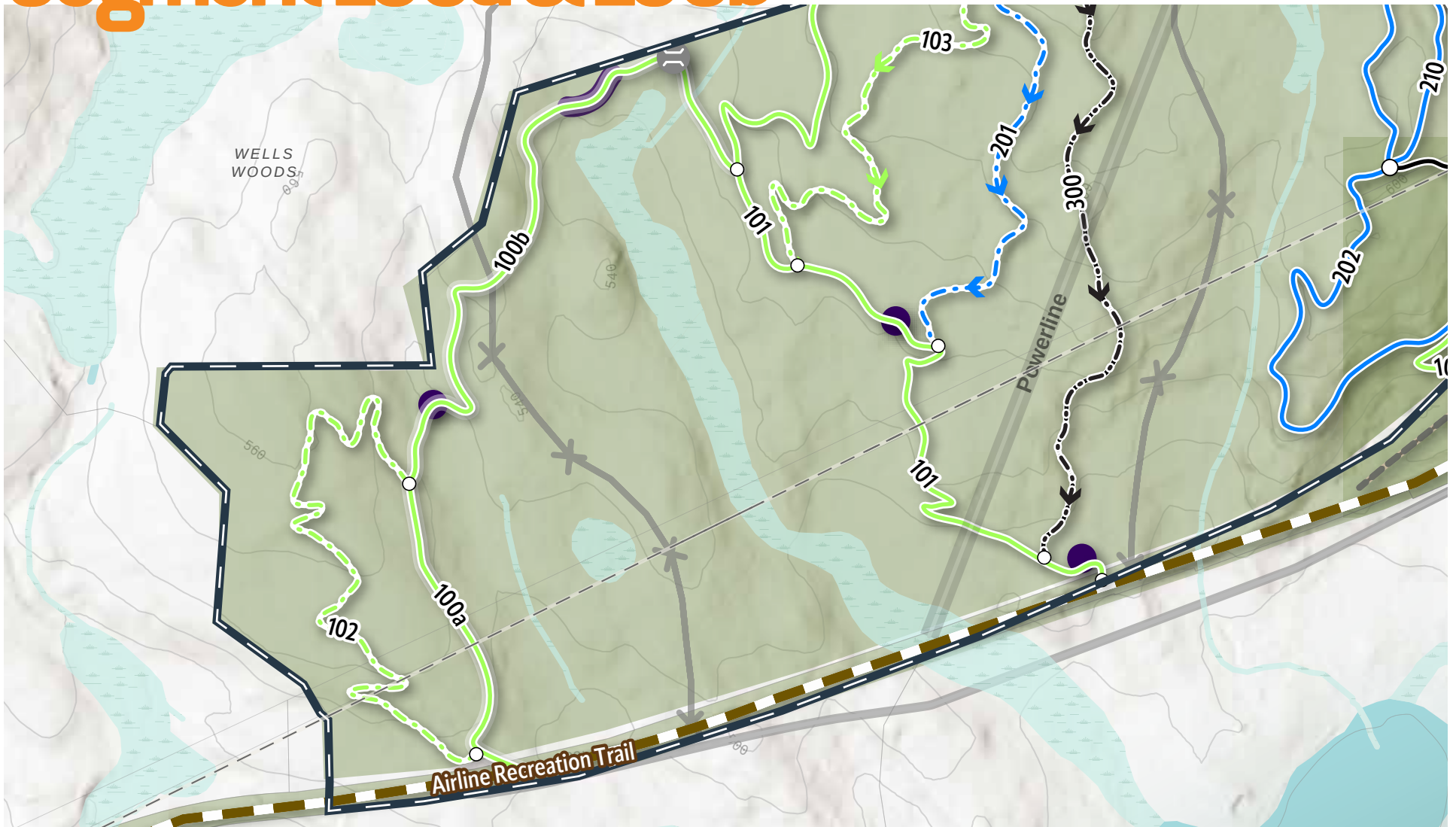
MONO POND STATE PARK TRAILS PLANNING & DESIGN – EXISTING TRAIL IMPROVEMENTS/REALIGNMENTS

Name	Style	Skill	User	Direction	Status	Flag Color	Miles
1	Traditional	Hike	Hike Only	Bidirectional	Existing	Blue	0.12
2	Traditional	Hike	Hike Only	Bidirectional	Existing	Blue	0.09
3	Traditional	Hike	Hike Only	Bidirectional	Flagged	Blue	0.17
4	Traditional	Hike	Hike Only	Bidirectional	Existing	Blue	0.42
5	Traditional	Hike	Hike Only	Bidirectional	Existing	Blue	0.02
Yellow Trail	Universal Access	All	Hike Only	Bidirectional	Existing		0.92
104 White Trail	Traditional	Beginner	Shared-Use	Bidirectional	Existing		0.73

Total

2.48

Segment 100a & 100b



Trail Details:

Flagging Color: Blue

Length: 0.22 miles & 0.50 miles

Trail Type: Traditional, Bidirectional

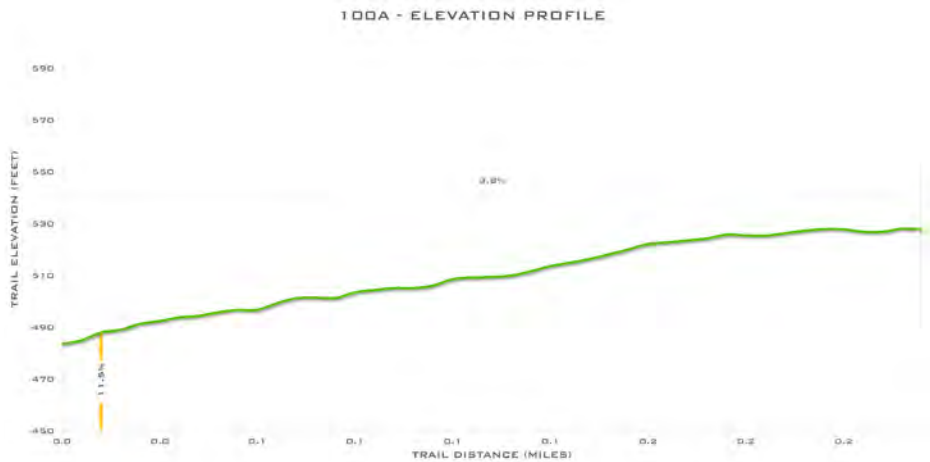
Difficulty: Beginner

Average Climb Grade: 3.8% & 2.5%

Average Descend Grade: 0.0% & -2.4%

Tread Width: 54"

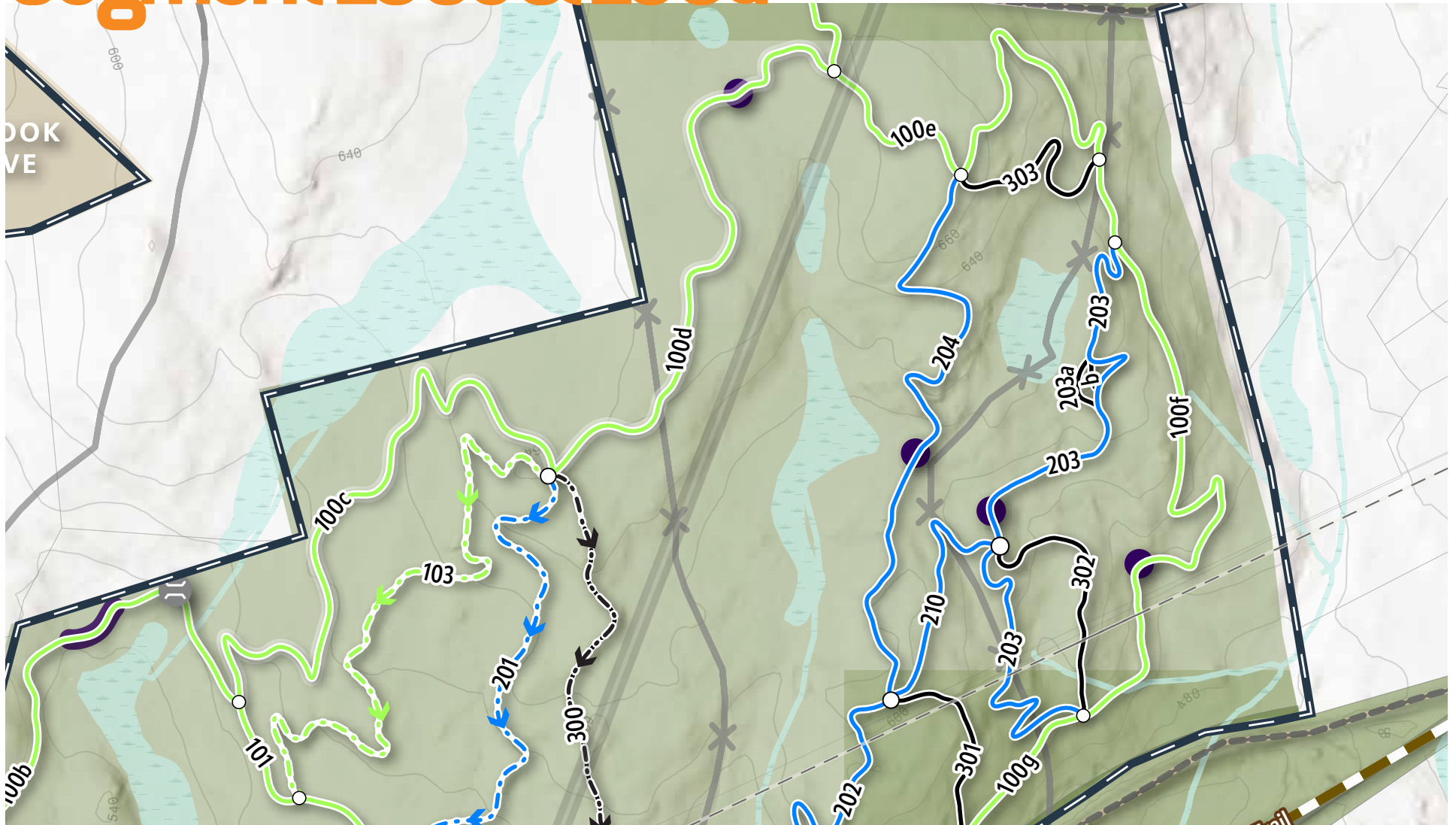
Trail Elevation Profile



Segments 100a and 100b make up a 0.72-mile section of the larger 2.79-mile beginner bi-directional shared-use trail that forms the outer loop around the mountain bike zone. This section begins at the lower elevations on the west side of the network and climbs gradually along the base of the slope, offering a comfortable ascent that is approachable for riders, hikers, and runners of all abilities. The alignment parallels segment 101 while maintaining enough separation to create an alternate experience, eventually connecting to the Air Line Trail. Segment 100b crosses a wet area near the property line, armoring or puncheon will be necessary. There is also a small stream crossing where a bridge will be needed. Bridge design should follow the USDA Forest Service Standard Trail Plans and Specifications for STD 962 — SAWN TIMBER TRAIL BRIDGE. The bridge length is approximately 20' based on field analysis. Lengths may change during construction. Bridge width should be 5' wide minimum. All features and construction should allow for adaptive mountain bikes on this segment.



Segment 100c&100d



Trail Details:

Flagging Color: Pink

Length: 0.51 miles & 0.44 miles

Trail Type: Traditional, Bidirectional

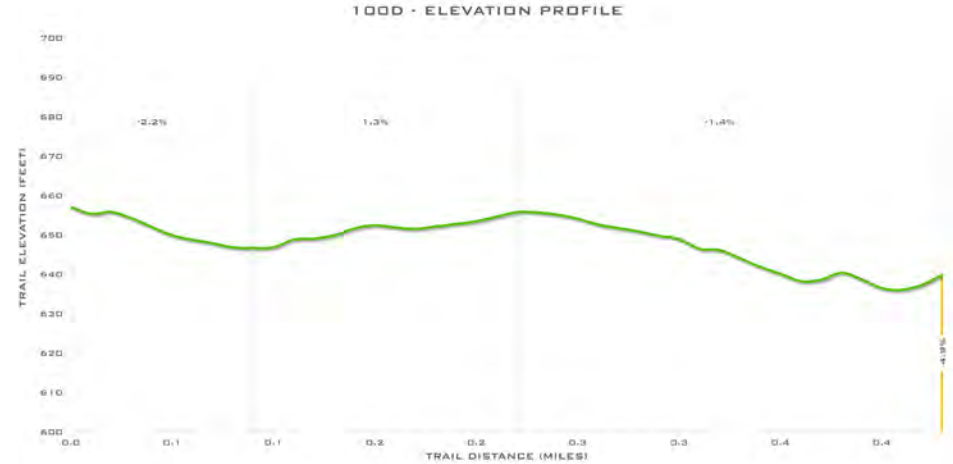
Difficulty: Beginner

Average Climb Grade: 3.5% & 1.3%

Average Descend Grade: 0.0% & -1.7%

Tread Width: 54"

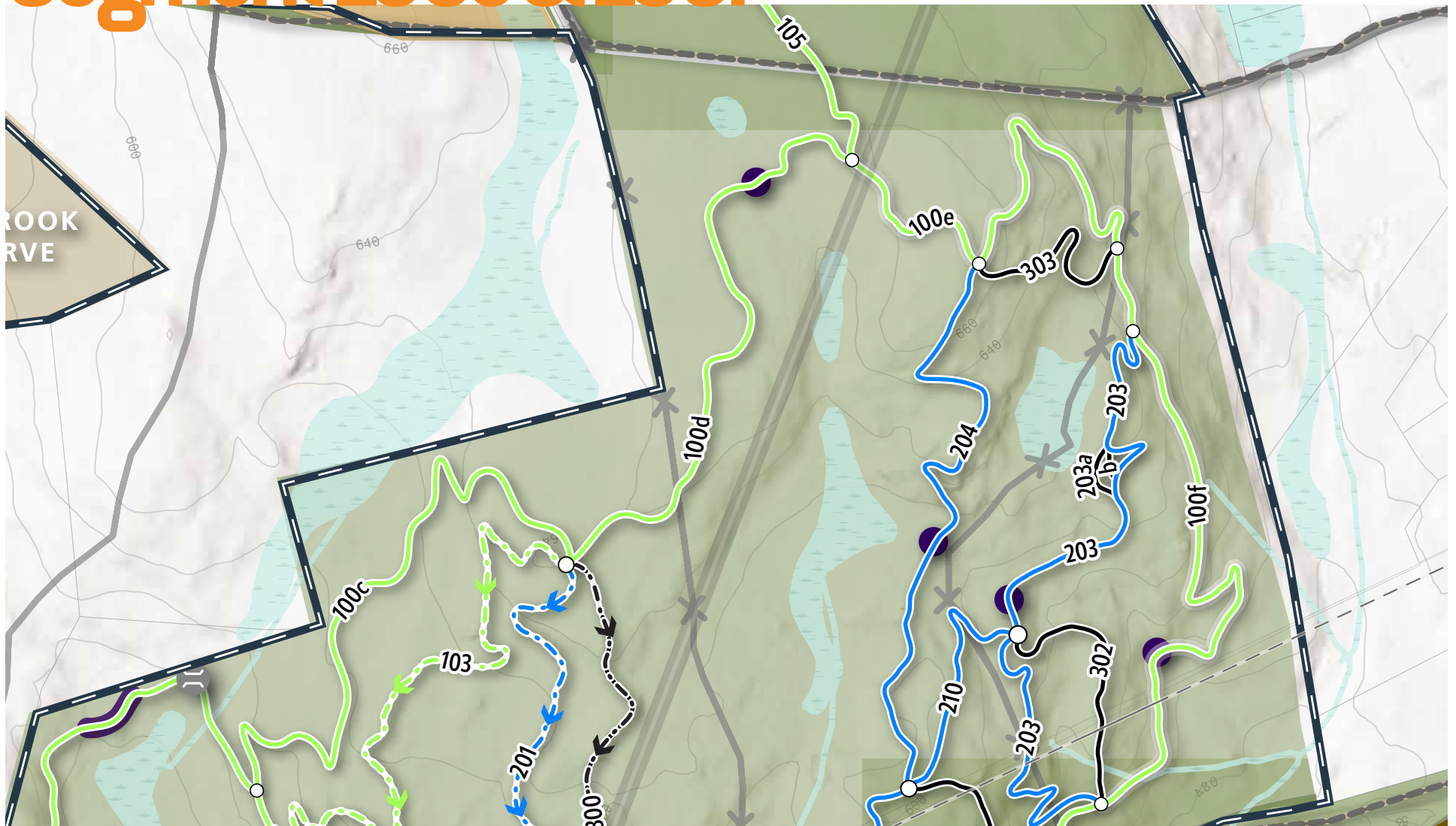
Trail Elevation Profile



Segments 100c and 100d form a 0.95-mile stretch of the 2.79-mile shared-use perimeter trail that traverses the rolling terrain between the north and south ends of the mountain bike zone. The route crosses several seasonal drainages where water collects during wetter months, requiring rock armoring to ensure year-round sustainability. Segment 100d will also require basin and rise construction techniques starting near the hub with segments 105 and 100e as the terrain is relatively flat. This section plays a critical role in network circulation, serving as the main approach to the upper hub area where riders can drop into bike-optimized trails 103, 201, and 300. The moderate grades and well-contoured tread make it equally welcoming for novice users while still functioning as an efficient travel corridor for more experienced riders linking multiple laps. All features and construction should allow for adaptive mountain bikes on this segment.



Segment 100e & 100f



Trail Details:

Flagging Color: Pink

Length: 0.13 miles & 0.77 miles

Trail Type: Traditional, Bidirectional

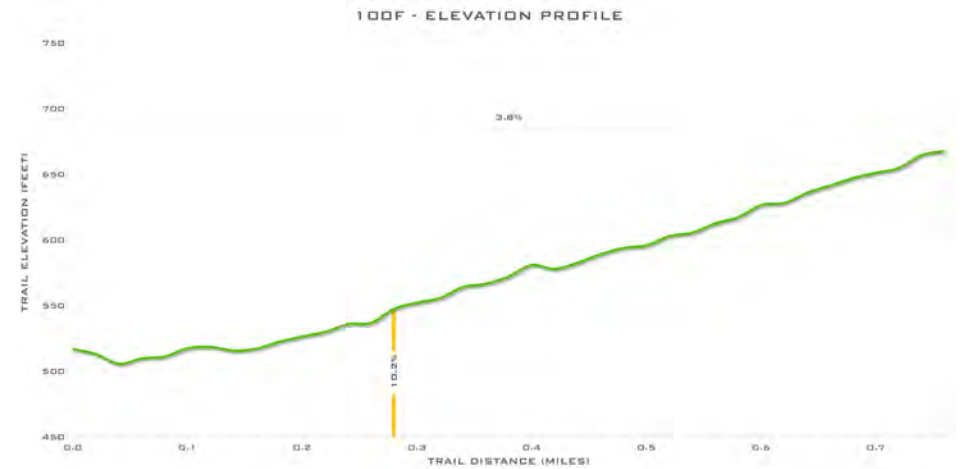
Difficulty: Beginner

Average Climb Grade: 2.7% & 3.8%

Average Descend Grade: -2.4% & 0.0%

Tread Width: 54"

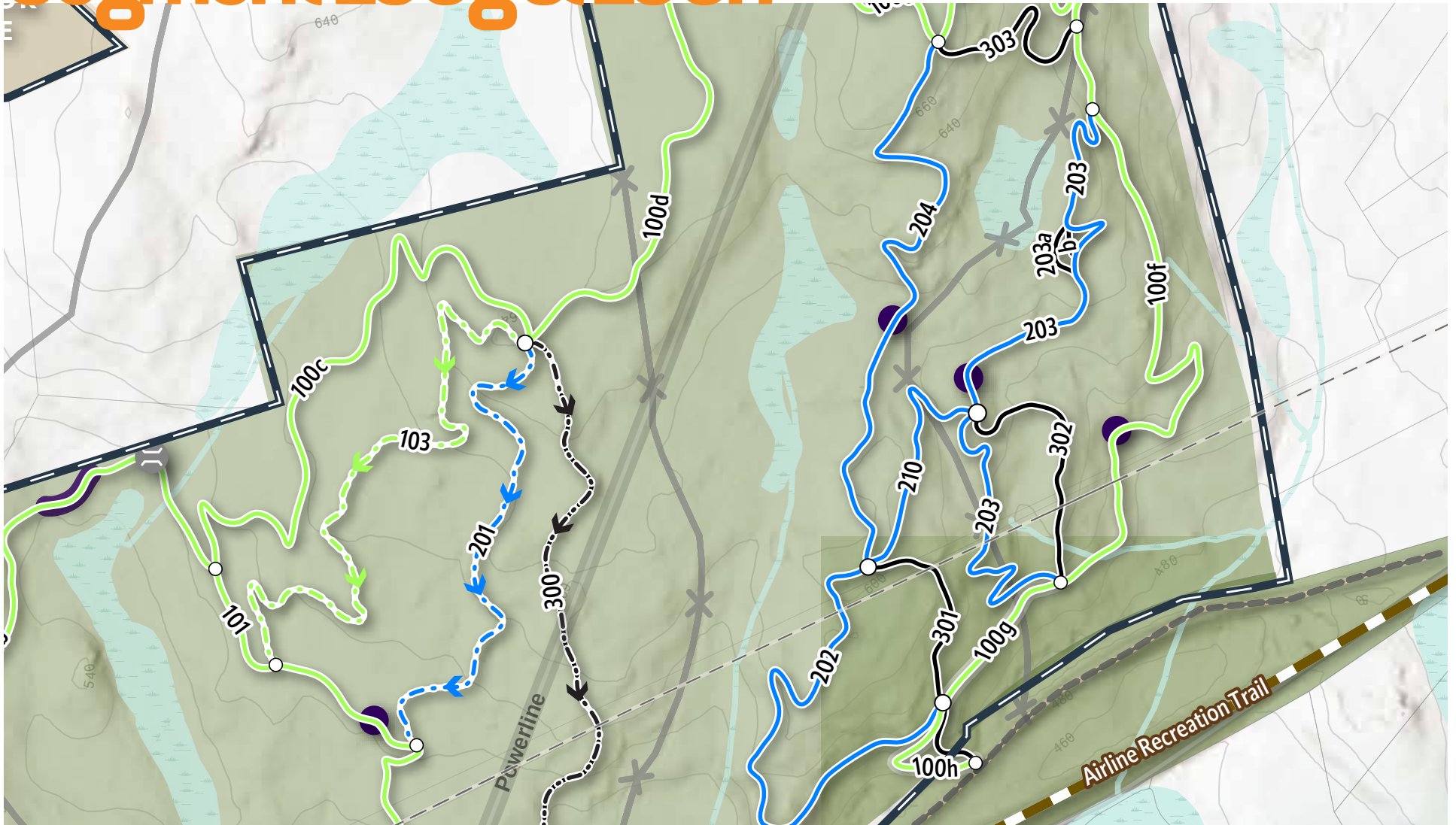
Trail Elevation Profile



Segments 100e and 100f make up a 0.90-mile section of the overall segment 100 perimeter loop, tracing the eastern side of the mountain bike zone. The alignment maintains gentle grades and good sight lines, making it a comfortable option for beginner users and a steady connection for longer rides. By linking directly into both the shared-use network and the mountain bike-focused zone, this segment enables flexible route planning for visitors. Its eastern location also positions it as a useful link between the Air Line Trail access points and the central parts of the park, allowing for a variety of loop configurations without forcing riders or hikers into more technical terrain. All features and construction should allow for adaptive mountain bikes on this segment.



Segment 100g & 100h



Trail Details:

Flagging Color: Pink

Length: 0.12 miles & 0.10 miles

Trail Type: Traditional, Bidirectional

Difficulty: Beginner

Average Climb Grade: 1.6% & 0.0%

Average Descend Grade: -6.6% & -8.5%

Tread Width: 54"

Trail Elevation Profile



Segments 100g and 100h form a short but important 0.22-mile stretch of the 2.79-mile perimeter loop, serving as the eastern gateway from the Air Line Trail into the mountain bike zone. The alignment replaces a steep, eroded doubletrack with a smoother, more sustainable entry that is far more inviting to new users. Starting here, visitors can access the entire 100-series loop in a clockwise or counterclockwise direction, or connect quickly to the upper hub area. The improved grade and surface not only enhance the user experience but also reduce long-term maintenance needs, making this a high-value connector despite its short length. All features and construction should allow for adaptive mountain bikes on this segment.

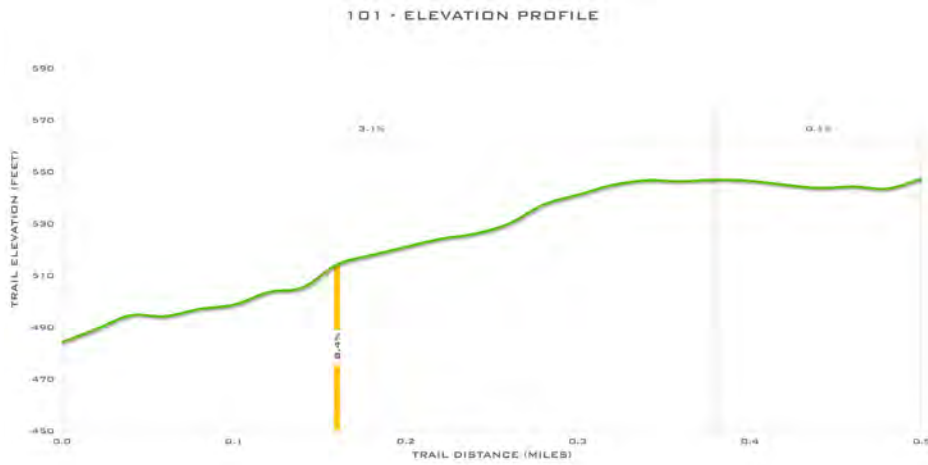


This topographic map shows a mountainous region with several trails and landmarks. The map includes contour lines indicating elevation, with labels such as 540, 500, 480, and 460. A prominent feature is the 'Powerline' running diagonally across the center. Another feature is the 'Airline Recreation Trail' running along the bottom right. The map also shows several water bodies, including a large lake in the upper right and smaller streams. Trails are marked with different colors and styles: a green dashed line, a blue dashed line, a black dashed line, and a brown dashed line. Specific points on the trails are labeled with numbers like 100b, 100c, 100d, 100e, 100f, 100g, 100h, 100i, 100j, 100k, 100l, 100m, 100n, 100o, 100p, 100q, 100r, 100s, 100t, 100u, 100v, 100w, 100x, 100y, 100z, 100aa, 100ab, 100ac, 100ad, 100ae, 100af, 100ag, 100ah, 100ai, 100aj, 100ak, 100al, 100am, 100an, 100ao, 100ap, 100aq, 100ar, 100as, 100at, 100au, 100av, 100aw, 100ax, 100ay, 100az, 100ba, 100bb, 100bc, 100bd, 100be, 100bf, 100bg, 100bh, 100bi, 100bj, 100bk, 100bl, 100bm, 100bn, 100bo, 100bp, 100bq, 100br, 100bs, 100bt, 100bu, 100bv, 100bw, 100bx, 100by, 100bz, 100ca, 100cb, 100cc, 100cd, 100ce, 100cf, 100cg, 100ch, 100ci, 100cj, 100ck, 100cl, 100cm, 100cn, 100co, 100cp, 100cq, 100cr, 100cs, 100ct, 100cu, 100cv, 100cw, 100cx, 100cy, 100cz, 100da, 100db, 100dc, 100dd, 100de, 100df, 100dg, 100dh, 100di, 100dj, 100dk, 100dl, 100dm, 100dn, 100do, 100dp, 100dq, 100dr, 100ds, 100dt, 100du, 100dv, 100dw, 100dx, 100dy, 100dz, 100ea, 100eb, 100ec, 100ed, 100ee, 100ef, 100eg, 100eh, 100ei, 100ej, 100ek, 100el, 100em, 100en, 100eo, 100ep, 100eq, 100er, 100es, 100et, 100eu, 100ev, 100ew, 100ex, 100ey, 100ez, 100fa, 100fb, 100fc, 100fd, 100fe, 100ff, 100fg, 100fh, 100fi, 100fj, 100fk, 100fl, 100fm, 100fn, 100fo, 100fp, 100fq, 100fr, 100fs, 100ft, 100fu, 100fv, 100fw, 100fx, 100fy, 100fz, 100ga, 100gb, 100gc, 100gd, 100ge, 100gf, 100gg, 100gh, 100gi, 100gj, 100gk, 100gl, 100gm, 100gn, 100go, 100gp, 100gq, 100gr, 100gs, 100gt, 100gu, 100gv, 100gw, 100gx, 100gy, 100gz, 100ha, 100hb, 100hc, 100hd, 100he, 100hf, 100hg, 100hh, 100hi, 100hj, 100hk, 100hl, 100hm, 100hn, 100ho, 100hp, 100hq, 100hr, 100hs, 100ht, 100hu, 100hv, 100hw, 100hx, 100hy, 100hz, 100ia, 100ib, 100ic, 100id, 100ie, 100if, 100ig, 100ih, 100ii, 100ij, 100ik, 100il, 100im, 100in, 100io, 100ip, 100iq, 100ir, 100is, 100it, 100iu, 100iv, 100iw, 100ix, 100iy, 100iz, 100ja, 100jb, 100jc, 100jd, 100je, 100jf, 100jg, 100jh, 100ji, 100jj, 100jk, 100jl, 100jm, 100jn, 100jo, 100jp, 100jq, 100jr, 100js, 100jt, 100ju, 100jv, 100jw, 100jx, 100jy, 100jz, 100ka, 100kb, 100kc, 100kd, 100ke, 100kf, 100kg, 100kh, 100ki, 100kj, 100kk, 100kl, 100km, 100kn, 100ko, 100kp, 100kq, 100kr, 100ks, 100kt, 100ku, 100kv, 100kw, 100kx, 100ky, 100kz, 100la, 100lb, 100lc, 100ld, 100le, 100lf, 100lg, 100lh, 100li, 100lj, 100lk, 100ll, 100lm, 100ln, 100lo, 100lp, 100lq, 100lr, 100ls, 100lt, 100lu, 100lv, 100lw, 100lx, 100ly, 100lz, 100ma, 100mb, 100mc, 100md, 100me, 100mf, 100mg, 100mh, 100mi, 100mj, 100mk, 100ml, 100mm, 100mn, 100mo, 100mp, 100mq, 100mr, 100ms, 100mt, 100mu, 100mv, 100mw, 100mx, 100my, 100mz, 100na, 100nb, 100nc, 100nd, 100ne, 100nf, 100ng, 100nh, 100ni, 100nj, 100nk, 100nl, 100nm, 100nn, 100no, 100np, 100nq, 100nr, 100ns, 100nt, 100nu, 100nv, 100nw, 100nx, 100ny, 100nz, 100oa, 100ob, 100oc, 100od, 100oe, 100of, 100og, 100oh, 100oi, 100oj, 100ok, 100ol, 100om, 100on, 100oo, 100op, 100oq, 100or, 100os, 100ot, 100ou, 100ov, 100ow, 100ox, 100oy, 100oz, 100pa, 100pb, 100pc, 100pd, 100pe, 100pf, 100pg, 100ph, 100pi, 100pj, 100pk, 100pl, 100pm, 100pn, 100po, 100pp, 100pq, 100pr, 100ps, 100pt, 100pu, 100pv, 100pw, 100px, 100py, 100pz, 100qa, 100qb, 100qc, 100qd, 100qe, 100qf, 100qg, 100qh, 100qi, 100qj, 100qk, 100ql, 100qm, 100qn, 100qo, 100qp, 100qq, 100qr, 100qs, 100qt, 100qu, 100qv, 100qw, 100qx, 100qy, 100qz, 100ra, 100rb, 100rc, 100rd, 100re, 100rf, 100rg, 100rh, 100ri, 100rj, 100rk, 100rl, 100rm, 100rn, 100ro, 100rp, 100rq, 100rr, 100rs, 100rt, 100ru, 100rv, 100rw, 100rx, 100ry, 100rz, 100sa, 100sb, 100sc, 100sd, 100se, 100sf, 100sg, 100sh, 100si, 100sj, 100sk, 100sl, 100sm, 100sn, 100so, 100sp, 100sq, 100sr, 100ss, 100st, 100su, 100sv, 100sw, 100sx, 100sy, 100sz, 100ta, 100tb, 100tc, 100td, 100te, 100tf, 100tg, 100th, 100ti, 100tj, 100tk, 100tl, 100tm, 100tn, 100to, 100tp, 100tq, 100tr, 100ts, 100tt, 100tu, 100tv, 100tw, 100tx, 100ty, 100tz, 100ua, 100ub, 100uc, 100ud, 100ue, 100uf, 100ug, 100uh, 100ui, 100uj, 100uk, 100ul, 100um, 100un, 100uo, 100up, 100uq, 100ur, 100us, 100ut, 100uu, 100uv, 100uw, 100ux, 100uy, 100uz, 100va, 100vb, 100vc, 100vd, 100ve, 100vf, 100vg, 100vh, 100vi, 100vj, 100vk, 100vl, 100vm, 100vn, 100vo, 100vp, 100vq, 100vr, 100vs, 100vt, 100vu, 100vv, 100vw, 100vx, 100vy, 100vz, 100wa, 100wb, 100wc, 100wd, 100we, 100wf, 100wg, 100wh, 100wi, 100wj, 100wk, 100wl, 100wm, 100wn, 100wo, 100wp, 100wq, 100wr, 100ws, 100wt, 100wu, 100wv, 100ww, 100wx, 100wy, 100wz, 100xa, 100xb, 100xc, 100xd, 100xe, 100xf, 100xg, 100xh, 100xi, 100xj, 100xk, 100xl, 100xm, 100xn, 100xo, 100xp, 100xq, 100xr, 100xs, 100xt, 100xu, 100xv, 100xw, 100xx, 100xy, 100xz,

Flagging Color: Pink
Length: 0.51 miles
Trail Type: Traditional, Bidirectional

Difficulty: Beginner
Average Climb Grade: 2.4%
Average Descend Grade: N/A
Tread Width: 54"

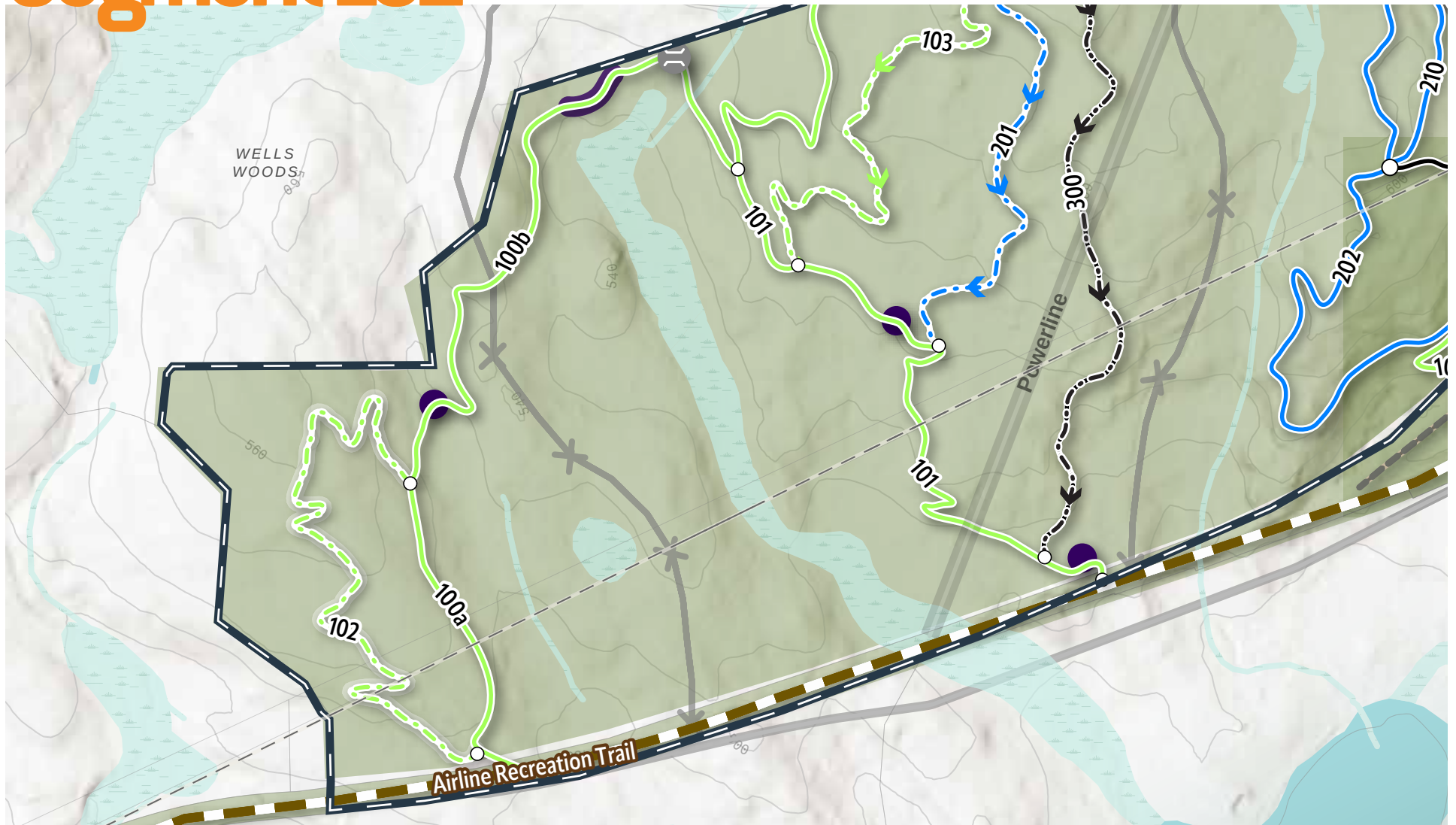
Trail Elevation Profile



Segment 101 is a 0.50-mile beginner shared-use bi-directional trail that branches directly from the Air Line Trail into the core of the network. It connects with mountain bike-optimized trails 103, 201, and 300, serving as both a lap-return route for riders and an easy exit back to the regional trail corridor. The alignment follows gentle grades and is designed with broad appeal, accommodating cyclists, hikers, and runners without introducing unnecessary technical difficulty. Because of its accessibility, segment 101 functions as one of the park's most important "on-ramps," giving visitors a clear and direct entry into the heart of the trail system. All features and construction should allow for adaptive mountain bikes on this segment.



Segment 102



Trail Details:

Flagging Color: Orange

Length: 0.55 miles

Trail Type: Bike-Optimized, Downhill

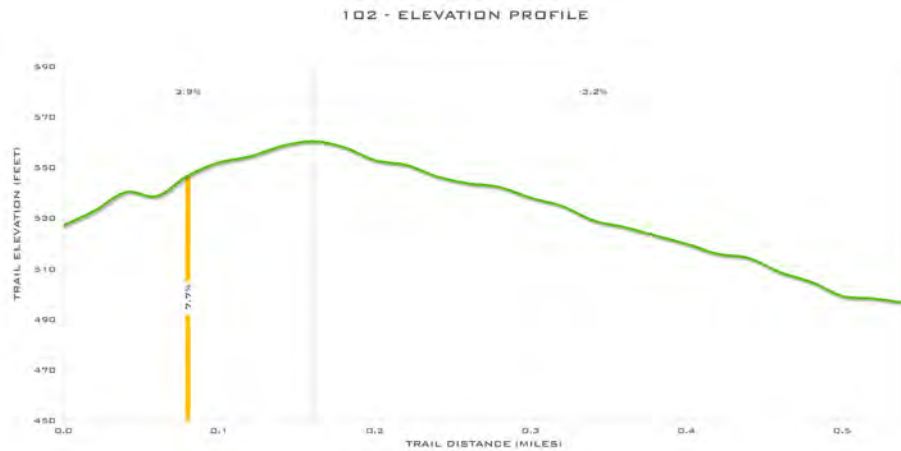
Difficulty: Beginner

Average Climb Grade: 3.9%

Average Descend Grade: -3.2%

Tread Width: 60"

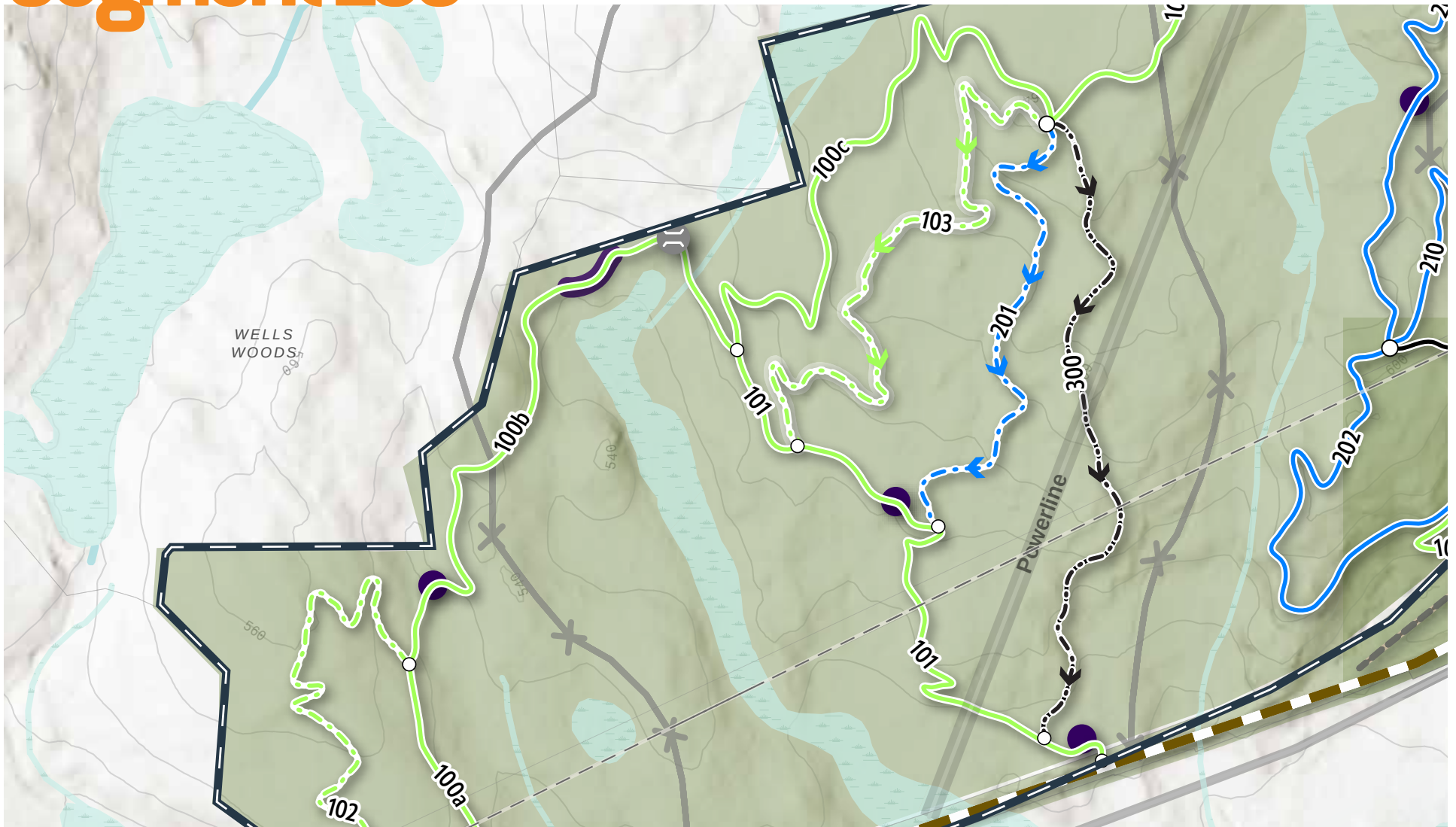
Trail Elevation Profile



Segment 102 is a 0.50-mile beginner bike-optimized trail designed for quick, repeatable laps. Paired with segment 100a, it forms a compact 0.75-mile loop that's perfect for warm-ups, skill-building, or short rides. The alignment incorporates mellow berms and flow-friendly features that appeal to beginners while still offering a fun, sessionable experience for more advanced riders looking to get in multiple runs. Its close proximity to the Air Line Trail and the main MTB hub makes it a natural choice for riders easing into the bike-optimized portions of the network. All features and construction should allow for adaptive mountain bikes on this segment.



Segment 103



Trail Details:

Flagging Color: Pink Stripe

Length: 0.53 miles

Trail Type: Bike-Optimized, Downhill

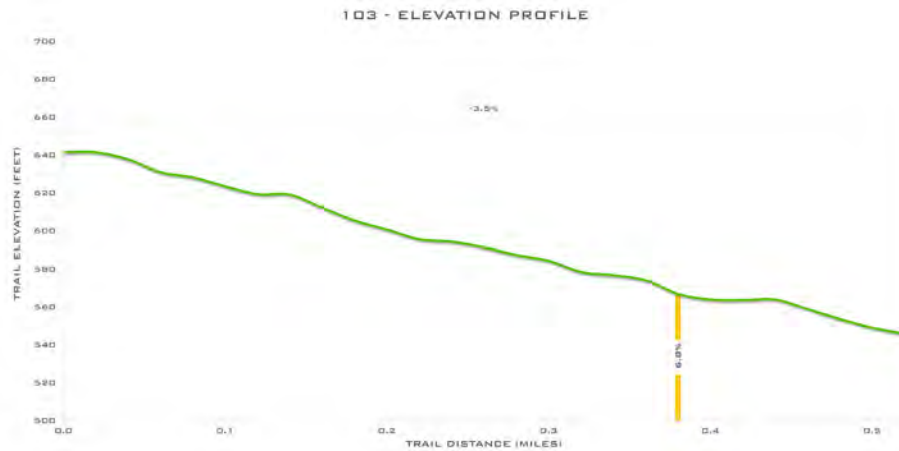
Difficulty: Beginner

Average Climb Grade: N/A

Average Descend Grade: -3.5%

Tread Width: 60"

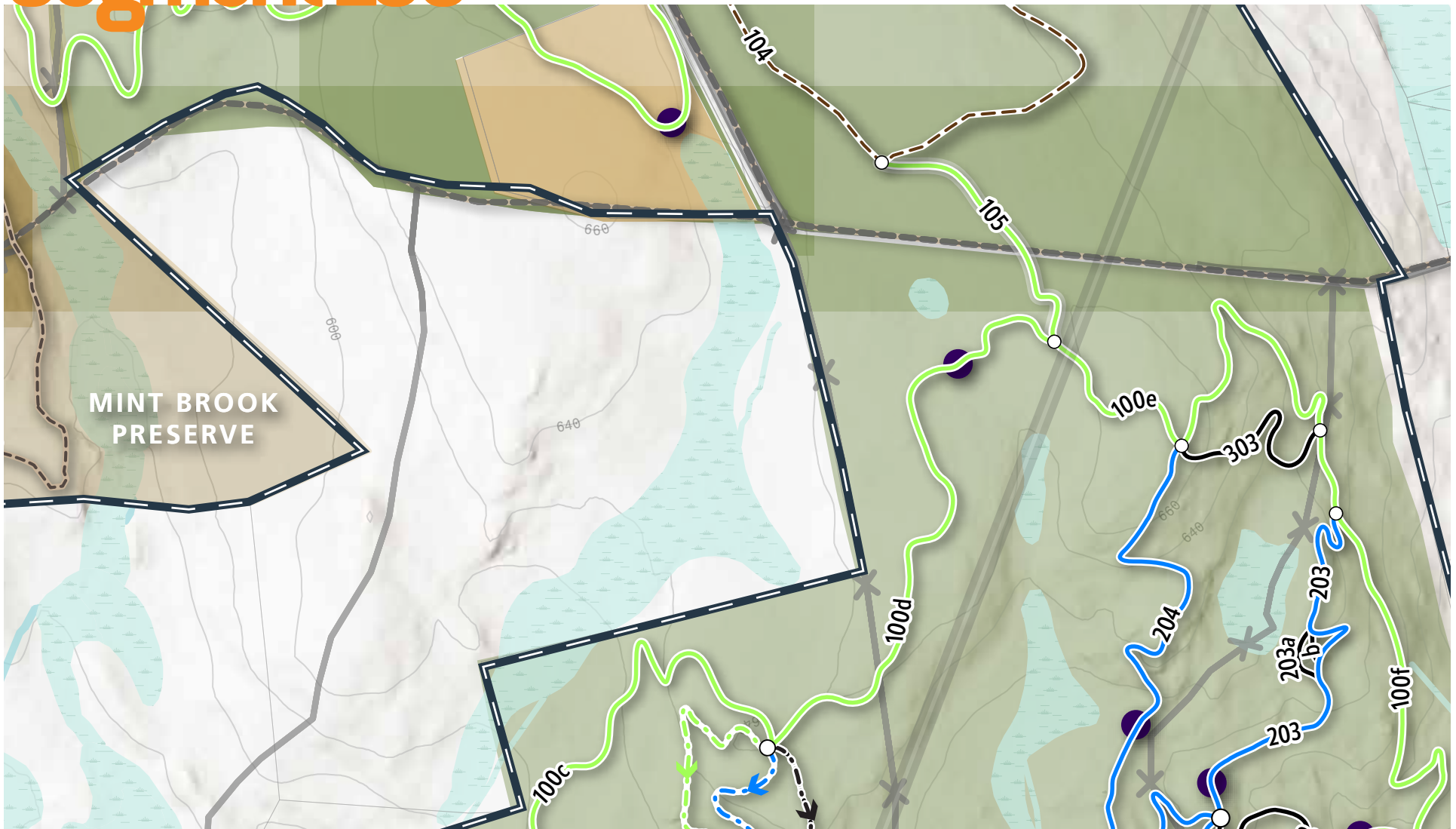
Trail Elevation Profile



Segment 103 is a 0.60-mile beginner bike-optimized downhill trail located in the dedicated mountain bike zone alongside segments 201 and 300. Designed with a consistent downhill flow, the alignment provides a progression-friendly experience with gentle berms, rollers, and optional features. By grouping all bike-optimized downhills in this zone, the network allows riders to enjoy a focused experience while minimizing interactions with hikers and runners. Non-cyclists approaching from the Air Line Trail can bypass this zone via segment 101, ensuring a smooth flow for all user types. All features and construction should allow for adaptive mountain bikes on this segment.



Segment 105



Trail Details:

Flagging Color: Pink

Length: 0.19 miles

Trail Type: Traditional, Bidirectional

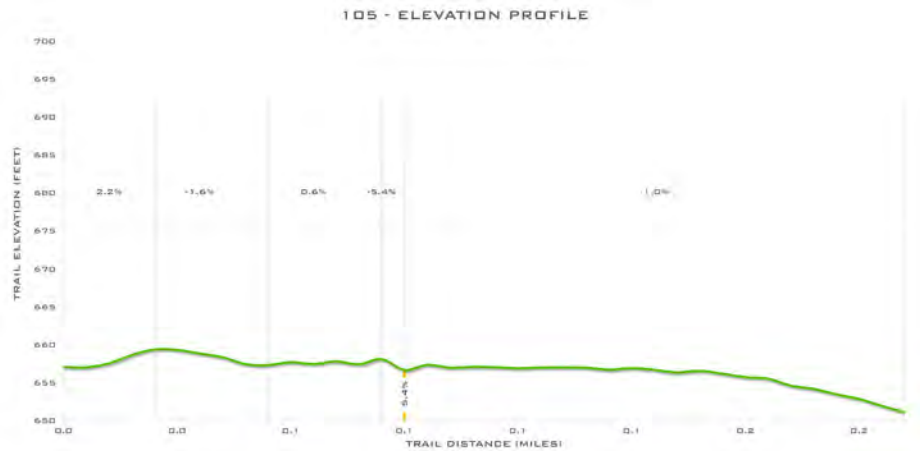
Difficulty: Beginner

Average Climb Grade: 1.3%

Average Descend Grade: -1.2%

Tread Width: 54"

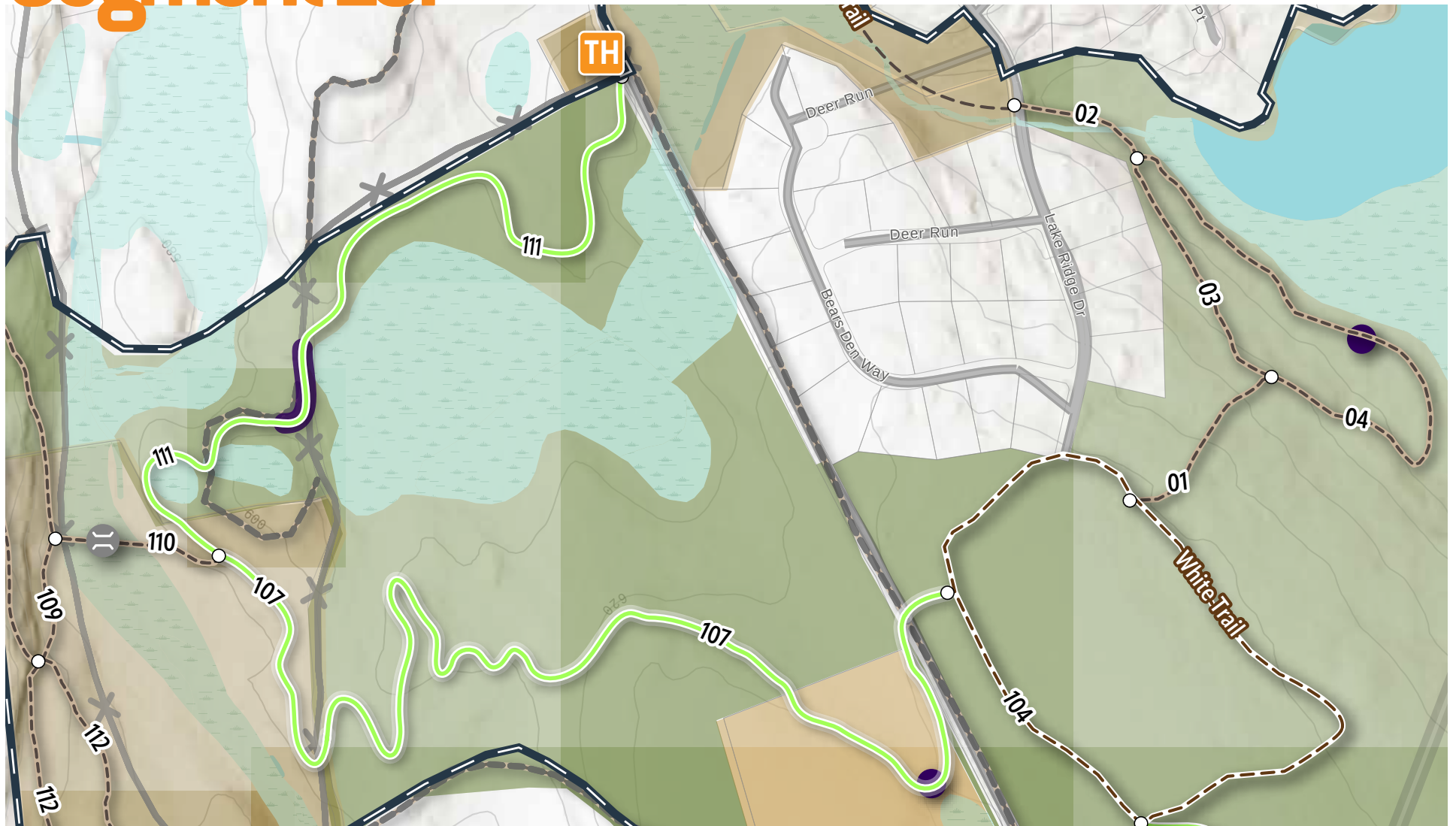
Trail Elevation Profile



Segment 105 is a short but important 0.20-mile beginner traditional bi-directional trail that branches from the existing White Trail. It offers a quick and direct link to segment 100d, providing access to the southwest portion of the network, or to segment 100e, which leads toward the upper access points for much of the intermediate and advanced mountain bike terrain. Despite its short length, this segment significantly improves network connectivity by reducing the need for users to backtrack or commit to longer loops to reach their intended destinations. All features and construction should allow for adaptive mountain bikes on this segment.



Segment 107



Trail Details:

Flagging Color: Blue

Length: 1.44 miles

Trail Type: Traditional, Bidirectional

Difficulty: Beginner

Average Climb Grade: 1.5%

Average Descend Grade: -2.5%

Tread Width: 54"

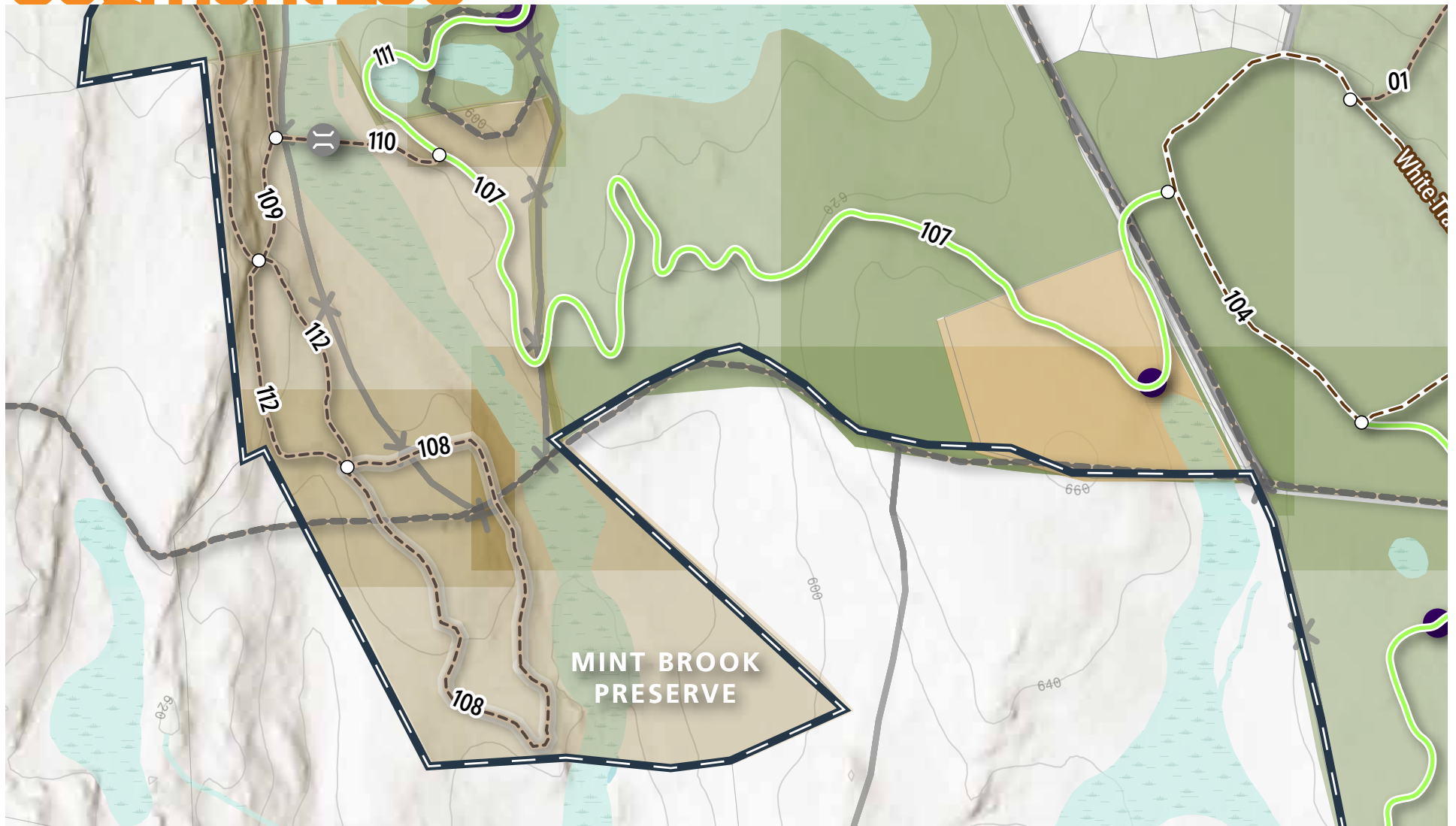
Trail Elevation Profile



Segment 107 is a one-mile beginner traditional bi-directional shared-use trail that serves as a critical north-south connector within the network. Starting from the northwest side of the park, it links directly to the White Trail and provides access to the broader system without forcing users into the more bike-focused zones. It also completes the connection to Wells Woods Road via segment 111, giving the community another formalized entry point into the trail system. The alignment travels through a mix of wooded terrain and open understory, with one wet crossing that will require rock armoring to ensure a sustainable tread and year-round usability. All features and construction should allow for adaptive mountain bikes on this segment.



Segment 108



Trail Details:

Flagging Color: Blue

Length: 0.55 miles

Trail Type: Traditional, Bidirectional

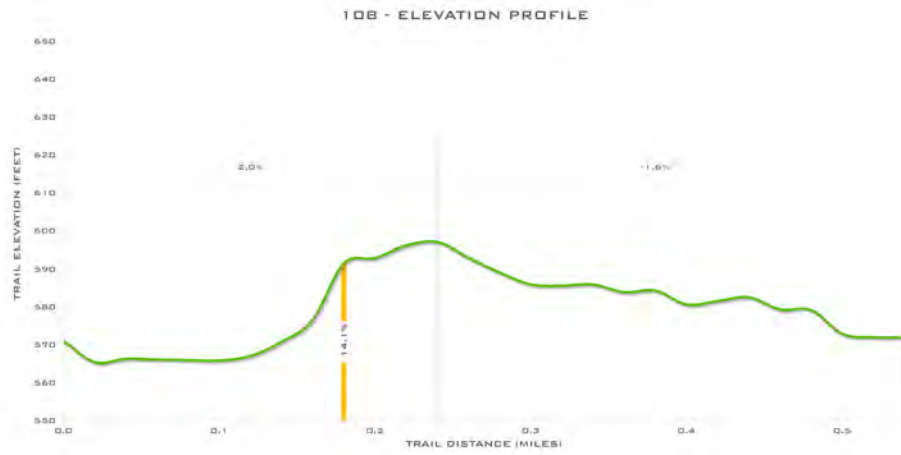
Difficulty: Hiking

Average Climb Grade: 2.0%

Average Descend Grade: -1.6%

Tread Width: 36"

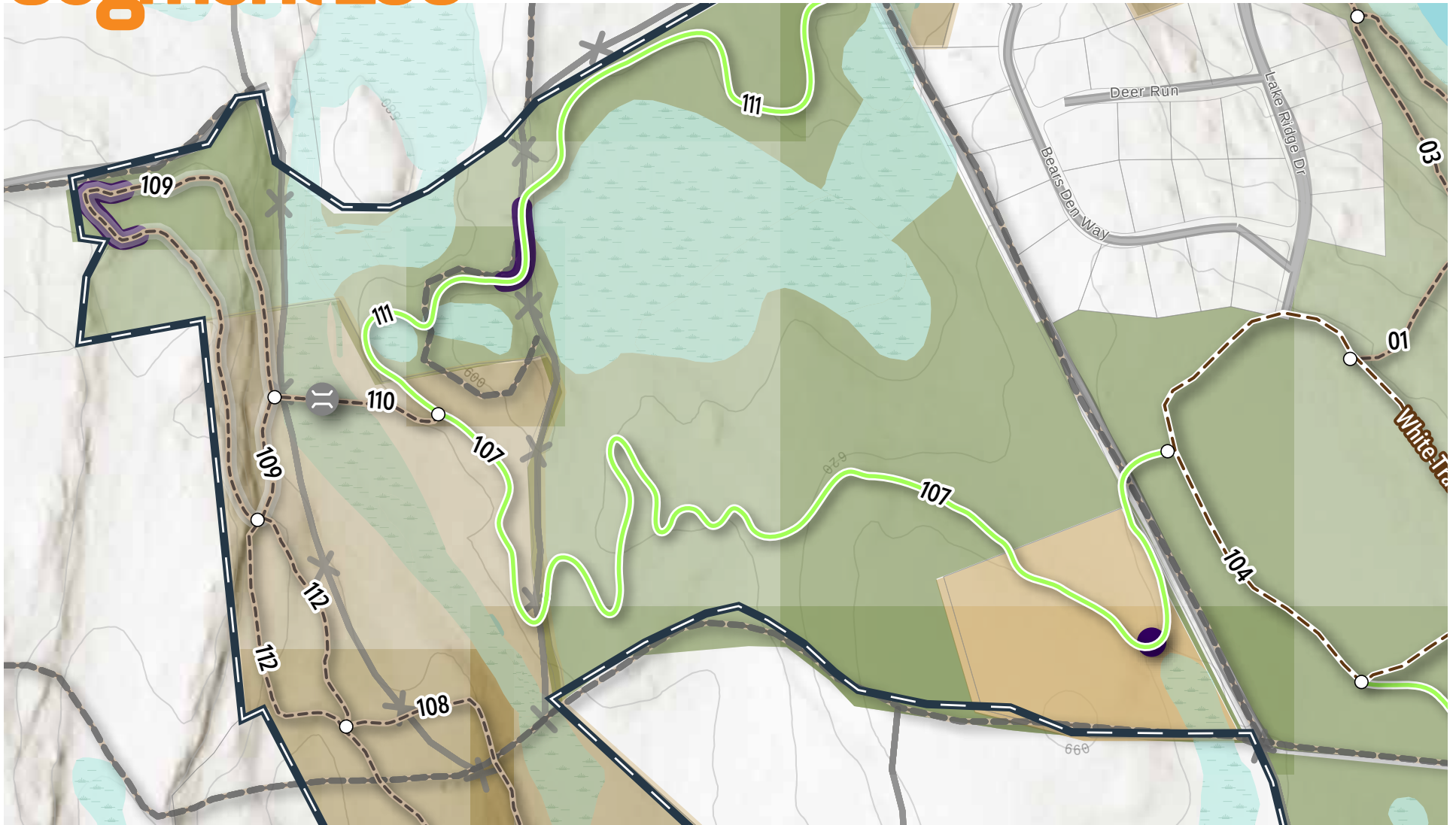
Trail Elevation Profile



Segment 108 is a proposed 0.50-mile hiking trail that forms a loop from the base of segment 112 within the Mint Brook Preserve. This scenic route winds through open hardwood forests, skirts sections of historic stone walls, and offers serene views of the pond at the southern end of the preserve. Designed for a slower, more immersive hiking experience, this trail gives visitors a way to enjoy the preserve's cultural and natural features without venturing into the shared-use or mountain bike zones. Its easy grades make it an excellent option for casual walkers and families.



Segment 109



Trail Details:

Flagging Color: Red

Length: 0.59 miles

Trail Type: Traditional, Bidirectional

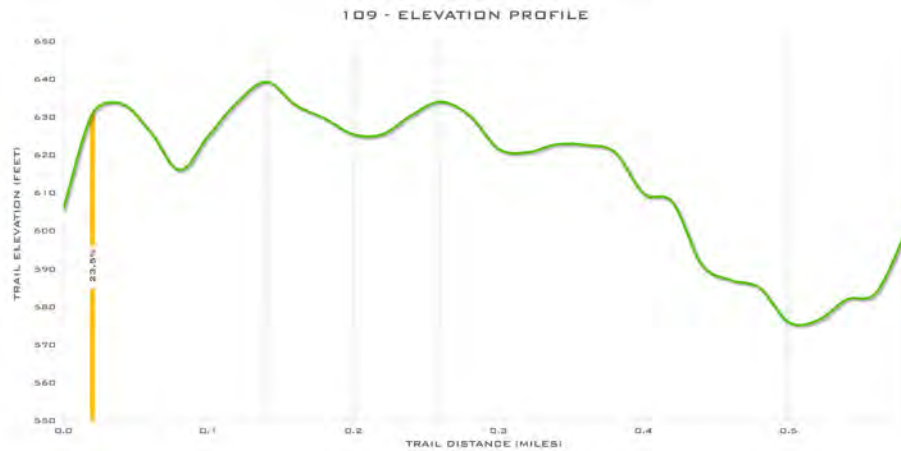
Difficulty: Hiking

Average Climb Grade: 4.4%

Average Descend Grade: -4.5%

Tread Width: 36"

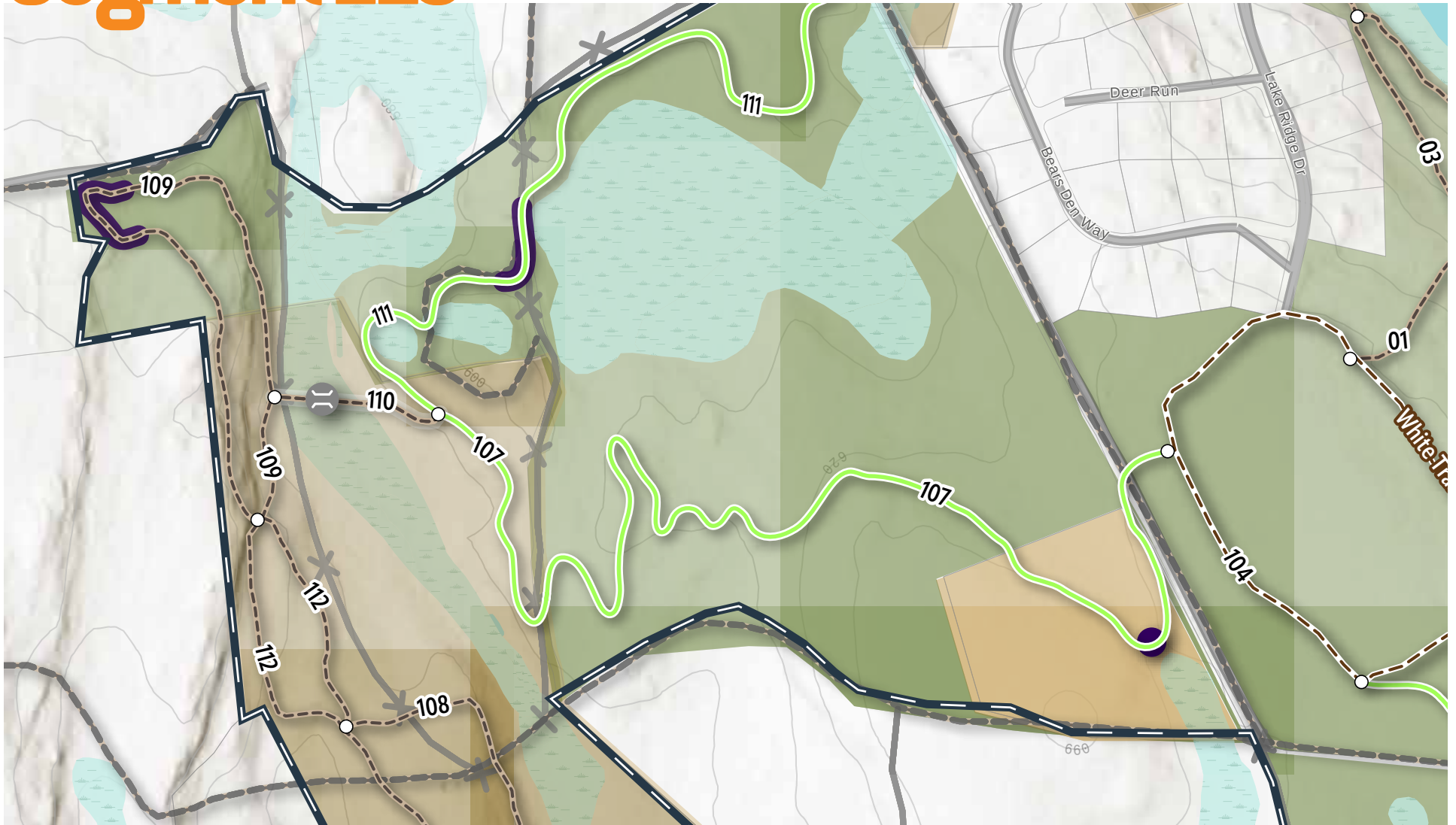
Trail Elevation Profile



Segment 109 is a proposed 0.59-mile hiking trail branching off from the segment 110 connector and looping back to its starting point. The route climbs along a prominent cliff band, providing unique vantage points and opportunities for interpretation of the area's geology. Midway through the loop, hikers pass the remains of an old foundation, a cultural feature that adds interest to the experience. Several wet areas along the trail may require either rock armoring or the construction of a puncheon bridge to protect the tread and maintain access during wetter months.



Segment 110



Trail Details:

Flagging Color: Blue

Length: 0.11 miles

Trail Type: Traditional, Bidirectional

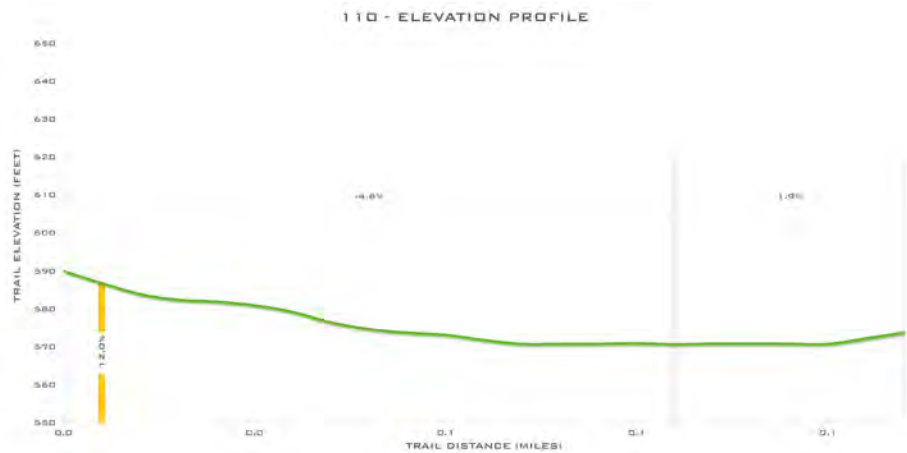
Difficulty: Hiking

Average Climb Grade: 1.9%

Average Descend Grade: -4.6%

Tread Width: 54"

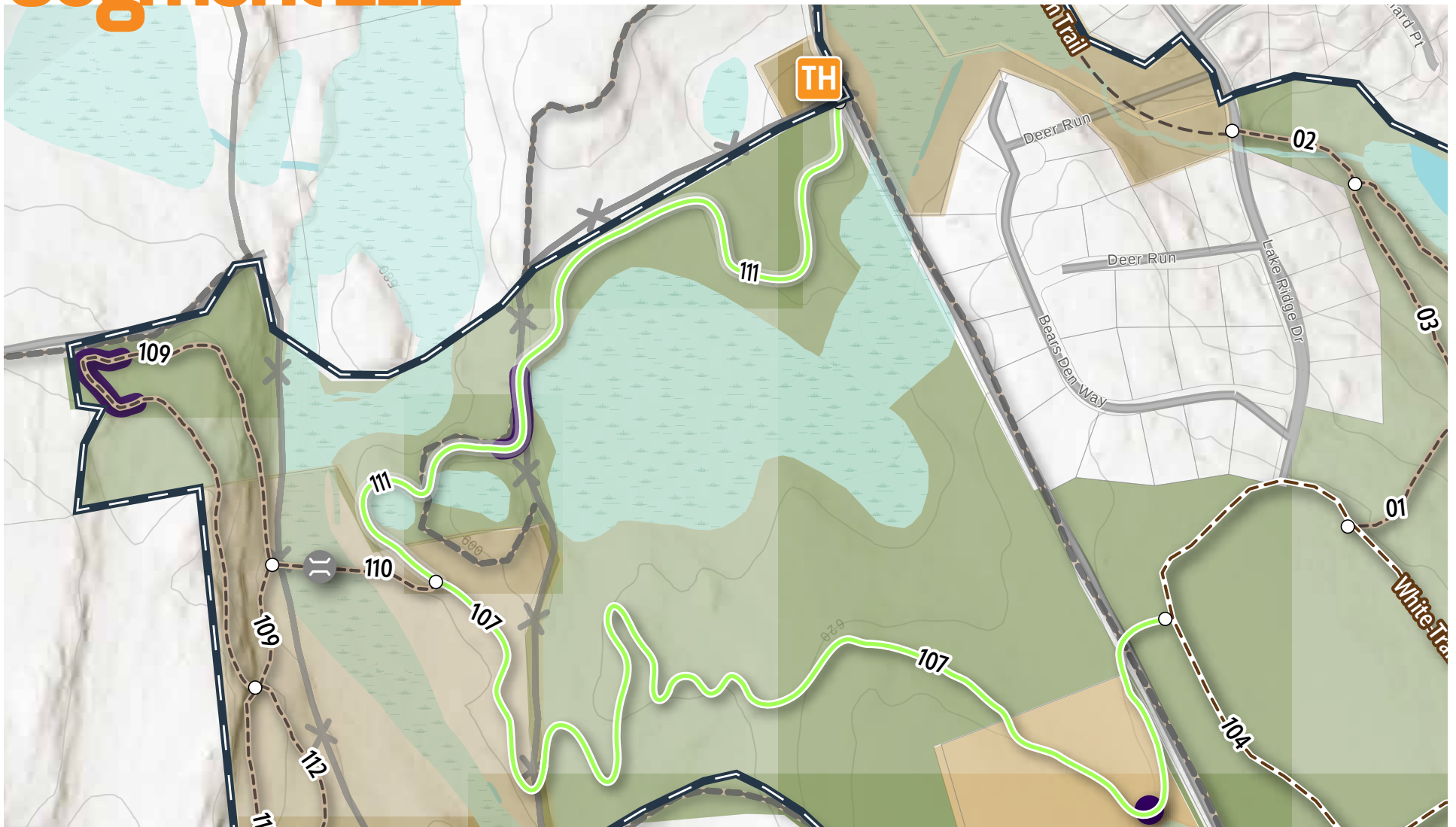
Trail Elevation Profile



Segment 110 is a short but vital 0.11-mile connector with a significant section of elevated boardwalk to link segment 107 with the hiking-only network in the Mint Brook Preserve. The elevated structure will allow users to traverse sensitive wetland or flood-prone areas without causing environmental damage, ensuring long-term sustainability and accessibility. This connection expands hiking options within the preserve by tying together multiple loops. An observation platform/resting area should be included along the boardwalk for nature viewing and possible interpretive signage.



Segment 111



Trail Details:

Flagging Color: Blue

Length: 0.66 miles

Trail Type: Traditional, Bidirectional

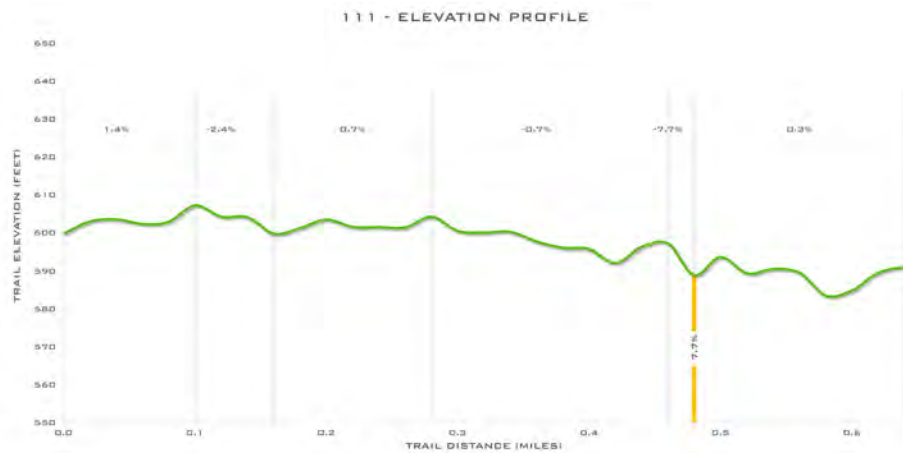
Difficulty: Beginner

Average Climb Grade: 0.70%

Average Descend Grade: -1.7%

Tread Width: 54"

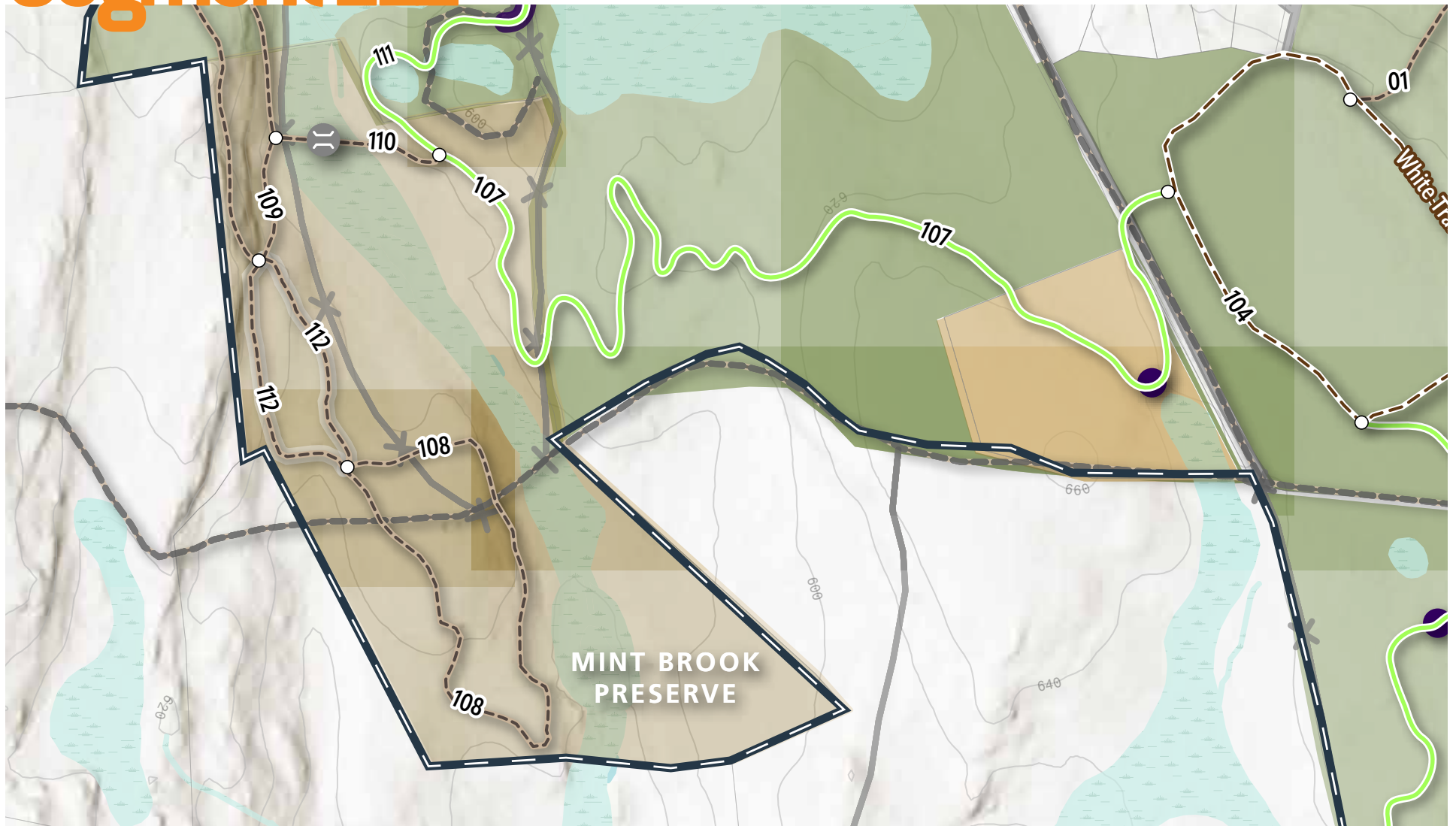
Trail Elevation Profile



Segment 111 is a 0.66-mile beginner traditional bi-directional shared-use trail that begins at the proposed parking and trailhead improvement area off Wells Woods Road. From here, the segment connects to segment 110, providing access into the Mint Brook Preserve's hiking-only trails, or to segment 107 for entry into the broader shared-use network. Much of this alignment reuses existing trail in the northern portion of the park, improving it where necessary to bring it up to sustainability standards. This makes it both a functional connector and a low-impact upgrade to the existing infrastructure. All features and construction should allow for adaptive mountain bikes on this segment.



Segment 112



Trail Details:

Flagging Color: Blue

Length: 0.33 miles

Trail Type: Traditional, Bidirectional

Difficulty: Hiking

Average Climb Grade: 3.8%

Average Descend Grade: -3.6%

Tread Width: 36"

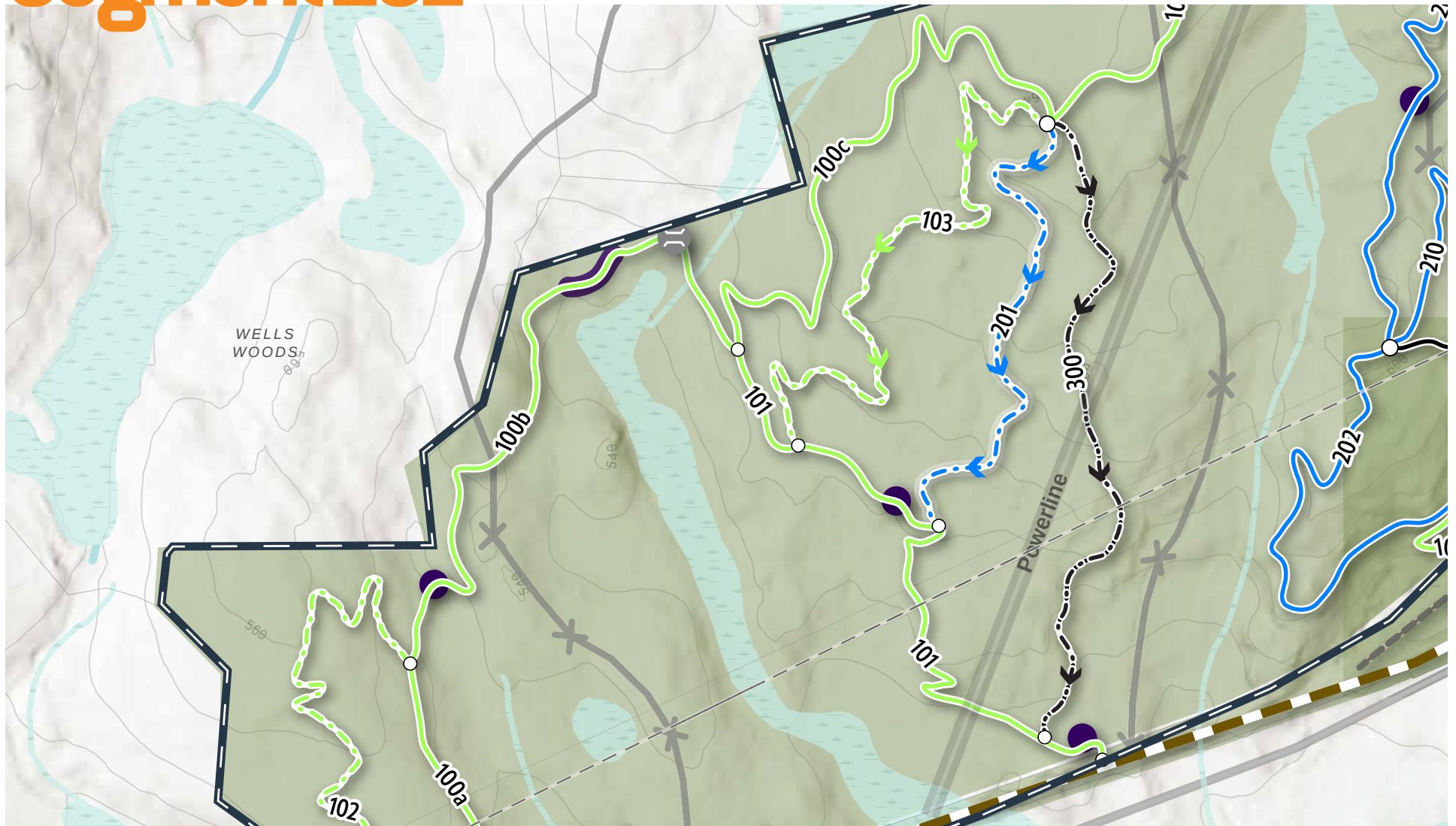
Trail Elevation Profile



Segment 112 is a proposed 0.33-mile connector trail linking the lower end of segment 109 to segment 108. This short hiking link provides another way to explore the Mint Brook Preserve, allowing visitors to create custom loop hikes that vary in length and difficulty. Positioned between the northern and southern parts of the preserve, it helps tie the hiking network together and encourages repeat visits from users who want to try different combinations of trails.



Segment 201



Trail Details:

Flagging Color: Blue

Length: 0.37 miles

Trail Type: Bike-Optimized, Downhill

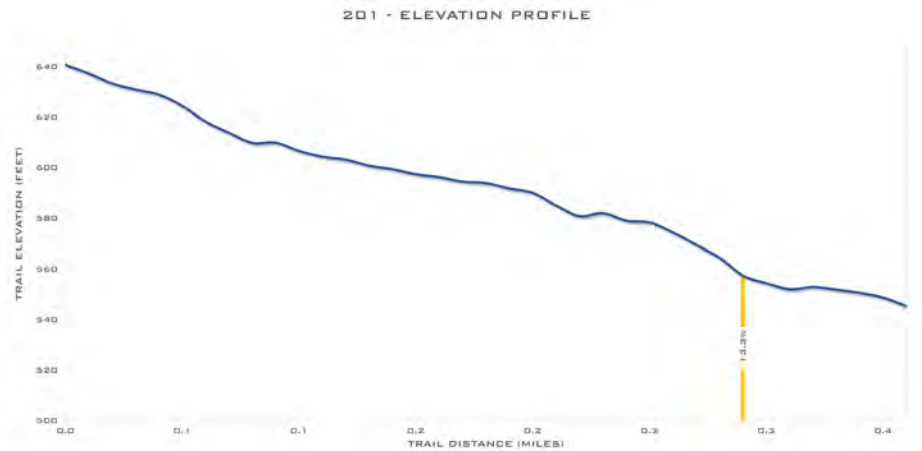
Difficulty: Intermediate

Average Climb Grade: N/A

Average Descend Grade: -5.0%

Tread Width: 60"

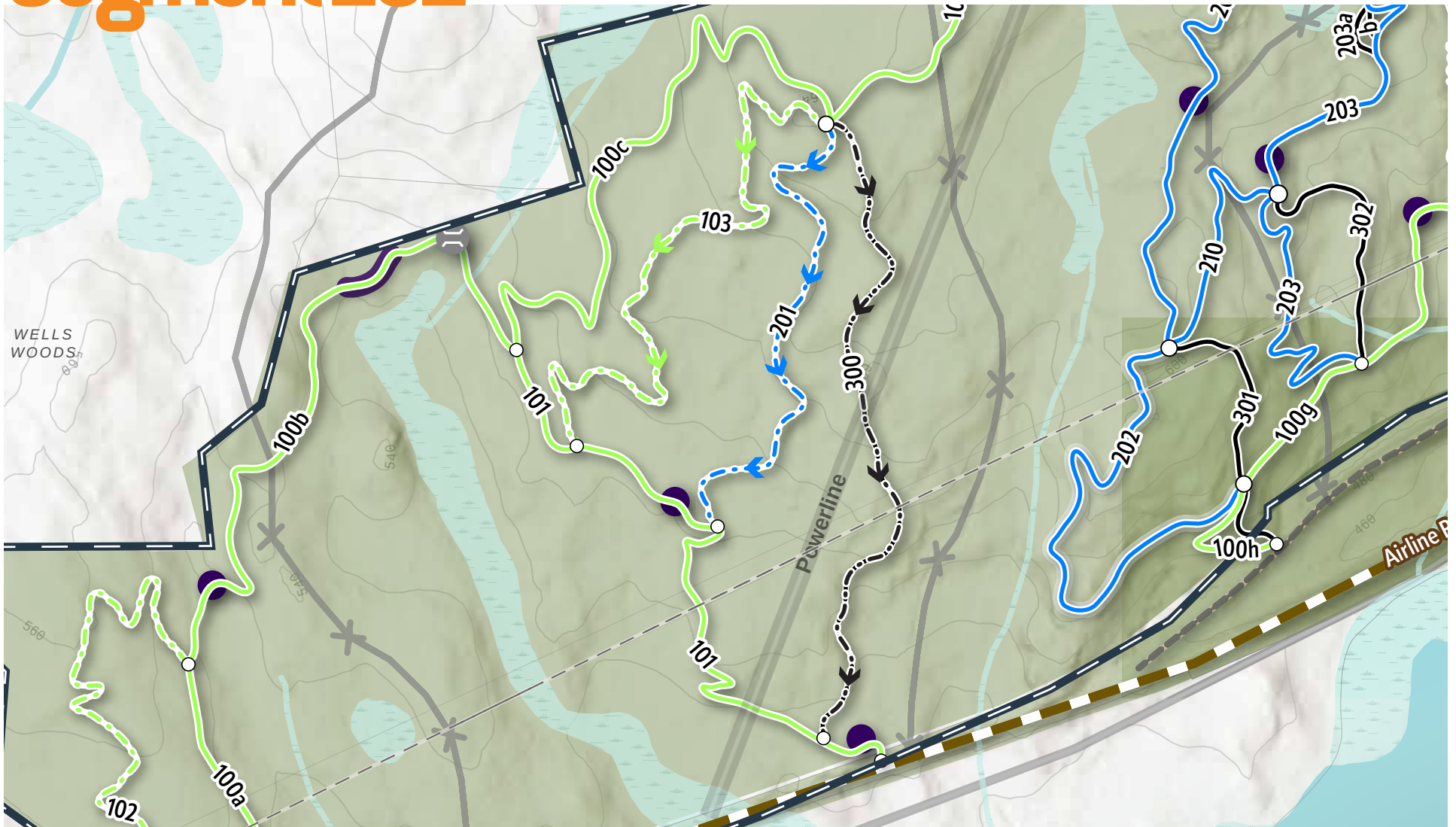
Trail Elevation Profile



Segment 201 is a 0.37-mile intermediate bike-optimized downhill trail located in the dedicated mountain bike zone alongside segments 103 and 300. Designed with flow in mind, it features a series of progressive elements, such as berms, rollers, and optional technical lines, that help riders improve their skills while keeping the trail fun for repeat runs. Its alignment offers a smooth, consistent descent with clear sight lines, making it approachable for riders progressing from beginner to intermediate terrain. Segment 101 serves as the main return route, allowing easy lapping of this zone without long climbs or backtracking.



Segment 202



Trail Details:

Flagging Color: Blue

Length: 0.41 miles

Trail Type: Traditional, Bidirectional

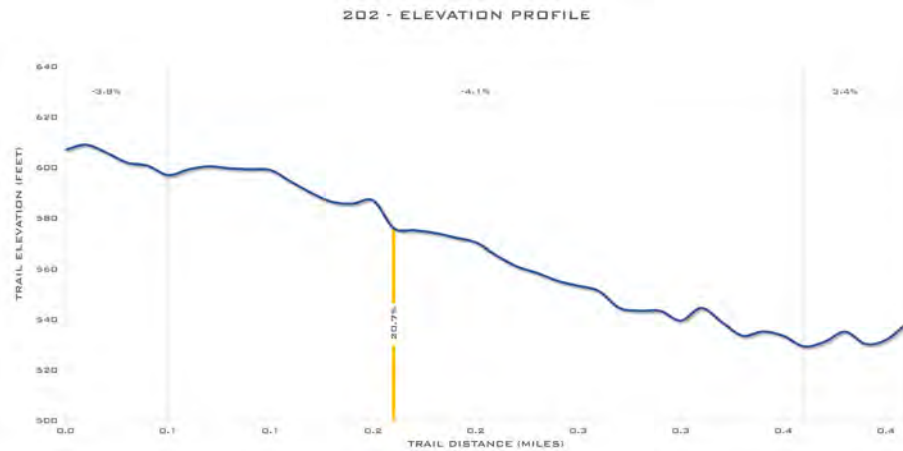
Difficulty: Intermediate

Average Climb Grade: 3.4%

Average Descend Grade: -4.1%

Tread Width: 48"

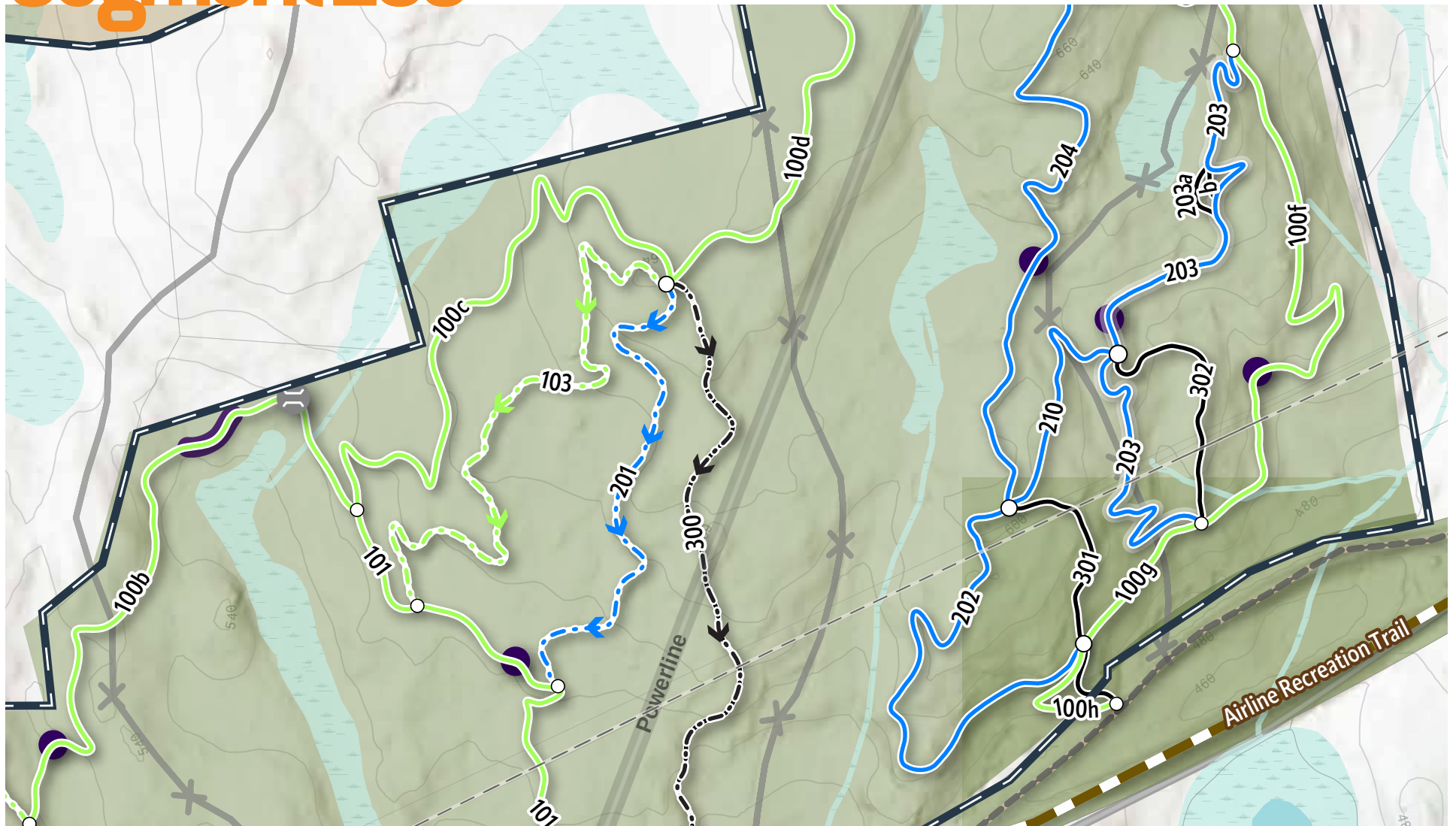
Trail Elevation Profile



Segment 202 is a 0.41-mile intermediate traditional bi-directional trail that wraps around the nose of the ridge, offering riders and hikers open views toward the Air Line Trail to the south. The alignment climbs steadily, providing an alternative way to gain elevation while exploring the park. This segment links directly to segment 204, which reaches the highest point of the Zone 3 area, making it a valuable part of longer loop options. Its combination of views, varied terrain, and moderate grade makes it appealing to a broad range of trail users.



Segment 203



Trail Details:

Flagging Color: Blue

Length: 0.56 miles

Trail Type: Traditional, Bidirectional

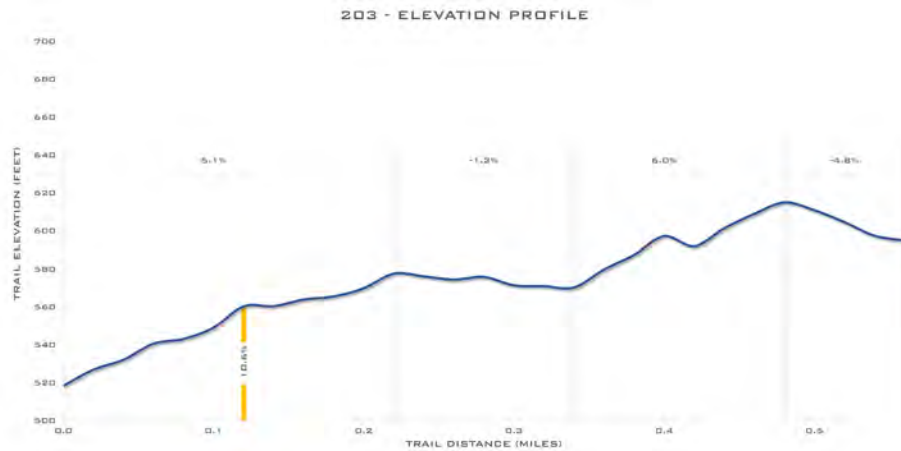
Difficulty: Intermediate

Average Climb Grade: 5.5%

Average Descend Grade: -2.6%

Tread Width: 48"

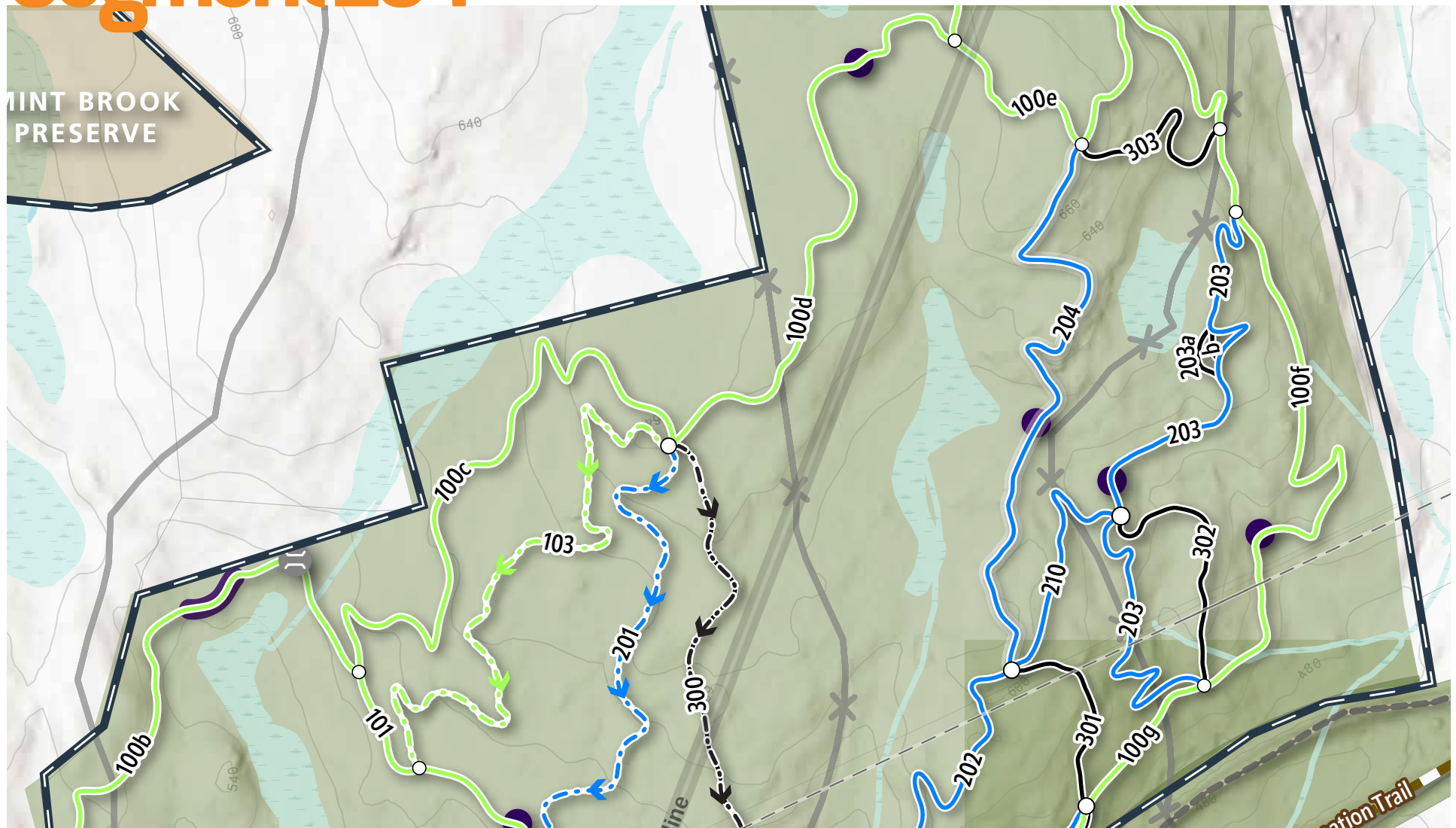
Trail Elevation Profile



Segment 203 is a 0.60-mile intermediate traditional bi-directional trail weaving through the hardwood-covered slopes of the project area. It provides a long, flowing singletrack experience that is enjoyable for both riders and hikers. The alignment incorporates bike-optimized features, as well as optional alternate lines (203a & 203b) that take advantage of natural rock slabs to create more technical challenges. This mix allows riders to choose their level of difficulty while still maintaining a shared-use friendly tread. One section crosses a wet area that will require rock armoring to ensure the trail remains durable in all conditions.



Segment 204



Trail Details:

Flagging Color: Blue

Length: 0.45 miles

Trail Type: Traditional, Bidirectional

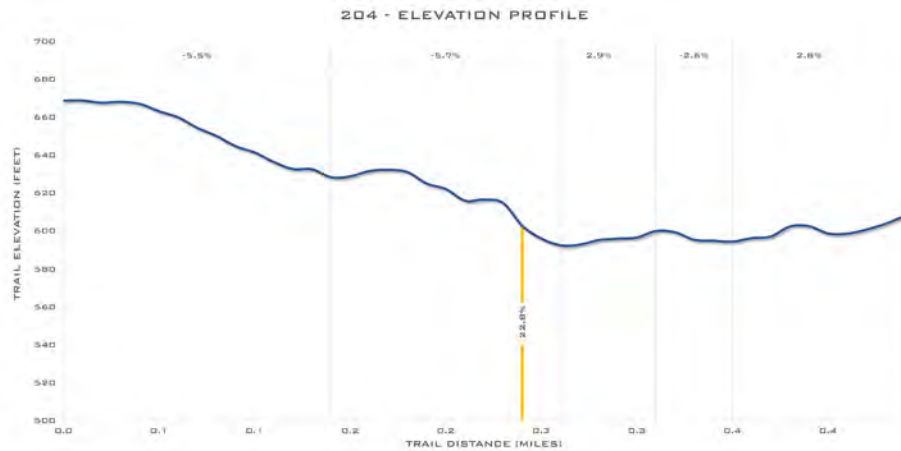
Difficulty: Intermediate

Average Climb Grade: 2.8

Average Descend Grade: -5.28%

Tread Width: 48"

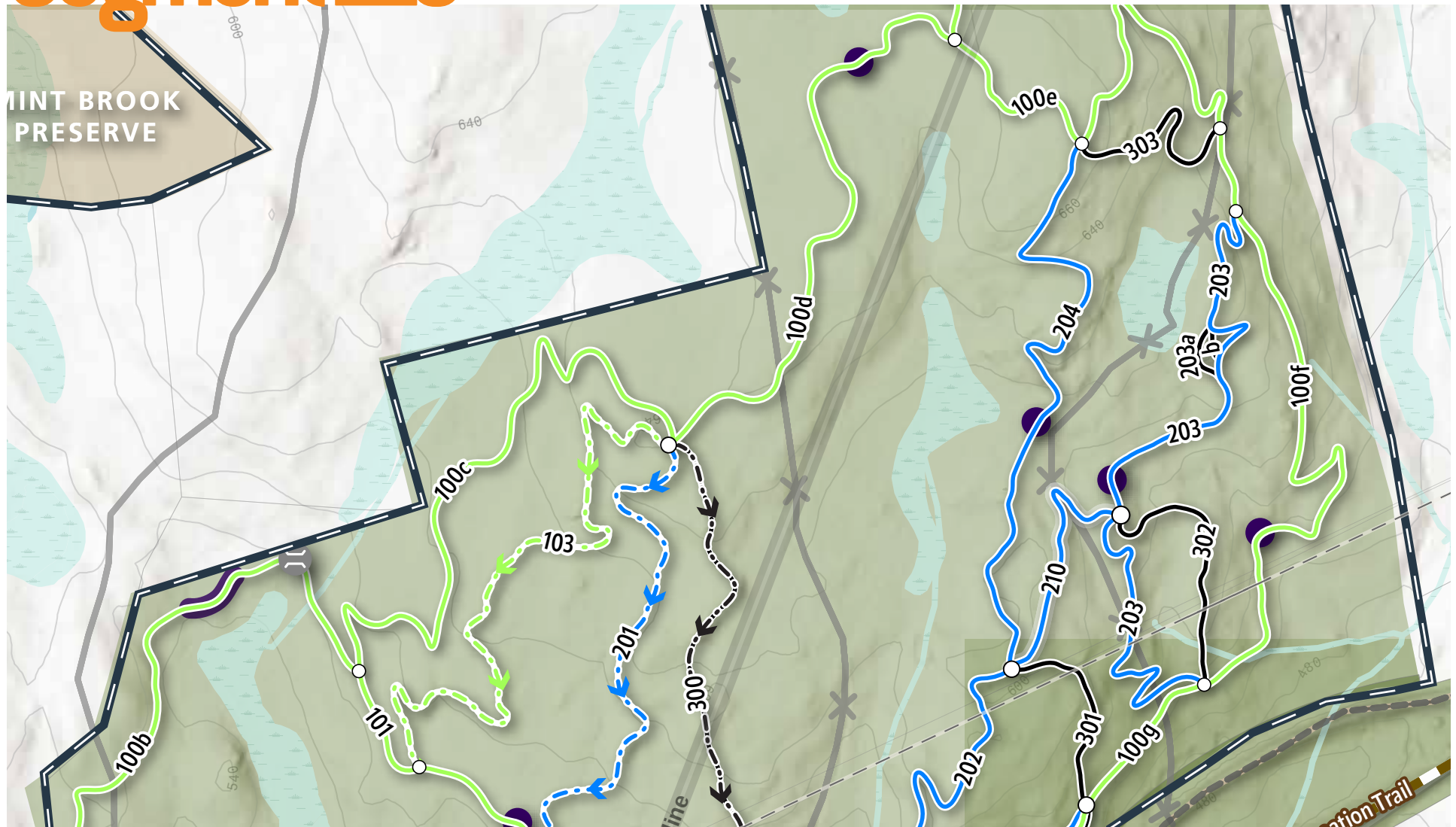
Trail Elevation Profile



Segment 204 is a 0.45-mile intermediate traditional bi-directional trail that rides like a descending route for much of its length. The alignment features a mix of natural rock slabs and optional alternate lines for riders seeking extra technical challenges. Its connection to segments 202 and 210 makes it an important link in creating multiple loop options within the Zone 3 area. One wet crossing will require rock armoring to maintain tread stability and long-term sustainability.



Segment 210



Trail Details:

Flagging Color: Red

Length: 0.18 miles

Trail Type: Traditional, Bidirectional

Difficulty: Intermediate

Average Climb Grade: N/A

Average Descend Grade: -3.4%

Tread Width: 36"

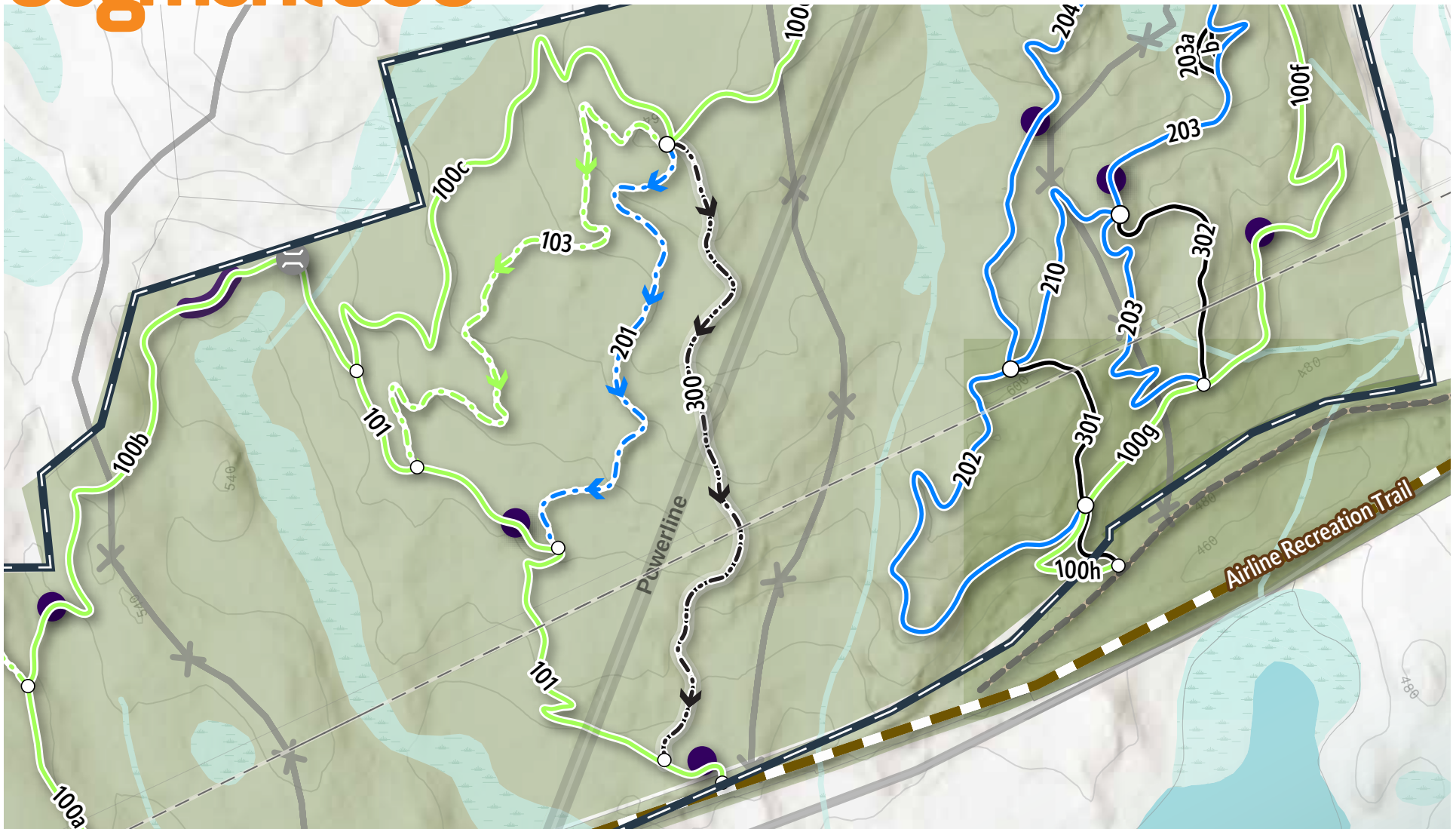
Trail Elevation Profile



Segment 210 is a 0.18-mile intermediate traditional bi-directional connector trail linking segments 202 and 204 with segments 203 and 302. Despite its short length, it plays a big role in expanding loop possibilities within the network, allowing riders and hikers to mix and match routes for varied experiences. Its moderate grade and location make it a convenient shortcut or link when transitioning between trail types and difficulty levels.



Segment 300



Trail Details:

Flagging Color: Pink Dot

Length: 0.46 miles

Trail Type: Bike-Optimized, Downhill

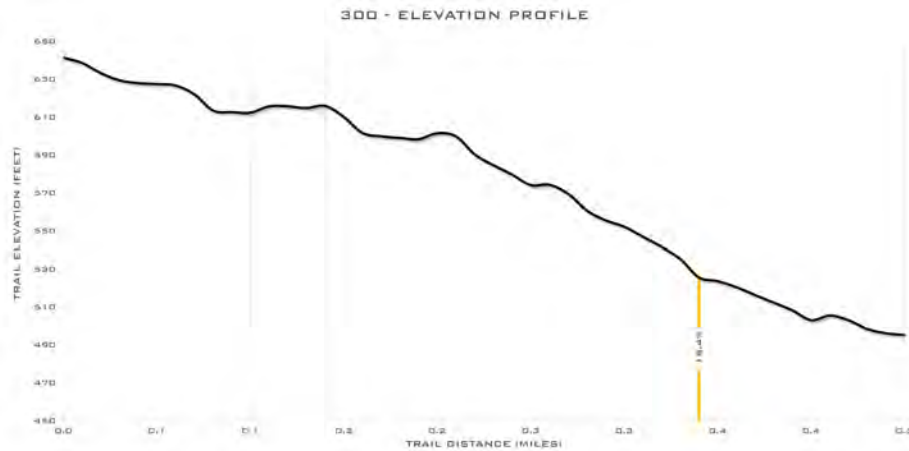
Difficulty: Advanced

Average Climb Grade: 1.7%

Average Descend Grade: -6.9%

Tread Width: 60"

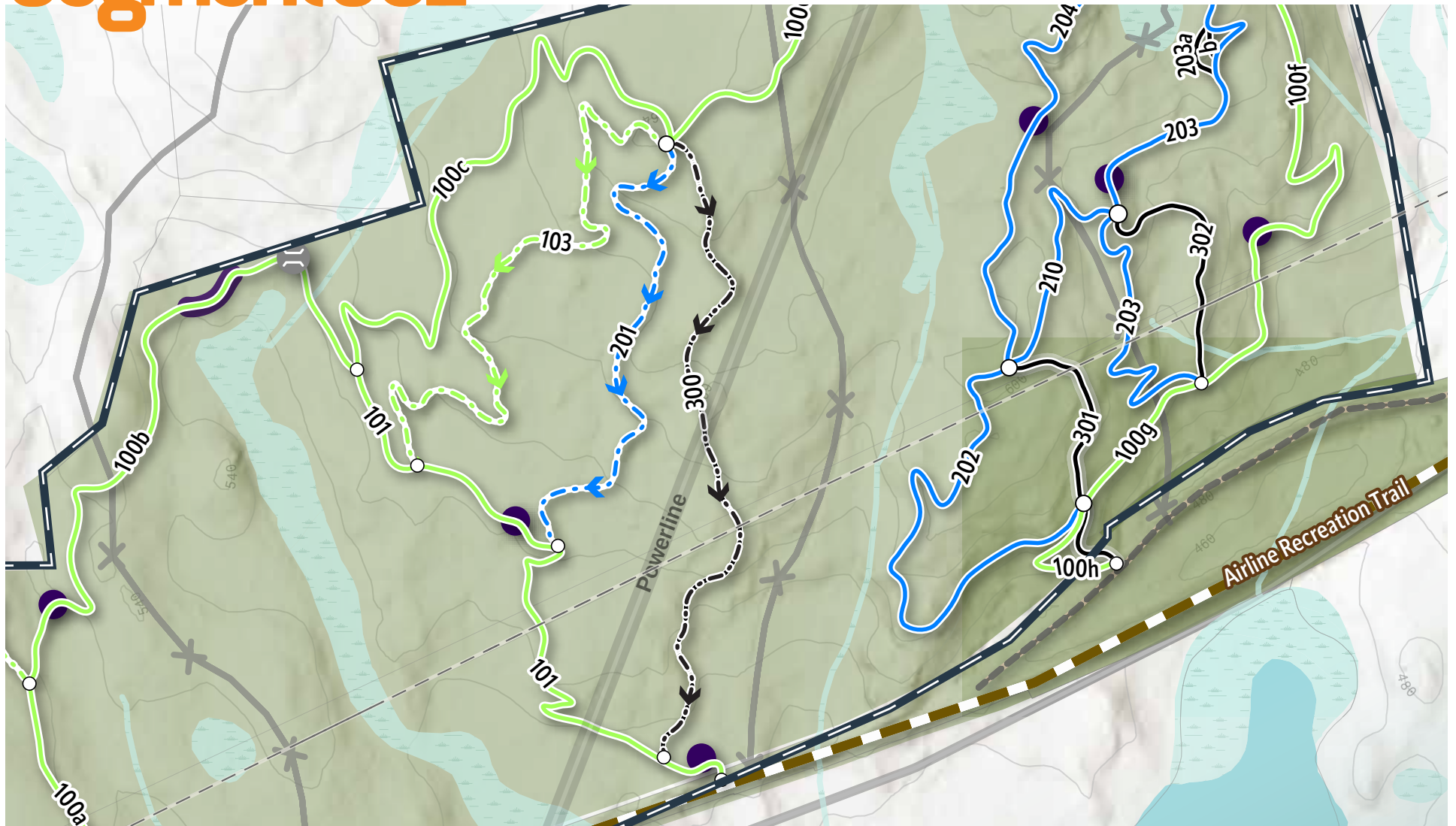
Trail Elevation Profile



Segment 300 is a 0.46-mile advanced bike-optimized downhill trail in the heart of the mountain bike-focused zone. Designed for skilled riders, it incorporates jumps, drops, rock rolls, and steeper grades that demand precise handling and confidence. The alignment offers a consistent flow from start to finish, with multiple opportunities for riders to carry speed and link features together. Segment 101 serves as the primary return route, making it easy to lap this trail multiple times in a single ride.



Segment 301



Trail Details:

Flagging Color: Orange

Length: 0.20 miles

Trail Type: Traditional, Bidirectional

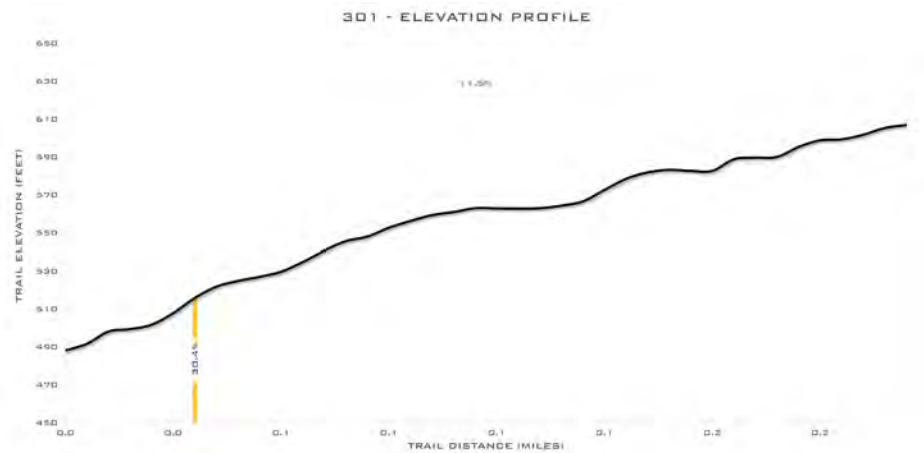
Difficulty: Advanced

Average Climb Grade: 11.5%

Average Descend Grade: N/A

Tread Width: 36"

Trail Elevation Profile



Segment 301 is a 0.20-mile advanced traditional bi-directional trail that follows an existing doubletrack route. With steeper pitches and rougher tread than surrounding trails, it offers a more demanding approach to reach segment 204 and the summit area. Riders and hikers will find it a short but challenging climb, while descents test control on uneven terrain and loose surfaces.



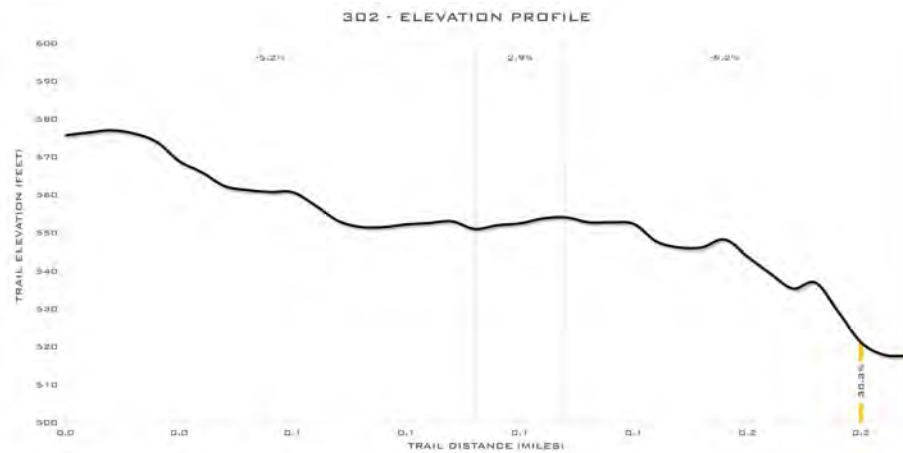
The map displays a topographic view of a trail system. Key features include:

- Trail Segments:** Labeled with codes such as 100a, 100b, 100c, 100d, 100e, 100f, 100g, 100h, 100i, 100j, 100k, 100l, 100m, 100n, 100o, 100p, 100q, 100r, 100s, 100t, 100u, 100v, 100w, 100x, 100y, and 100z. These segments are color-coded: green for 100a-100j, blue for 100k-100p, and black for 100q-100z.
- Powerline:** A dashed line running diagonally across the map, labeled "Powerline".
- Airline Recreation Trail:** A thick dashed line running along the bottom right of the map, labeled "Airline Recreation Trail".
- Contour Lines:** Thin lines indicating elevation, with labels such as 480, 490, 500, 510, 520, 530, 540, 550, 560, 570, 580, 590, 600, 610, 620, 630, 640, 650, 660, 670, 680, 690, 700, 710, 720, 730, 740, 750, 760, 770, 780, 790, 800, 810, 820, 830, 840, 850, 860, 870, 880, 890, 900, 910, 920, 930, 940, 950, 960, 970, 980, 990, 1000, 1010, 1020, 1030, 1040, 1050, 1060, 1070, 1080, 1090, 1100, 1110, 1120, 1130, 1140, 1150, 1160, 1170, 1180, 1190, 1200, 1210, 1220, 1230, 1240, 1250, 1260, 1270, 1280, 1290, 1300, 1310, 1320, 1330, 1340, 1350, 1360, 1370, 1380, 1390, 1400, 1410, 1420, 1430, 1440, 1450, 1460, 1470, 1480, 1490, 1500, 1510, 1520, 1530, 1540, 1550, 1560, 1570, 1580, 1590, 1600, 1610, 1620, 1630, 1640, 1650, 1660, 1670, 1680, 1690, 1700, 1710, 1720, 1730, 1740, 1750, 1760, 1770, 1780, 1790, 1800, 1810, 1820, 1830, 1840, 1850, 1860, 1870, 1880, 1890, 1900, 1910, 1920, 1930, 1940, 1950, 1960, 1970, 1980, 1990, 2000, 2010, 2020, 2030, 2040, 2050, 2060, 2070, 2080, 2090, 2100, 2110, 2120, 2130, 2140, 2150, 2160, 2170, 2180, 2190, 2200, 2210, 2220, 2230, 2240, 2250, 2260, 2270, 2280, 2290, 2300, 2310, 2320, 2330, 2340, 2350, 2360, 2370, 2380, 2390, 2400, 2410, 2420, 2430, 2440, 2450, 2460, 2470, 2480, 2490, 2500, 2510, 2520, 2530, 2540, 2550, 2560, 2570, 2580, 2590, 2600, 2610, 2620, 2630, 2640, 2650, 2660, 2670, 2680, 2690, 2700, 2710, 2720, 2730, 2740, 2750, 2760, 2770, 2780, 2790, 2800, 2810, 2820, 2830, 2840, 2850, 2860, 2870, 2880, 2890, 2900, 2910, 2920, 2930, 2940, 2950, 2960, 2970, 2980, 2990, 3000, 3010, 3020, 3030, 3040, 3050, 3060, 3070, 3080, 3090, 3100, 3110, 3120, 3130, 3140, 3150, 3160, 3170, 3180, 3190, 3200, 3210, 3220, 3230, 3240, 3250, 3260, 3270, 3280, 3290, 3300, 3310, 3320, 3330, 3340, 3350, 3360, 3370, 3380, 3390, 3400, 3410, 3420, 3430, 3440, 3450, 3460, 3470, 3480, 3490, 3500, 3510, 3520, 3530, 3540, 3550, 3560, 3570, 3580, 3590, 3600, 3610, 3620, 3630, 3640, 3650, 3660, 3670, 3680, 3690, 3700, 3710, 3720, 3730, 3740, 3750, 3760, 3770, 3780, 3790, 3800, 3810, 3820, 3830, 3840, 3850, 3860, 3870, 3880, 3890, 3900, 3910, 3920, 3930, 3940, 3950, 3960, 3970, 3980, 3990, 4000, 4010, 4020, 4030, 4040, 4050, 4060, 4070, 4080, 4090, 4100, 4110, 4120, 4130, 4140, 4150, 4160, 4170, 4180, 4190, 4200, 4210, 4220, 4230, 4240, 4250, 4260, 4270, 4280, 4290, 4300, 4310, 4320, 4330, 4340, 4350, 4360, 4370, 4380, 4390, 4400, 4410, 4420, 4430, 4440, 4450, 4460, 4470, 4480, 4490, 4500, 4510, 4520, 4530, 4540, 4550, 4560, 4570, 4580, 4590, 4600, 4610, 4620, 4630, 4640, 4650, 4660, 4670, 4680, 4690, 4700, 4710, 4720, 4730, 4740, 4750, 4760, 4770, 4780, 4790, 4800, 4810, 4820, 4830, 4840, 4850, 4860, 4870, 4880, 4890, 4900, 4910, 4920, 4930, 4940, 4950, 4960, 4970, 4980, 4990, 5000, 5010, 5020, 5030, 5040, 5050, 5060, 5070, 5080, 5090, 5100, 5110, 5120, 5130, 5140, 5150, 5160, 5170, 5180, 5190, 5200, 5210, 5220, 5230, 5240, 5250, 5260, 5270, 5280, 5290, 5300, 5310, 5320, 5330, 5340, 5350, 5360, 5370, 5380, 5390, 5400, 5410, 5420, 5430, 5440, 5450, 5460, 5470, 5480, 5490, 5500, 5510, 5520, 5530, 5540, 5550, 5560, 5570, 5580, 5590, 5600, 5610, 5620, 5630, 5640, 5650, 5660, 5670, 5680, 5690, 5700, 5710, 5720, 5730, 5740, 5750, 5760, 5770, 5780, 5790, 5800, 5810, 5820, 5830, 5840, 5850, 5860, 5870, 5880, 5890, 5900, 5910, 5920, 5930, 5940, 5950, 5960, 5970, 5980, 5990, 6000, 6010, 6020, 6030, 6040, 6050, 6060, 6070, 6080, 6090, 6100, 6110, 6120, 6130, 6140, 6150, 6160, 6170, 6180, 6190, 6200, 6210, 6220, 6230, 6240, 6250, 6260, 6270, 6280, 6290, 6300, 6310, 6320, 6330, 6340, 6350, 6360, 6370, 6380, 6390, 6400, 6410, 6420, 6430, 6440, 6450, 6460, 6470, 648

Flagging Color: Orange
Length: 0.19 miles
Trail Type: Traditional, Bidirectional

84

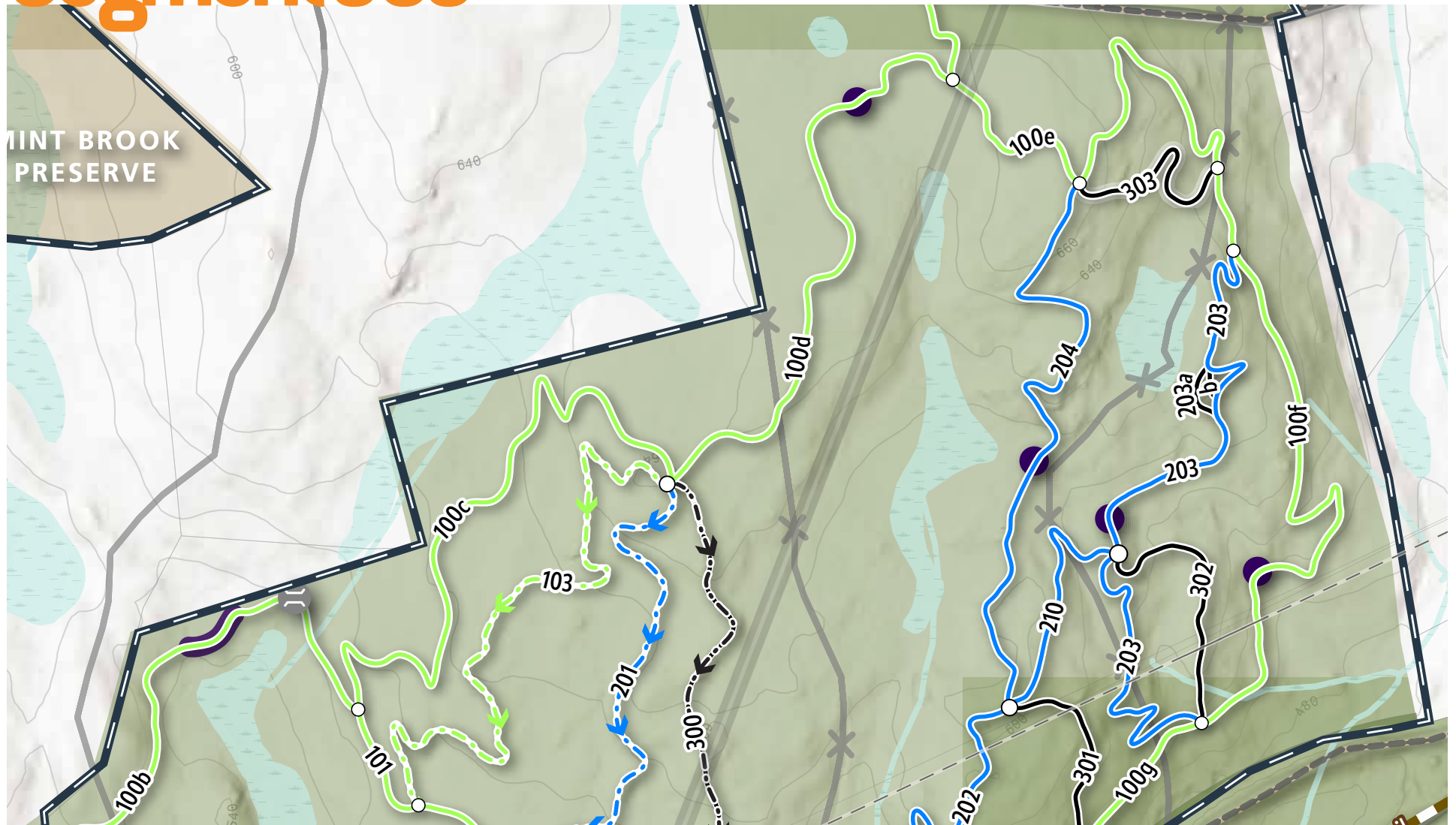
Trail Elevation Profile



Segment 302 is a 0.19-mile advanced traditional bi-directional trail that utilizes a well-built section of existing singletrack. Its steeper grade and technical rock features make it a concentrated burst of challenge for riders and hikers. Despite its short length, it packs in enough difficulty to stand out, serving as both a technical climb and an exciting descent.



Segment 303



Trail Details:

Flagging Color: Orange

Length: 0.16 miles

Trail Type: Traditional

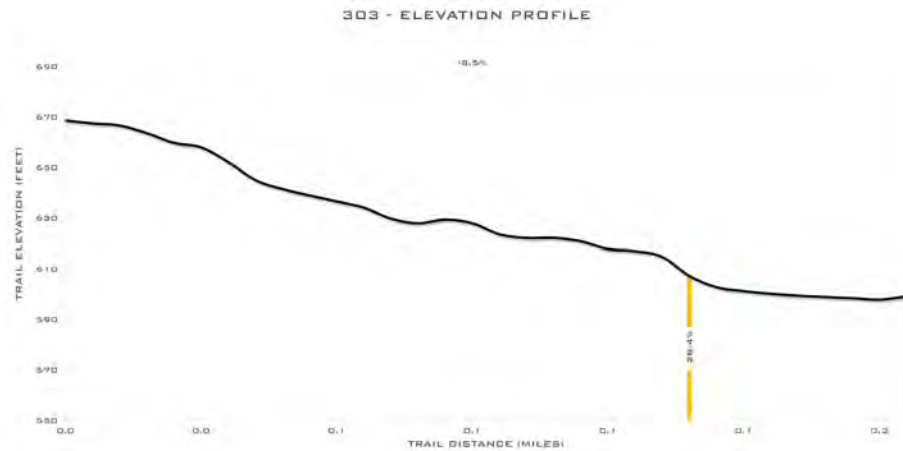
Difficulty: Advanced

Average Climb Grade: N/A

Average Descend Grade: -8.5%

Tread Width: 24"

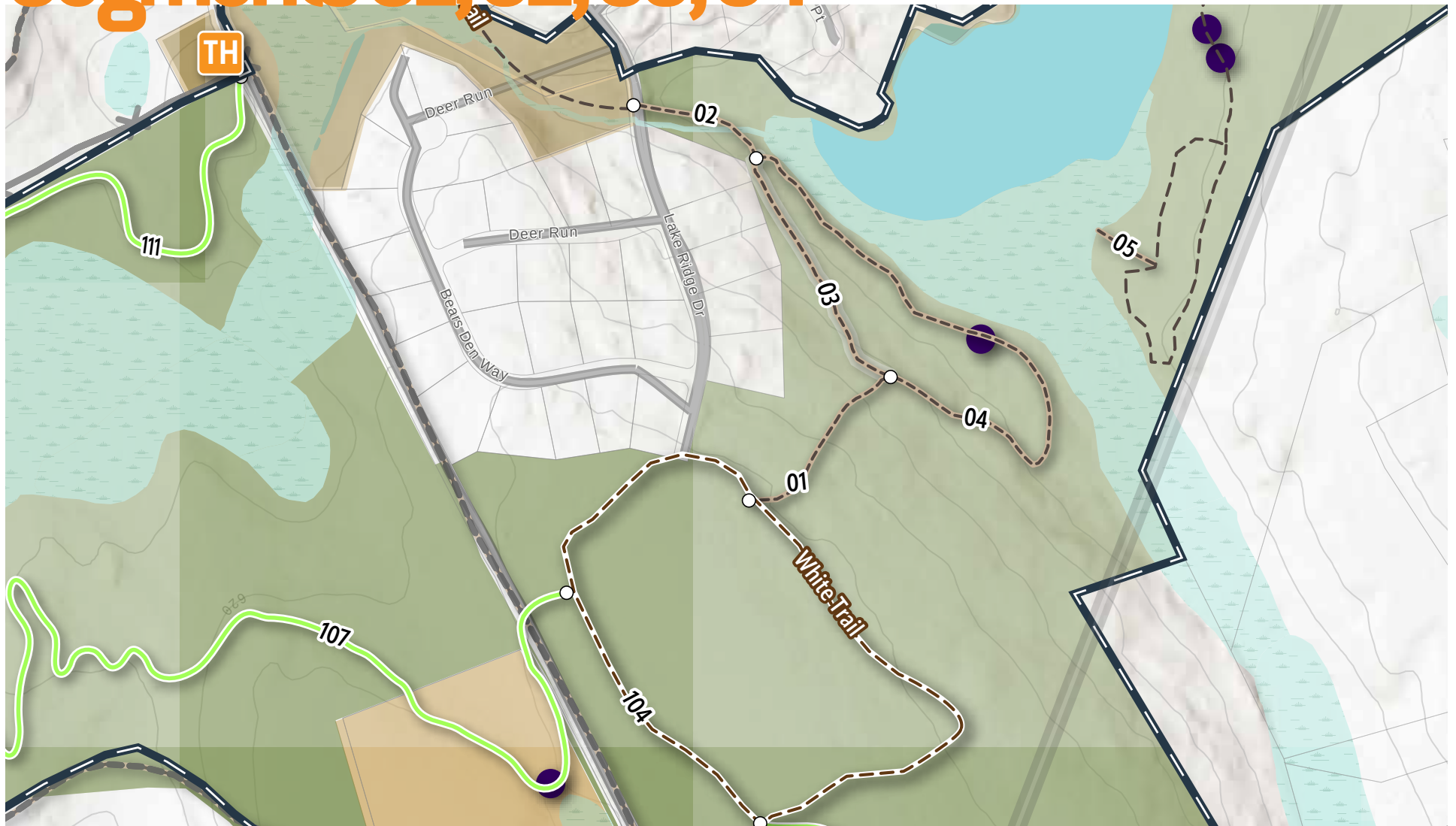
Trail Elevation Profile



Segment 303 is a 0.16-mile advanced traditional bi-directional trail that takes full advantage of the natural terrain and rock formations in this part of the park. Whether climbing to the top of the hill or descending from it, users will encounter technical features that require careful line choice and balance. Its rugged character makes it a preferred option for those seeking a more challenging alternative to surrounding trails.



Segments 01, 02, 03, 04



Trail Details:

Flagging Color: Blue

Length: 0.17 miles & 0.09 miles

Trail Type: Traditional, Bidirectional

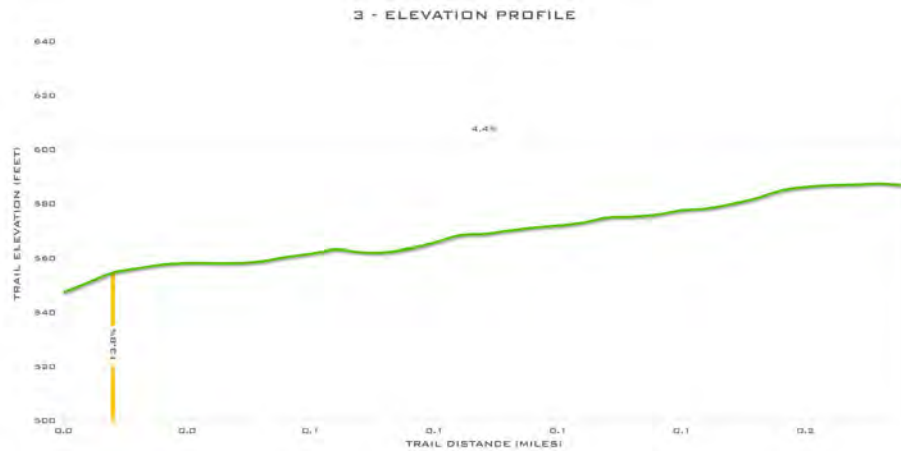
Difficulty: Hiking

Average Climb Grade: 4.4% & 3.8%

Average Descend Grade: N/A & -2.6%

Tread Width: 24"

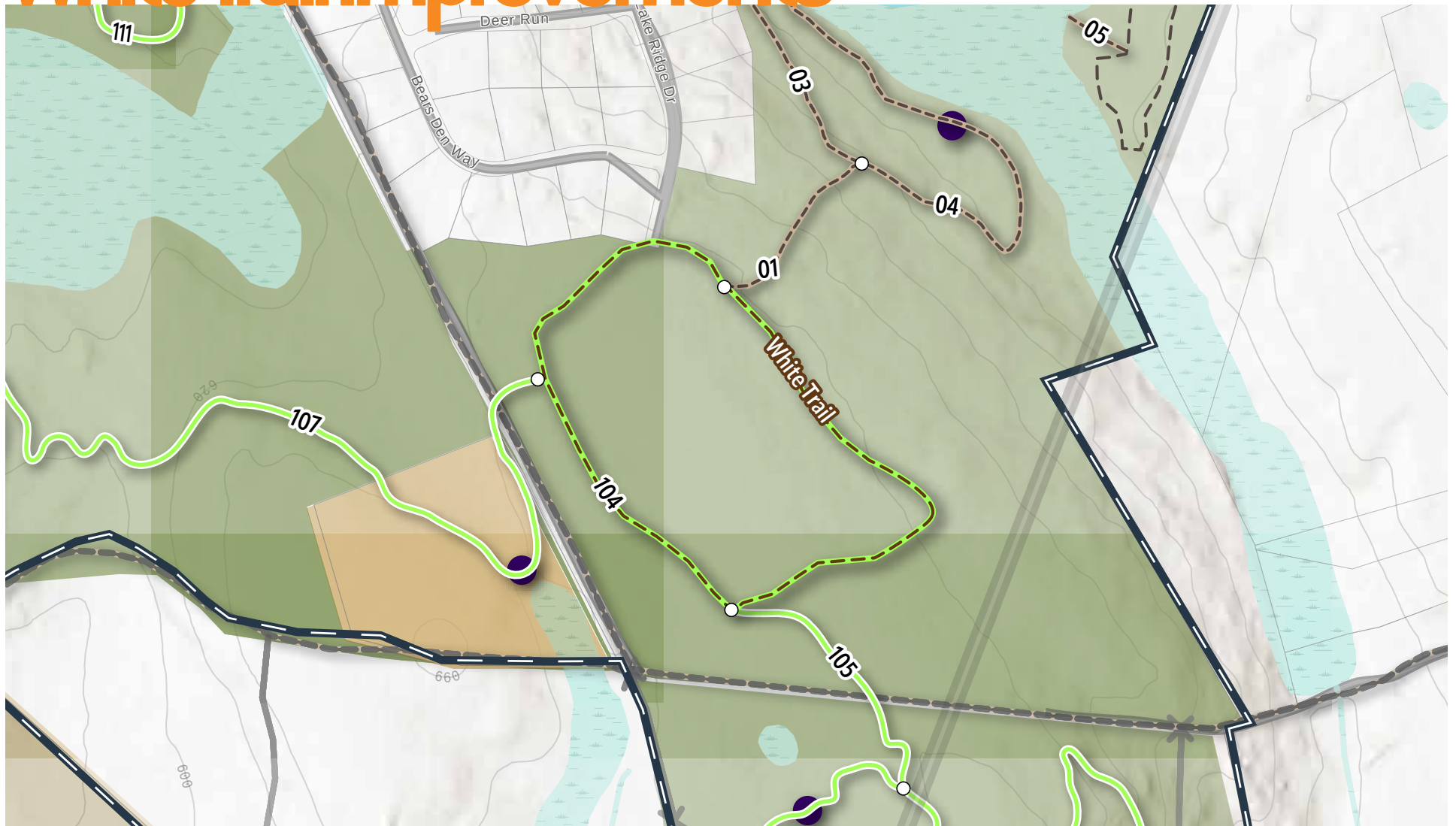
Trail Elevation Profile



Segments 01, 02, 03, and 04 is a 0.8-mile hiking trail loop branching from the existing segment 02, which itself links to the community access trail. Segment 03 is the only new trail segment proposed in this part of the park and will complete a scenic hiking loop along the water's edge. Once built, it will link seamlessly with segments 01, 02, and 04, existing community paths that provide shoreline access, enhancing both connectivity and visitor experience in this quieter corner of the park.



White Trail Improvements



Trail Details:

Flagging Color: existing not flagged

Length: 0.73 miles

Trail Type: Traditional, Bidirectional

Difficulty: Beginner

Average Climb Grade: N/A

Average Descend Grade: N/A

Tread Width: 54"

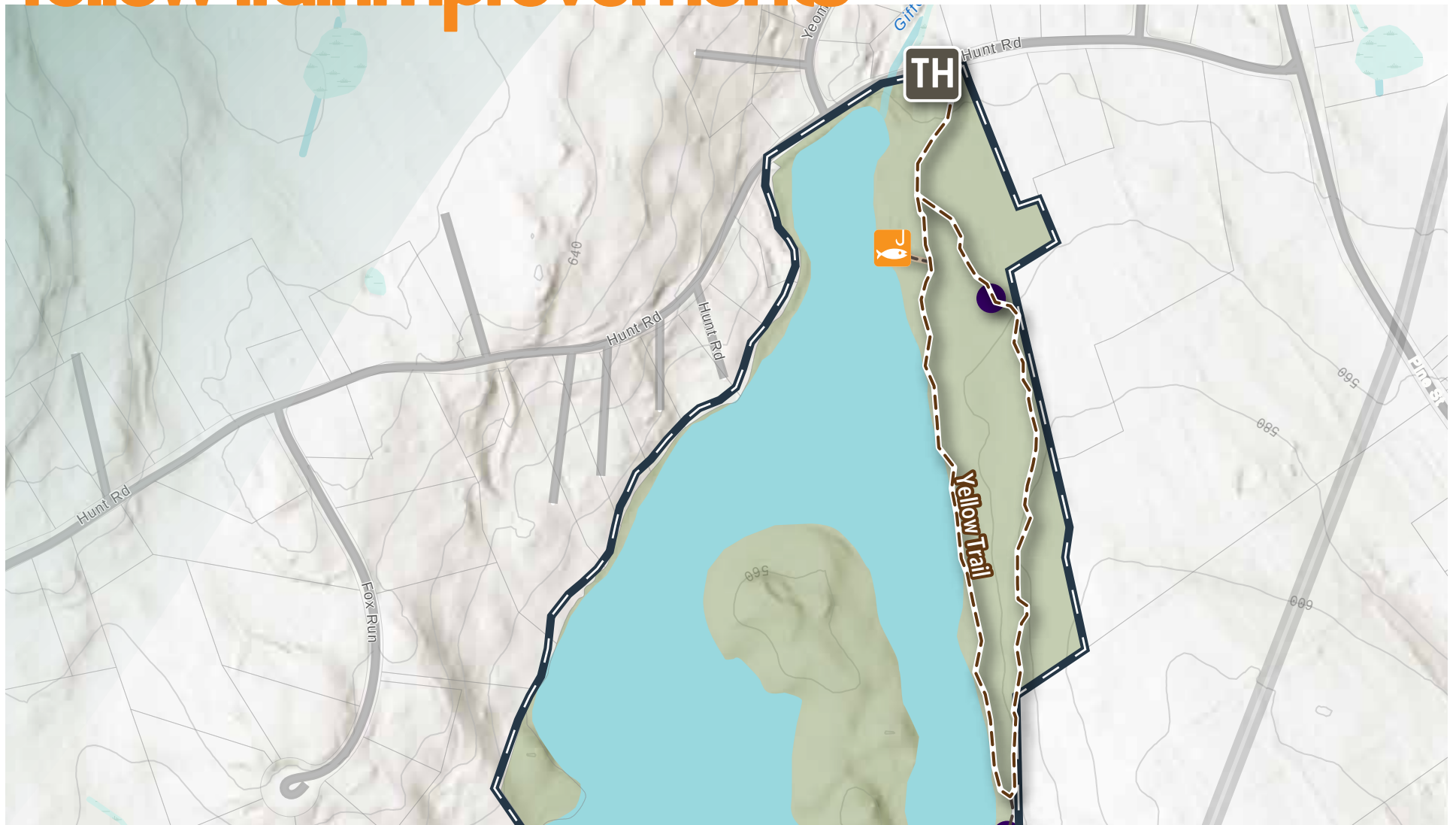
Trail Improvements

The existing White Trail serves as a primary shared-use route within the park, offering a gentle grade and an alignment that connects multiple zones of the trail network. With targeted improvements, this trail will have an improved tread surface and upgrades to allow for beginner shared-use and adaptive mountain bikes.

To make this trail more adaptive friendly the corridor will require selective clearing to remove pinch points and improve sight lines, as well as regrading to achieve a consistent tread width and slope. Surface improvements may include some basin and rise construction techniques along with compacted native mineral soil, ensuring a firm, stable surface free from roots, rocks, and other obstructions. These upgrades would enhance safety, comfort, and year-round usability.



Yellow Trail Improvements



Trail Details:

Flagging Color: existing not flagged

Length: 0.92 miles

Trail Type: Universal Access, Bidirectional

Difficulty: All access

Average Climb Grade: N/A

Average Descend Grade: N/A

Tread Width: 60"

Trail Improvements

The Yellow Trail starts at the Mono Pond Boat Launch Trailhead, forming a loop just under a mile long that connects with the Red Trail. This section runs alongside the pond, winding up the hillside to the eastern boundary of the property. Upgrading this trail to a Universal Access Trail will provide a high-quality, inclusive experience for visitors of all abilities. There are several access points to the water's edge that could be improved for fishing or for an observation platform.

Further design work will be needed to modify the trail corridor to comply with Universal Design Guidelines for trail grades, tread width, and surface. To meet universal design guidelines, the corridor will require targeted clearing to eliminate pinch points and improve sight lines, along with regrading to ensure a consistent tread width and slope. Surface improvements would include leveling and hardening the tread with crushed aggregate, creating a firm, stable surface free of roots, rocks, and other obstacles. These upgrades will allow the Yellow Trail to serve as a model for accessible recreation within Mono Pond State Park.



TRAIL DESIGN INVENTORY & SPECIFICATIONS

MONO POND PLANNING & DESIGN – TRAIL UNIT INVENTORY

Segment ID	Trail Type	Difficulty Rating	Length Miles	Trail Length (LF)	Tread Width (INCHES)	Rock Armor (LF) ²	Basin and Rise (LF) ⁴	Imported Tread Material (LF)	Boardwalk (LF) ³	Puncheon (LF) ³	Bridge Crossing (LF) ³	Elevated Platform Turn (EA) ¹	Elevated Berm Turn (EA) ¹	Non-Elevated Turn (EA) ¹	Non-Elevated Berm Turn (EA) ^{1,2}
1	Traditional	Hike	0.12	655	24"										
2	Traditional	Hike	0.09	484	24"										
3	Traditional	Hike	0.17	908	24"	40									
4	Traditional	Hike	0.42	2,211	24"	200									
5	Traditional	Hike	0.02	106	24"										
100a	Traditional	Beginner	0.22	1,186	54"										
100b	Traditional	Beginner	0.50	2,656	54"	102				24	20				
100c	Traditional	Beginner	0.51	2,704	54"	60						2		2	
100d	Traditional	Beginner	0.44	2,297	54"		550								
100e	Traditional	Beginner	0.13	682	54"										
100f	Traditional	Beginner	0.77	4,064	54"	50						1	1	3	
100g	Traditional	Beginner	0.12	634	54"	25									
100h	Traditional	Beginner	0.10	518	54"										1
101	Traditional	Beginner	0.51	2,669	54"	40								3	1
102	Bike Optimized	Beginner	0.55	2,896	60"								2	2	4
103	Bike Optimized	Beginner	0.53	2,796	60"								4	2	
104 White Trail	Traditional	Beginner	0.73	3,863	54"										
105	Traditional	Beginner	0.19	1,001	54"										
107	Traditional	Beginner	1.03	5,421	54"	88				200				7	
108	Traditional	Hike	0.55	2,885	36"										
109	Traditional	Hike	0.59	3,102	36"	80									
110	Traditional	Hike	0.11	589	54"				287						
111	Traditional	Beginner	0.66	3,471	54"										
112	Traditional	Hike	0.33	1,735	36"										
201	Bike Optimized	Intermediate	0.37	1,938	60"	30									3
202	Traditional	Intermediate	0.41	2,186	48"								1	1	1
203	Traditional	Intermediate	0.56	2,957	48"	50							2	3	2
203a	Traditional	Advanced	0.04	213	24"										
203b	Traditional	Advanced	0.02	99	24"										
204	Traditional	Intermediate	0.45	2,355	48"	294							1	2	
210	Traditional	Intermediate	0.18	963	36"									1	
300	Bike Optimized	Advanced	0.46	2,422	60"										3
301	Traditional	Advanced	0.20	1,033	36"										
302	Traditional	Advanced	0.19	977	36"										1
303	Traditional	Advanced	0.16	826	24"										2
Yellow Trail	Universal Access	All	0.92	4,860	60"			4860							2
Total			13.33	70,362		1059.00		4860	287	224	20	3	11	26	26

Footnotes

1. Turns are field designed. Turn quantities should not alter without written permission of the Client.

2. Rock armor quantities are based on field analysis and trail design. Rock armor quantities may change during construction. Additional armoring may be needed in potential wet areas. Quantities will be determined during construction.

3. Bridge, Boardwalk, and puncheon lengths are based on field analysis and trail design. Bridge lengths may change during construction.

4. Basin and rise tread lengths are based on field analysis and trail design, Lengths may change during construction.

Trail Specifications																
Trail Type	Unit	Directional	Feature Frequency ¹	Constructed Tread Width ^{2,3}	Ave Trail Grade per 1000 ⁴	Max Trail Grade: climbing ⁵	Max Trail Grade: descending ⁵	Proposed Flagline Corridor Width	Corridor Width (4' above tread)	Corridor Height Minimum ⁵	Exposure (without railing)	Avoidable Obstacles (over 50% of tread or less)	Rollable Feature Height (jumps, berms, etc.)	Rugosity (surface texture) ⁶	Tread and trail features	Experience Notes
Universal Access Trail	Linear Feet	Bi-directional	N/A	96"-144"	0% - 5%	5% with short segment exceptions	5% with short segment exceptions	50	120"-158"	12"	N/A	less than 2", less than 1/2" on boardwalks or paved surface	N/A	Low	Firm, stable, and consistent trail surface. Crushed stone or similar imported surface material.	Typically follows universal design principles to provide access to trail users of all ability levels. Trail grades are gentle with little to no exposure to steep slopes, cliffs or other features. Running slopes, tread surfacing, and corridor clearing shall follow USDA Accessibility Guidebook for Outdoor Recreation and Trails guidelines. In general, the trail surface is smooth and stable with little to no obstacles. The tread surface is wide to accommodate a wide range of users. Cross slopes should be between 2%-5%max. Resting intervals will be needed where the trail exceeds 5% running grade. Max running grades for short segments over 5% are limited to the following: 200 feet for 5%-8.33% running grade, 30 feet for 8.33%-10% running grade, 10 feet for 10%-12% running grade.
Beginner Traditional	Linear Feet	Bi-directional	Low	48"-60"	0% - 5%	10%	10%	50'	60"-72"	8'	N/A	less than 2" partial width of tread or less than 5" full width of tread	N/A	Low	Firm trail surface. May include rock surfacing	Typically specified for easiest trail difficulties. Trail grades are gentle and set on shallow cross slopes with little to no exposure to trail side risks like steep slopes, cliffs, or external influences that require advanced bike handling moves to avoid. In general, the trail surface is relatively smooth with little to no obstacles (rocks and roots). Tread width, turns, bridges, and pinch points should accommodate Adaptive Mountain Bikes to the extent possible.
Beginner Bike-Optimized	Linear Feet	Bi-directional	Low	48"-60"	0% - 5%	10%	10%	50'	60"-72"	8'	N/A	less than 2" partial width of tread or less than 5" full width of tread	6"-18"	Low	Semi-firm trail surface. May include rock surfacing.	Typically specified for easiest trail difficulties. Trail grades are gentle and set on shallow cross slopes with little to no exposure to trail side risks like steep slopes, cliffs, or external influences that require advanced bike handling moves to avoid. In general, the trail surface is relatively smooth with little to no obstacles (rocks and roots). Feature frequency is appropriate for the shared-use nature while keeping it engaging for intermediate riders advancing their skills. Tread width, turns, bridges, and pinch points should accommodate Adaptive Mountain Bikes to the extent possible.
Beginner MTB Downhill	Linear Feet	One-way (Downhill)	Medium	48"-60"	0% - 5%	10%	10%	50'	60"-72"	12"	less than 24"	less than 2" partial width of tread or less than 5" full width of tread	6"-18"	Low	Firm trail surface. May include rock surfacing	The easiest bike-only gravity trails. This trail should provide an introduction to highly bike-optimized trail experiences. Trail grades are gentle and set on shallow cross slopes with little to no exposure to trail side risks like steep slopes, cliffs, or external influences that require advanced bike handling moves to avoid. In general, the trail surface is relatively smooth with little to no obstacles (rocks and roots). Feature frequency is low, but should provide ample rollers and berms to create a "roller coaster" experience for riders. No features should provide mandatory air time.
Intermediate Traditional	Linear Feet	Bi-directional	Medium	24"-48"	7-10%	15%	20%	50'	30"-42"	8'	less than 48"	less than 8"	12"-24"	Medium	Semi-firm to loose trail surface. Will include rock surfacing. Rocks will be uneven.	This trail type will have the look and feel of traditional shared-use singltrack. Trail grades are moderate and set on moderate to steep cross slopes. In general, the trail surface is semi-firm with some natural obstacles (rocks and roots). Feature frequency is appropriate for the shared-use nature while keeping it engaging for intermediate riders advancing their skills. Tread width, turns, bridges, and pinch points should accommodate Adaptive Mountain Bikes to the extent possible.
Intermediate Bike-Optimized	Linear Feet	Bi-directional	Medium	24"-48"	7-10%	15%	20%	50'	30"-42"	8'	less than 48"	less than 8"	24"-48"	Medium	Semi-firm trail surface. May include rock surfacing.	Specified for intermediate trails. Trail grades are moderate and set on moderate to steep cross slopes with some exposure such as steep slopes or cliffs. In general, the trail surface is semi-firm with some natural obstacles (rocks and roots). Feature frequency is appropriate for the shared-use nature while keeping it engaging for intermediate riders advancing their skills. Tread width, turns, bridges, and pinch points should accommodate Adaptive Mountain Bikes to the extent possible.
Intermediate Downhill	Linear Feet	One-way (Downhill)	Medium-High	36"-60"	7%	15%	20%	50'	48"-72"	12"	less than 48"	less than 8"	24"-48"	Medium	Semi-firm trail surface. May include rock surfacing.	Specified for intermediate bike-only directional trails. Trails are gravity-specific, with use in the downhill direction. These trails expose users to moderate to steep grades, rugged terrain, and mountain bike specific features. The trail surface is moderately variable with the presence of rocks and roots. Feature frequency is determined by specific trail narratives but can include rollers, berms, drops, and jumps.
Advanced Traditional	Linear Feet	Bi-directional	Medium	18"-30"	10%	20%	40%	50'	30"-42"	8'	less than 48"	less than 16"	24"-48"	High	Unpredictable trail surface. Will include rock surfacing. Rocks will be uneven.	This trail type looks and feels like traditional singlettrack with narrow tread and the presence of rocks, roots, and other obstacles. Grades are steeper than beginner and intermediate trails and may exceed the physical climbing/descending limits of some hikers and riders. Highly unpredictable trail surface with high rugosity is expected.
Advanced Bike-Optimized	Linear Feet	Bi-directional	Medium-High	24"-42"	15%	20%	50%	50'	48"-72"	8'	less than 48"	less than 16"	No restrictions	Medium-High	Semi-firm to loose trail surface. Will include rock surfacing. Rocks will be uneven.	Specified for advanced bike-only trails. Trails are bike-optimized. These trails traverse side slopes ranging from 20%-120%, therefore users are exposed to steep hills and rocky drop offs. The trail surface is variable with the presence of rocks and roots. Feature frequency is determined by specific trail narratives.
Advanced Downhill	Linear Feet	One-way (Downhill)	High	36"-60"	15%	30%	50%	50'	48"-72"	12"	less than 48"	No restrictions	No restrictions	Medium-High	Semi-firm to loose trail surface. Will include rock surfacing. Rocks will be uneven.	Specified for the advanced bike-only directional trails. Trails are gravity-specific, with use in the downhill direction. These trails expose users to steep grades, rugged terrain, and rocky drop offs. The trail surface is variable with the presence of rocks and roots. Feature frequency is determined by specific trail narratives.

Footnotes

- Feature Frequency is averaged over long distances. Per 100': "low" = 2-3 features, "med" = 3-5 features, "high" = 5-10 features.
- Constructed tread width may narrow over short distances to 50% of spec. Examples include rock or tree gateways.
- Tread width also applies to bridges and boardwalks. Check with local regulations for overriding guidelines on width or any other requirements (height restrictions, railings, etc.).
- Max grades climbing and descending refer to extremely short segments, 10 feet or less.
- Corridor height should be reduced in thick laurel or rhododendron where appropriate to provide a more natural "tunnel experience".
- Rugosity attempts to capture average tread coarseness. Tread area with obstacles: "low" = less than 5%, "med" = less than 20%, "high" = over 20%, "very high" = over 50%. Check Master Plan and Trail Guidelines by Difficulty Level for surface texture details.

General Notes
Sustainable trails guidelines provide the foundation for all design + construction decisions ("half rule", frequent grade reversals, max grades function of soils + use, etc.). All trails should have a minimum grade and camber (in/outslope) of 3% to ensure a well-drained tread.

Turn Specifications

Trail Type	Unit	Min Turn Radius	Max Turnpad Grades ¹	Max Berm/Turn Camber ²	Tread and trail features	Experience Notes
Elevated Platform Turn	Each	8'	20%	20%	Firm trail surface. May include rock surfacing.	The turn utilizes a platform to provide the user with a space to complete a turn and ensure the sustainable grades. This turn type is common where the side slopes are steep and would create a fall-line configuration if a non-elevated turn was used. The turn grades are steeper to allow for elevation gain or loss where needed to achieve key control points or for desired experience. Located on steeper side slopes where a small footprint is needed to fit turns on these slopes.
Elevated Berm Turn	Each	10'	20%	50%	Semi-firm trail surface. May include rock surfacing.	An open radius turn, typically raised though may rely heavily on a tall berm to hold riders on trail as they corner with speed. Generally used on Bike-optimized or gravity bike-only trails. Turns should wide and provide conservation of rider momentum with little to no force braking. Turns should include insloping and berm to hold rider into the turn and offer positive support through the entire turn.
Non-Elevated Turn	Each	20'	10%	25%	Firm trail surface. May include rock surfacing.	Sweeping long radius turns comfortable for shared users of beginner to intermediate ability levels. In combination with good sight lines, these turns work well for shared-use trails. Generally these are climbing or descending turns on mellow to moderate side slopes without the need for an elevated platform. The turn width will vary depending on the difficulty rating of the trail. Careful attention is required to ensure the tread properly drains and the grades follow the half-rule. Exceeding the half-rule may result in the trail following a fall-line configuration, leading to a rutted trail, increased maintenance, and decreased quality of the user experience.
Non-Elevated Berm Turn	Each	15'	15%	30%	Semi-firm trail surface. May include rock surfacing.	Sweeping long radius turns with cambered berms. Generally used on MBO trails for beginner to advanced ability levels to allow riders to carve into a turn and retain speed while doing downhill. Generally these are climbing or descending turns on mellow to moderate side slopes. The turn features a filled (bermed) concave turning surface to enhance the flow experience. A platform is not necessary for this turn type where side slopes allow.

Footnotes

1. Turnpad grade measures the rise/fall across the turning surface at the base of any inslope.
2. Max camber is measured at the top of the inslope. Turns can not be outsloped.

General Notes

Sustainable trails guidelines provide the foundation for all design + construction decisions ("half rule", frequent grade reversals, max grades function of soils + use, etc.). All trails should have a minimum grade and camber (in/outslope) of 3% to ensure a well-drained tread.

PHASING & NEXT STEPS

06



PROJECT PHASING

Project phasing is dependent on multiple factors including funding availability, prior park planning, partnership agreements, and community support.

Phasing priorities were selected to create excitement and build momentum within the area for the new trails at Mono Pond State Park. Project implementation should begin with the trails that connect to the Air Line trail as connectivity from this location is already established and parking exists from the East and West. It is recommended that the beginner shared-use loop segments 100a-h are constructed first as this forms the backbone of the trail system. Segments 101, 103, and 203 are also recommended for this phase to establish new trail types and ability levels in a manner that can build excitement and help the community build their skills over time while providing a broad mix of trail types and difficulty levels across the community.

Trails selected for future phases will continue to build out the system for a range of trail types and ability levels with sequencing that takes into account the complexity involved in implementation for some of the trails in the plan such as the wetland crossing on segment 110, trailhead access on Wells Woods Road, and improvements to the Yellow Trail. Multiple projects may occur concurrently with sequencing adjusting as needed or priorities change. Final design may be needed if alignments need to be adjusted based on environmental review. Costs increases for future phases should be anticipated depending on project implementation schedule and adjusted for inflation. The following charts outline recommended project phasing.



MONO POND STATE PARK RESERVE

Trail Planning & Design - Flagged Trails

Columbia, CT - October 2025

Legend

Existing Site

- Project Boundary
- DEEP Property
- Town Property
- Road
- Unmaintained Road
- Air Line Recreation Trail
- Community Trail
- Stream/River
- Wetland
- Lake/Pond
- Existing Trailhead

Trail Phasing

- Phase 1
- Phase 2
- Phase 3
- Phase 4
- Phase 5

Proposed Trails

- Hiking Only Trail
- Existing Trail Upgrades, Universal Access Trail
- Existing Trail Upgrades, Shared-Use Beginner Trail
- Shared-Use Beginner Trail
- Shared-Use Intermediate Trail
- Shared-Use Advanced Trail
- Bike-Optimized, Beginner Trail
- Bike-Optimized, Intermediate Trail
- Bike-Optimized, Advanced Trail
- Road Decommission
- Rock Armoring
- Community Trailhead
- Trail Access
- Fishing Access
- Hub
- Boardwalk / Boarding



Prepared by:



Note: This map is intended for planning purposes only. Property boundaries are approximate. Do not use for design development or construction estimates.

MONO POND PLANNING & DESIGN – COST OPINION PHASE 1

Name	Style	Skill	User	Direction	Tread Surface	Tread Width (Inches)	Phase	Flag Color	Length Miles	Estimated Cost Low	Estimated Cost High
100a	Traditional	Beginner	Shared-Use	Bidirectional	Natural	54"	1	Blue	0.22	\$15,700.00	\$20,200.00
100b	Traditional	Beginner	Shared-Use	Bidirectional	Natural	54"	1	Blue	0.50	\$62,900.00	\$75,400.00
100c	Traditional	Beginner	Shared-Use	Bidirectional	Natural	54"	1	Pink	0.51	\$35,900.00	\$46,100.00
100d	Traditional	Beginner	Shared-Use	Bidirectional	Natural	54"	1	Pink	0.44	\$30,500.00	\$39,200.00
100e	Traditional	Beginner	Shared-Use	Bidirectional	Natural	54"	1	Pink	0.13	\$9,000.00	\$11,600.00
100f	Traditional	Beginner	Shared-Use	Bidirectional	Natural	54"	1	Pink	0.77	\$53,900.00	\$69,300.00
100g	Traditional	Beginner	Shared-Use	Bidirectional	Natural	54"	1	Pink	0.12	\$8,400.00	\$10,800.00
100h	Traditional	Beginner	Shared-Use	Bidirectional	Natural	54"	1	Pink	0.10	\$6,900.00	\$8,800.00
101	Traditional	Beginner	Shared-Use	Bidirectional	Natural	54"	1	Pink	0.51	\$35,400.00	\$45,500.00
103	Bike Optimized	Beginner	Bike Only	Downhill	Natural	60"	1	Pink Stripe	0.53	\$42,400.00	\$63,600.00
203	Traditional	Intermediate	Shared-Use	Bidirectional	Natural	48"	1	Blue	0.56	\$39,200.00	\$50,400.00
203a	Traditional	Advanced	Bike Only	Downhill	Natural	24"	1	Orange	0.04	\$2,800.00	\$4,400.00
203b	Traditional	Advanced	Bike Only	Downhill	Natural	24"	1	Pink	0.02	\$1,300.00	\$2,100.00
SubTotal									4.45	\$344,300.00	\$447,400.00
Final Field Design Services										\$15,000.00	\$30,000.00
Permitting/Environmental Review										\$20,000.00	\$30,000.00
Mobilization										\$20,000.00	\$25,000.00
Signage Branding and Design Guidelines - does not include production or installation										\$25,000.00	\$35,000.00
Total										\$424,300.00	\$567,400.00

Notes: This cost opinion provides ranges for the construction costs and serves as a planning tool only. The cost opinion does not serve as a bid. The costs for any necessary site development infrastructure, electrical infrastructure, stormwater infrastructure, and/or landscaping are not included in this cost opinion. The cost opinion assumes that additional fill is not required for the development of trail features. Construction costs assume professional trail contractors perform the work.

* Costs will vary for any imported materials used for trail surfacing and sub-base needs.

MONO POND PLANNING & DESIGN – COST OPINION PHASE 2

Name	Style	Skill	User	Direction	Tread Surface	Tread Width (Inches)	Phase	Flag Color	Length Miles	Estimated Cost Low	Estimated Cost High
102	Bike Optimized	Beginner	Bike Only	Downhill	Natural	60"	2	Orange	0.55	\$1,300.00	\$2,100.00
104 White Trail	Traditional	Beginner	Shared-Use	Bidirectional	Natural	54"	2	Existing	0.73	\$35,700.00	\$53,500.00
105	Traditional	Beginner	Shared-Use	Bidirectional	Natural	54"	2	Pink	0.19	\$12,800.00	\$16,400.00
201	Bike Optimized	Intermediate	Bike Only	Downhill	Natural	60"	2	Blue	0.37	\$36,700.00	\$55,000.00
202	Traditional	Intermediate	Shared-Use	Bidirectional	Natural	48"	2	Blue	0.41	\$13,700.00	\$17,600.00
204	Traditional	Intermediate	Shared-Use	Bidirectional	Natural	48"	2	Blue	0.45	\$13,000.00	\$16,700.00
300	Bike Optimized	Advanced	Bike Only	Downhill	Natural	60"	2	Pink Dot	0.46	\$12,500.00	\$18,800.00
SubTotal									3.16	\$125,700.00	\$180,100.00
Final Field Design Services										\$15,000.00	\$30,000.00
Mobilization										\$20,000.00	\$25,000.00
Signage Branding and Design Guidelines - does not include production or installation										\$15,000.00	\$20,000.00
Total										\$175,700.00	\$255,100.00

Notes: This cost opinion provides ranges for the construction costs and serves as a planning tool only. The cost opinion does not serve as a bid. The costs for any necessary site development infrastructure, electrical infrastructure, stormwater infrastructure, and/or landscaping are not included in this cost opinion. The cost opinion assumes that additional fill is not required for the development of trail features. Construction costs assume professional trail contractors perform the work. Additional costs and services may include permitting and environmental review.

* Costs will vary for any imported materials used for trail surfacing and sub-base needs.

MONO POND PLANNING & DESIGN – COST OPINION PHASE 3

Name	Style	Skill	User	Direction	Tread Surface	Tread Width (Inches)	Phase	Flag Color	Length Miles	Estimated Cost Low	Estimated Cost High
1	Traditional	Hike	Hike Only	Bidirectional	Natural	24"	3	Existing	0.12	\$6,800.00	\$8,100.00
2	Traditional	Hike	Hike Only	Bidirectional	Natural	24"	3	Existing	0.09	\$5,000.00	\$6,000.00
3	Traditional	Hike	Hike Only	Bidirectional	Natural	24"	3	Blue	0.17	\$11,200.00	\$14,600.00
4	Traditional	Hike	Hike Only	Bidirectional	Natural	24"	3	Existing	0.42	\$29,300.00	\$37,700.00
5	Traditional	Hike	Hike Only	Bidirectional	Natural	24"	3	Existing	0.02	\$1,100.00	\$1,300.00
210	Traditional	Intermediate	Shared-Use	Bidirectional	Natural	36"	3	Red	0.18	\$12,800.00	\$16,400.00
301	Traditional	Advanced	Shared-Use	Bidirectional	Natural	36"	3	Orange	0.20	\$13,700.00	\$17,600.00
302	Traditional	Advanced	Shared-Use	Bidirectional	Natural	36"	3	Orange	0.19	\$13,000.00	\$16,700.00
303	Traditional	Advanced	Shared-Use	Bidirectional	Natural	24"	3	Orange	0.16	\$12,500.00	\$18,800.00
SubTotal									1.55	\$105,400.00	\$137,200.00
Final Field Design Services										\$15,000.00	\$30,000.00
Mobilization										\$20,000.00	\$25,000.00
Signage Branding and Design Guidelines - does not include production or installation										\$10,000.00	\$15,000.00
Total										\$150,400.00	\$207,200.00

Notes: This cost opinion provides ranges for the construction costs and serves as a planning tool only. The cost opinion does not serve as a bid. The costs for any necessary site development infrastructure, electrical infrastructure, stormwater infrastructure, and/or landscaping are not included in this cost opinion. The cost opinion assumes that additional fill is not required for the development of trail features. Construction costs assume professional trail contractors perform the work. Additional costs and services may include permitting and environmental review.

* Costs will vary for any imported materials used for trail surfacing and sub-base needs.

MONO POND PLANNING & DESIGN – COST OPINION PHASE 4

Name	Style	Skill	User	Direction	Tread Surface	Tread Width (Inches)	Phase	Flag Color	Length Miles	Estimated Cost Low	Estimated Cost High
Yellow Trail	Universal Access	All	Hike Only	Bidirectional	Crushed Aggregate*	60"	4	Existing	0.92	\$230,100.00	\$276,100.00
SubTotal									0.92	\$230,100.00	\$276,100.00
Final Field Design Services										\$25,000.00	\$50,000.00
Mobilization										\$20,000.00	\$25,000.00
Signage Branding and Design Guidelines - does not include production or installation										\$15,000.00	\$20,000.00
Total										\$290,100.00	\$371,100.00

Notes: This cost opinion provides ranges for the construction costs and serves as a planning tool only. The cost opinion does not serve as a bid. The costs for any necessary site development infrastructure, electrical infrastructure, stormwater infrastructure, and/or landscaping are not included in this cost opinion. The cost opinion assumes that additional fill is not required for the development of trail features. Construction costs assume professional trail contractors perform the work. Additional costs and services may include permitting and environmental review.

* Costs will vary for any imported materials used for trail surfacing and sub-base needs.

MONO POND PLANNING & DESIGN – COST OPINION PHASE 5

Name	Style	Skill	User	Direction	Tread Surface	Tread Width (Inches)	Phase	Flag Color	Length Miles	Estimated Cost Low	Estimated Cost High
107	Traditional	Beginner	Shared-Use	Bidirectional	Natural	54"	5	Blue	1.03	\$82,100.00	\$138,600.00
108	Traditional	Hike	Hike Only	Bidirectional	Natural	36"	5	Blue	0.55	\$38,200.00	\$49,200.00
109	Traditional	Hike	Hike Only	Bidirectional	Natural	36"	5	Red	0.59	\$41,100.00	\$52,900.00
110	Traditional	Hike	Hike Only	Bidirectional	Natural/ Boardwalk	54"	5	Blue	0.11	\$334,900.00	\$781,400.00
111	Traditional	Beginner	Shared-Use	Bidirectional	Natural	54"	5	Blue	0.66	\$46,000.00	\$59,200.00
112	Traditional	Hike	Hike Only	Bidirectional	Natural	36"	5	Blue	0.33	\$23,000.00	\$29,600.00
SubTotal									3.26	\$565,300.00	\$1,110,900.00
Final Field Design Services										\$15,000.00	\$30,000.00
Mobilization										\$20,000.00	\$25,000.00
Signage Branding and Design Guidelines - does not include production or installation										\$15,000.00	\$20,000.00
Total										\$615,300.00	\$1,185,900.00

Notes: This cost opinion provides ranges for the construction costs and serves as a planning tool only. The cost opinion does not serve as a bid. The costs for any necessary site development infrastructure, electrical infrastructure, stormwater infrastructure, and/or landscaping are not included in this cost opinion. The cost opinion assumes that additional fill is not required for the development of trail features. Construction costs assume professional trail contractors perform the work. Additional costs and services may include permitting and environmental review.

* Costs will vary for any imported materials used for trail surfacing and sub-base needs.

PERMITTING AND COMPLIANCE

Permitting and environmental reviews often come with costs associated with their preparation, submittal, and oversight. Specific permitting and compliance needs should be identified after the design phase. Plans should identify potential impacts and mitigation measures. Work with an engineering firm may be necessary for any stormwater infrastructure needs associated with the project. An environmental and cultural review may also be necessary for the site. Some reviews are triggered by certain funding sources.

All construction projects are subject to regulatory requirements. This section provides a brief breakdown of anticipated permitting needs to implement this plan. The list is general in nature and is intended only to provide high-level planning for future trail development phases.

Obtaining proper permits can ensure that work follows local, state, and federal laws as this trails concept plan is implemented. At least as important, working under permits can help trail builders – and visitors – to be good stewards of the land. Permitting needs can be affected equally by landscape features and funding sources. Both should be identified during the design phases to ensure the relevant permitting is completed.

Ground disturbance and uncontrolled erosion and sedimentation can negatively impact our environment, water quality, and flora and fauna. These impacts are also unsightly and, if not quickly mitigated, can rapidly increase maintenance costs and ultimately create trails that visitors no longer want to visit. This list is not exhaustive but represents typical permitting requirements at a

federal level. Coordinating with appropriate local and state agencies will be necessary to assure compliance.

Stormwater Pollution Prevention Plan (SWPPP)

National Pollutant Discharge Elimination System (NPDES)

Construction General Permit (CGP)

Clean Water Act 404 and 401

Environmental And Cultural Review

Depending on funding sources, various levels of review may be required. For instance, Recreational Trails Program (RTP) grants will require environmental and historical reviews compliant with the National Environmental Policy Act due to the use of Federal Highway Administration funds. Reviews may be for federal- or state-listed threatened and endangered species, in conjunction with state historical preservation offices, or for other unidentified reasons. Other grants or funding sources may require similar, less, or more review during the design phases prior to construction. It is possible that consultation with United States Fish and Wildlife Service will be required depending on the final funding source and scope of construction. DEEP may require a Natural Diversity Data Base (NDDP) review as part of the process.

Utility Locate

It is against state law to excavate or grade without a utility location. It is extremely important that contractors notify the applicable organizations in a timely fashion for utility location services prior to construction.

Signage

The development of a mountain bike trail network requires the development of a comprehensive system of signs. Signs are the most important communication tool between land managers and trail users. A well-implemented and maintained signage system enhances the user experience by helping visitors navigate the trail network and providing information about the area. Signage also plays a critical role in managing risk and deploying emergency services.

Recommended signage for the trails should be simple, uncluttered, and obvious with a sign at every major intersection to help users stay on track. Signs should meet the needs of all users, from the daily trail user to someone who is experiencing the trails for the first time. In order to serve the variety of visitors, sign placement should be strategic and frequent. Because signs can intrude on the natural outdoor experience, too much signage can be unsightly. Balancing competing interests is key to developing a successful signage program.



SIGN TYPES

A variety of signs can be created to help users identify trails and their location, select routes, remain confident in their trail choices, find destinations and key points of interest, and understand regulations and allowed uses. Signage can also be interpretive, helping visitors learn about responsible recreation, trail etiquette, and resource protection, as well as how to reduce risk and hazards.

INFORMATIONAL SIGNS

Usually positioned at the trailhead and major intersections, informational signs provide details such as trail length and difficulty. These include signs that identify a trailhead from a road, signs at a trailhead kiosk, trail intersection signs, waymarks, difficulty rating signs, and trail length or elevation gain and loss signs.

REGULATORY SIGNS

These types of signs delineate rules, such as prohibited activities, direction of travel, or other restrictions.

DIRECTIONAL SIGNS

Directional signs provide navigational information.

WARNING SIGNS

Often incorporating highly visible designs, these signs warn trail users of upcoming hazards or risks. These include visitor rules and regulations, allowed activities, road and trail intersections, and emergency signs.

EDUCATIONAL SIGNS

Educational signs can provide a variety of information for trail users, such as guidelines for responsible recreation, descriptions of natural or cultural resources, trail etiquette, and bike skills

Construction

The trails recommended in this plan require extensive mechanized construction and knowledge of sustainable trail building practices and aMTB specific construction techniques. IMBA Trail Solutions recommends that a qualified team of professional trail builders bring these trails into reality. IMBA Trail Solutions also recommends professional guidance for management purposes of the project to ensure successful trails that are low maintenance, provide high-quality experiences, and meet the design intent outlined in this document.



Maintenance and Stewardship

Maintenance is an ongoing cost and should be planned and budgeted from the onset of a project. Trails should be managed according to trail type guidelines, respective trail narratives, and recommended difficulty levels. Typical annual maintenance budgets for traditional and mountain bike-optimized trails range from 5% to 15% of the construction cost. Annual maintenance of trails can be performed by adequately managed and trained volunteers. Setting up a volunteer stewardship program or utilizing exiting volunteer groups can help establish a trained volunteer base for maintenance activities. These tasks will include corridor trimming, downed tree removal, tread clearing, and minor drainage work.

Professional assistance will occasionally be required. The frequency will depend upon ongoing maintenance as well as weather patterns and use. Typically for cross-country trails, professional maintenance will be required every 10-20 years and will involve small reroutes, major drainage work, or other large tasks. Gravity trails can be expected to need professional help every 5 years or so as trails wear through weather and use. This will typically come in the form of rebuilding large dirt features and upgrading trails to provide slightly new experiences which help continue to draw regional riders, give locals something new, and help all riders progress in their skills.

Increasingly, destination mountain bike trail systems are funding and hiring part- or full-time staff to provide maintenance to trail systems. Ensuring a quality, consistent riding experience is key to

attracting visitors and keeping a local riding community satisfied and growing.

An Operations and Maintenance Plan should be developed by the land manager. O&M Plans cover topics on inspections, signage, trail/facility building materials, tools, maintenance frequency, risk management, incident/accident reporting, and emergency response. It is essential to decide, and to document, whether these tasks are the responsibility of the land manager, volunteers associated with a local mountain bike organization, or a combination of the two. There should be a distinct line of accountability, so it is easy to identify who is responsible for each maintenance task.

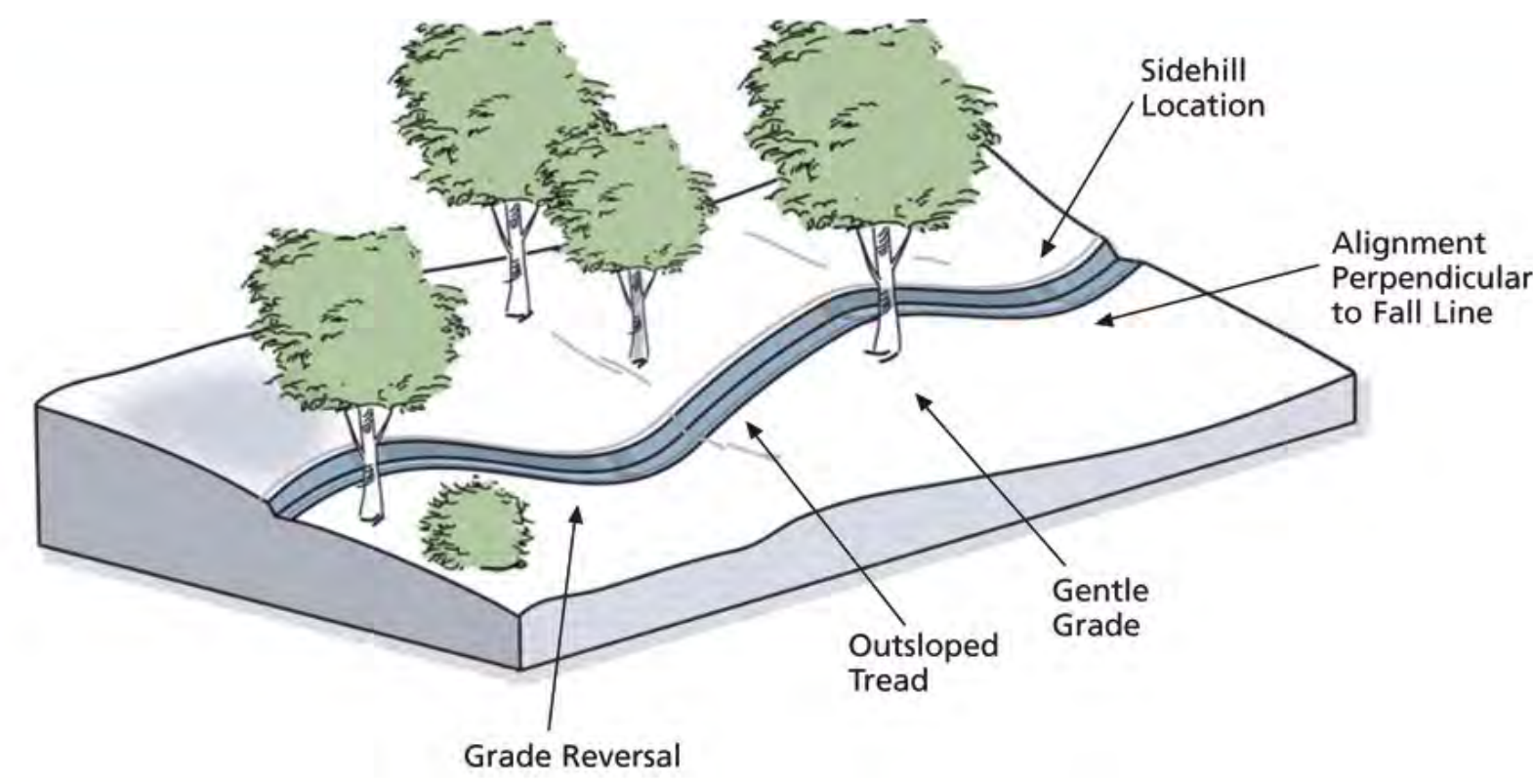
Conclusion

This document presents the feasibility, key opportunities, constraints, concept recommendations, and design details for the development of trails for Mono Pond State Park. The area of interest offers incredible terrain, ample open space, and important community connections. When coupled with existing and proposed facilities, the property offers highly suitable conditions for trail development that will create a trail system that will provide the community with a variety of new recreational opportunities. The planned trails and amenities provide an engaging experience for visitors of all ability levels and preferred trail styles. The incorporation of these trails and related infrastructure introduces new features to the area, adding to the appeal of the region and attracting new visitors. Overall, the development of trail infrastructure encourages residents to enjoy the outdoors and improves the quality of life for local residents.

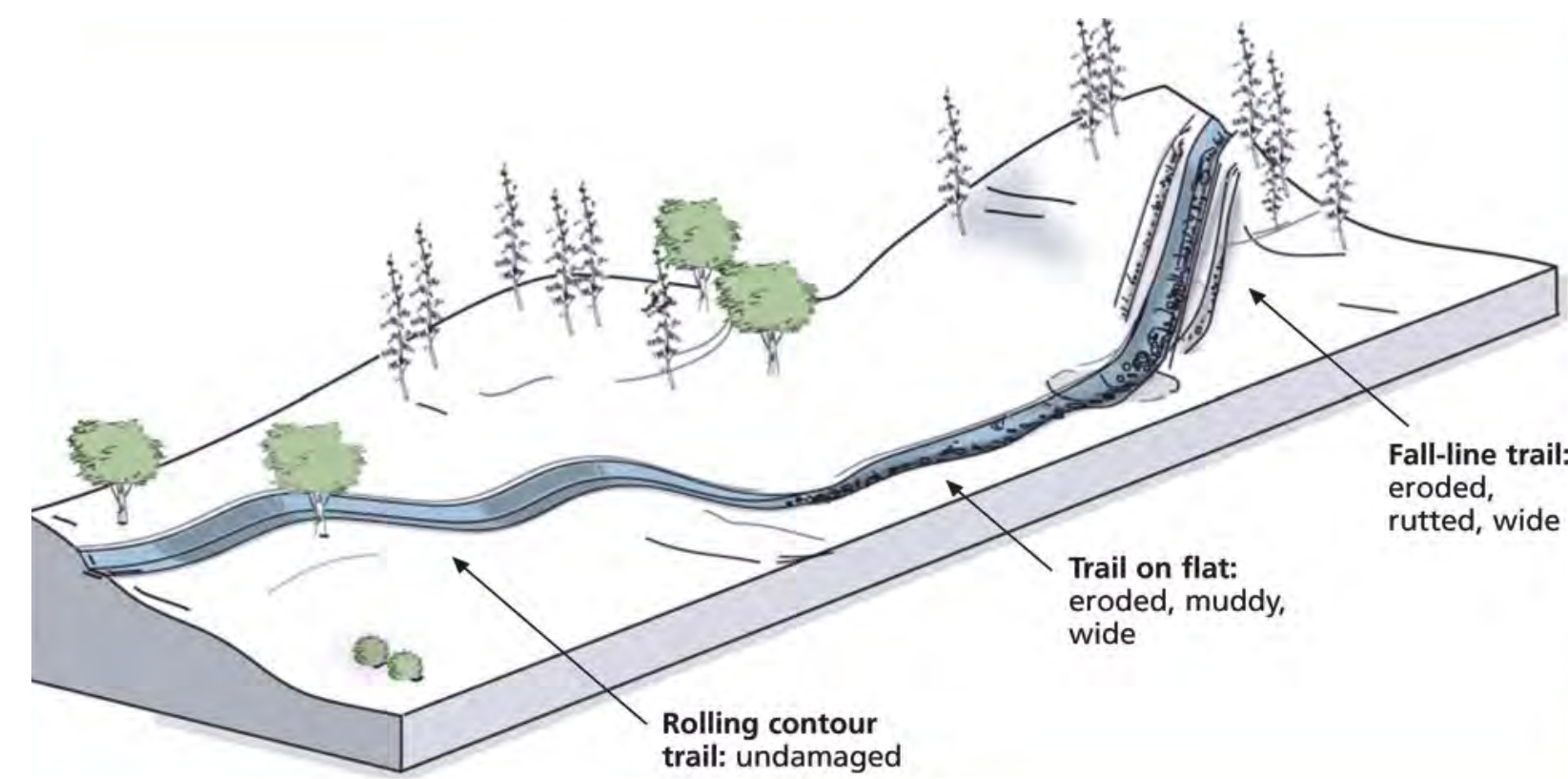
TRAIL TYPICALS - APPENDIX

A

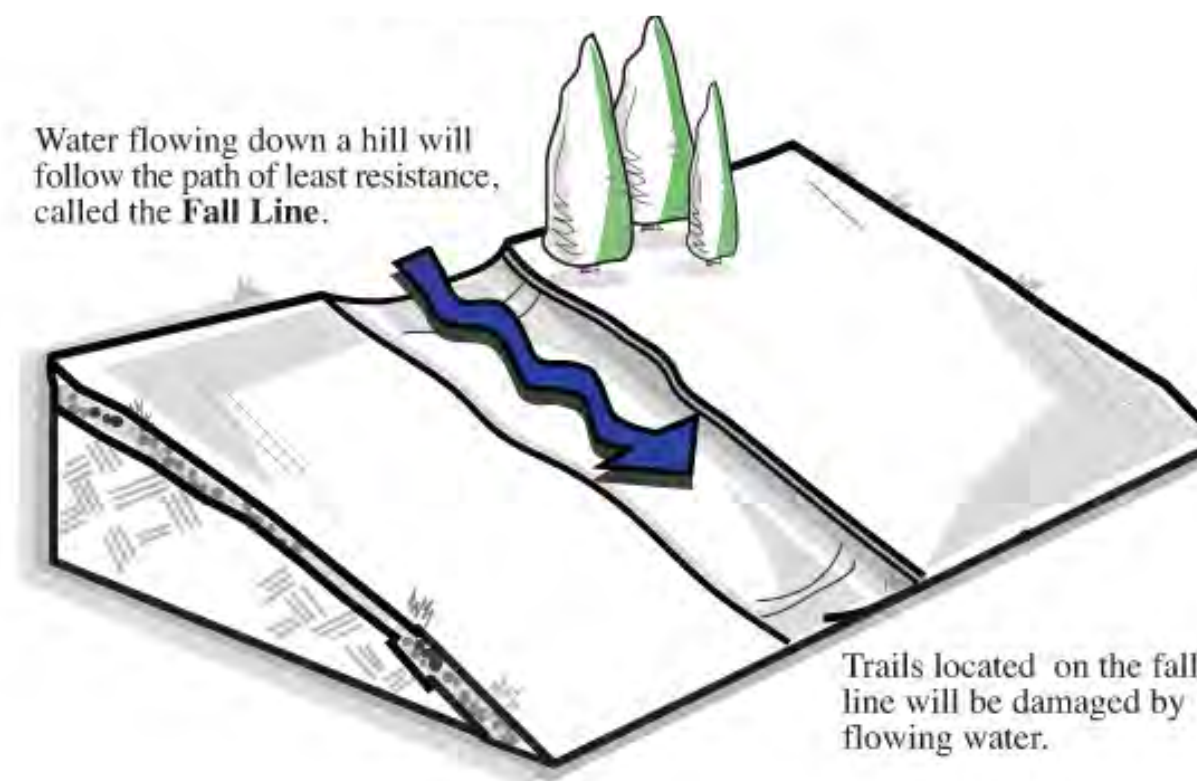
Rolling Contour Trail – The Ideal



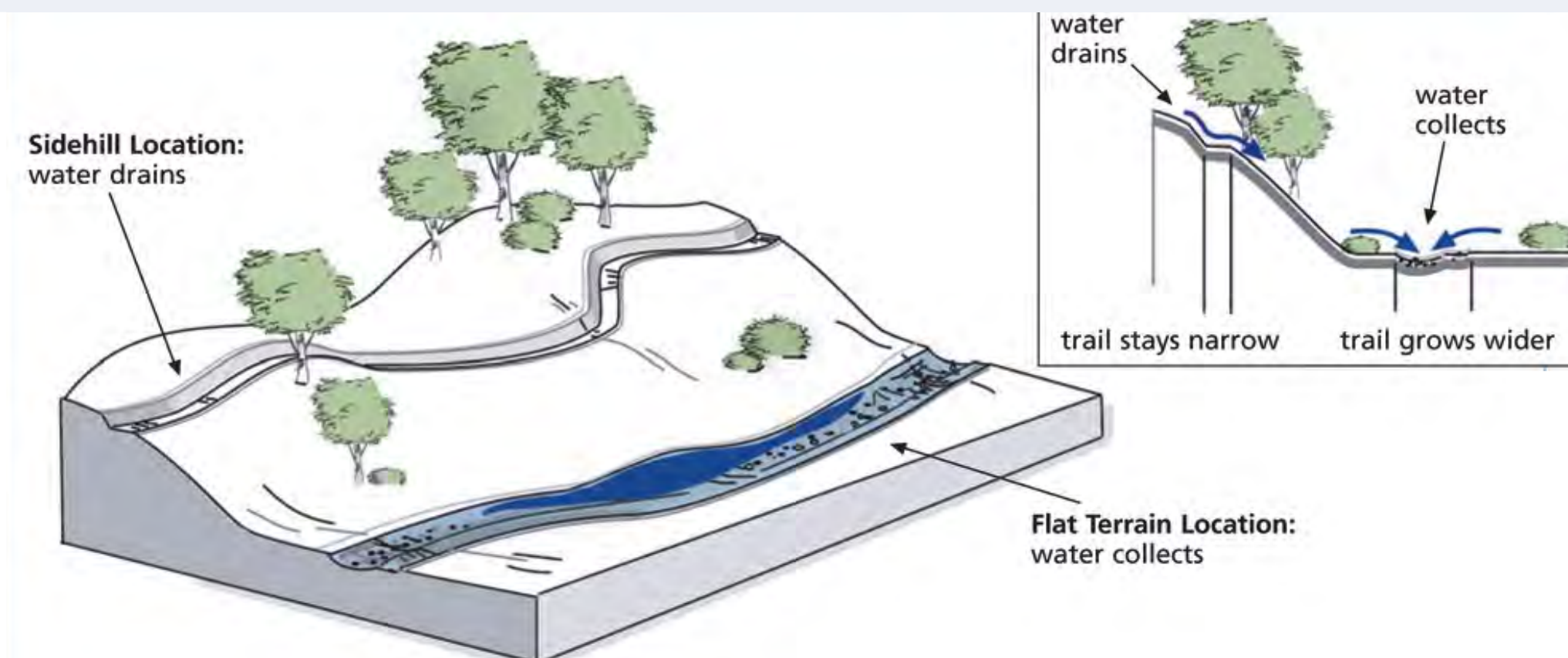
The Effect of Proper Trail Design



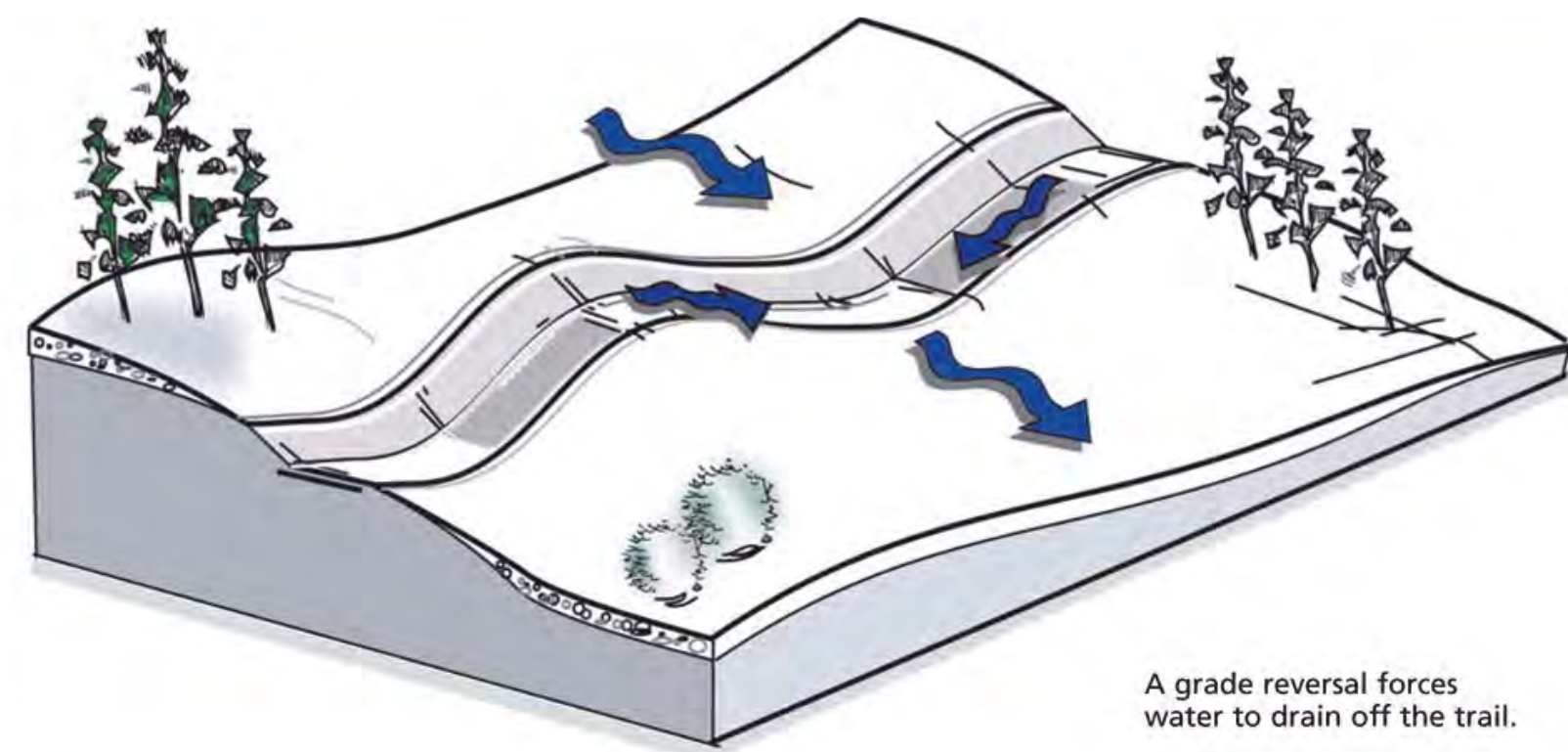
Fall Line Trail Defined



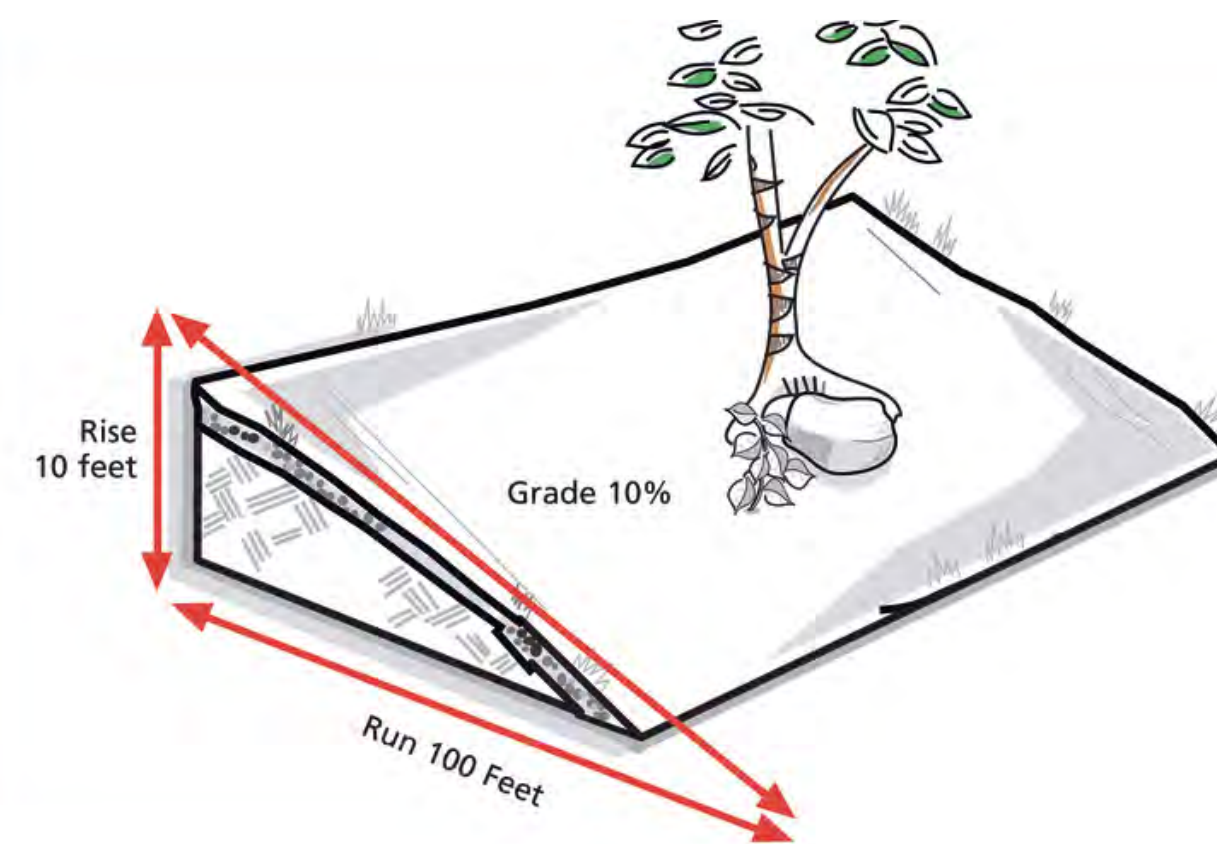
Trail Location: Sidehill Trails Are Best



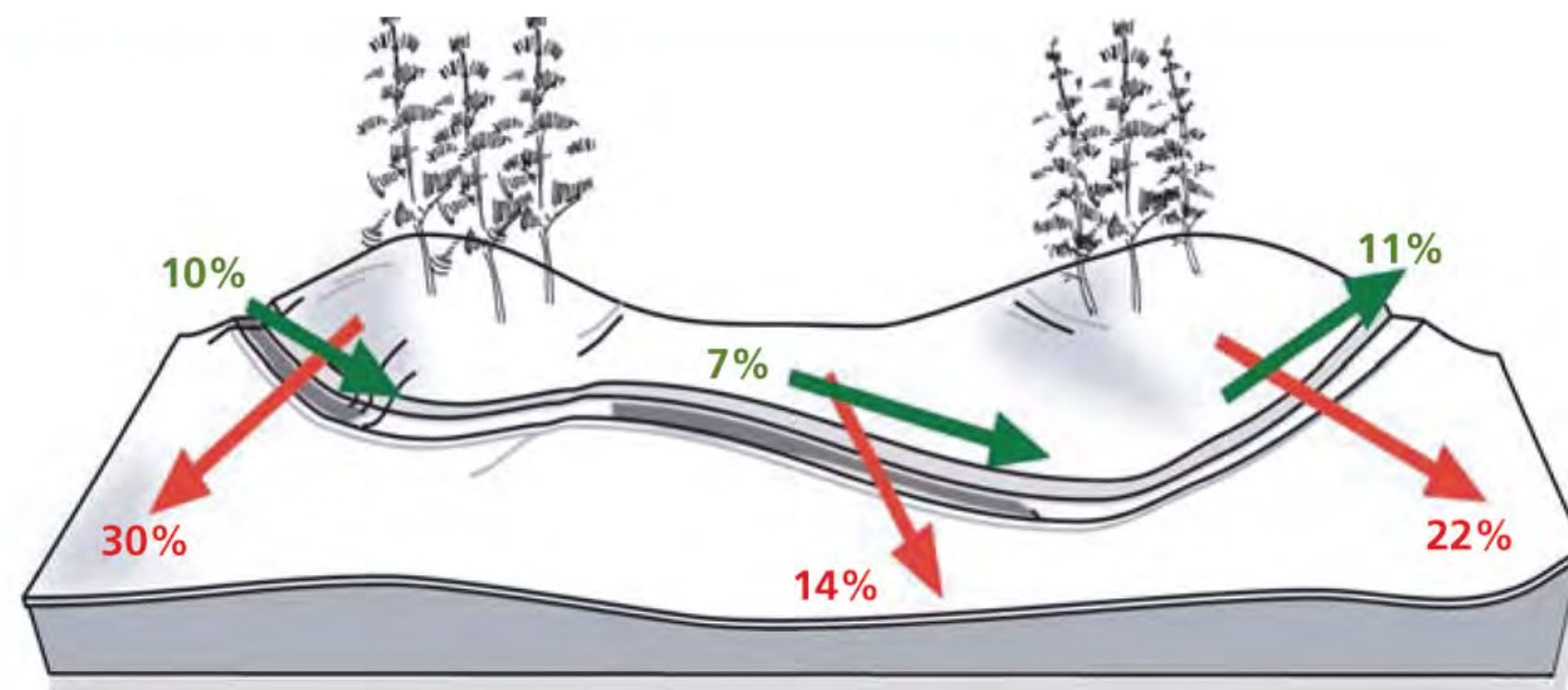
Grade Reversals



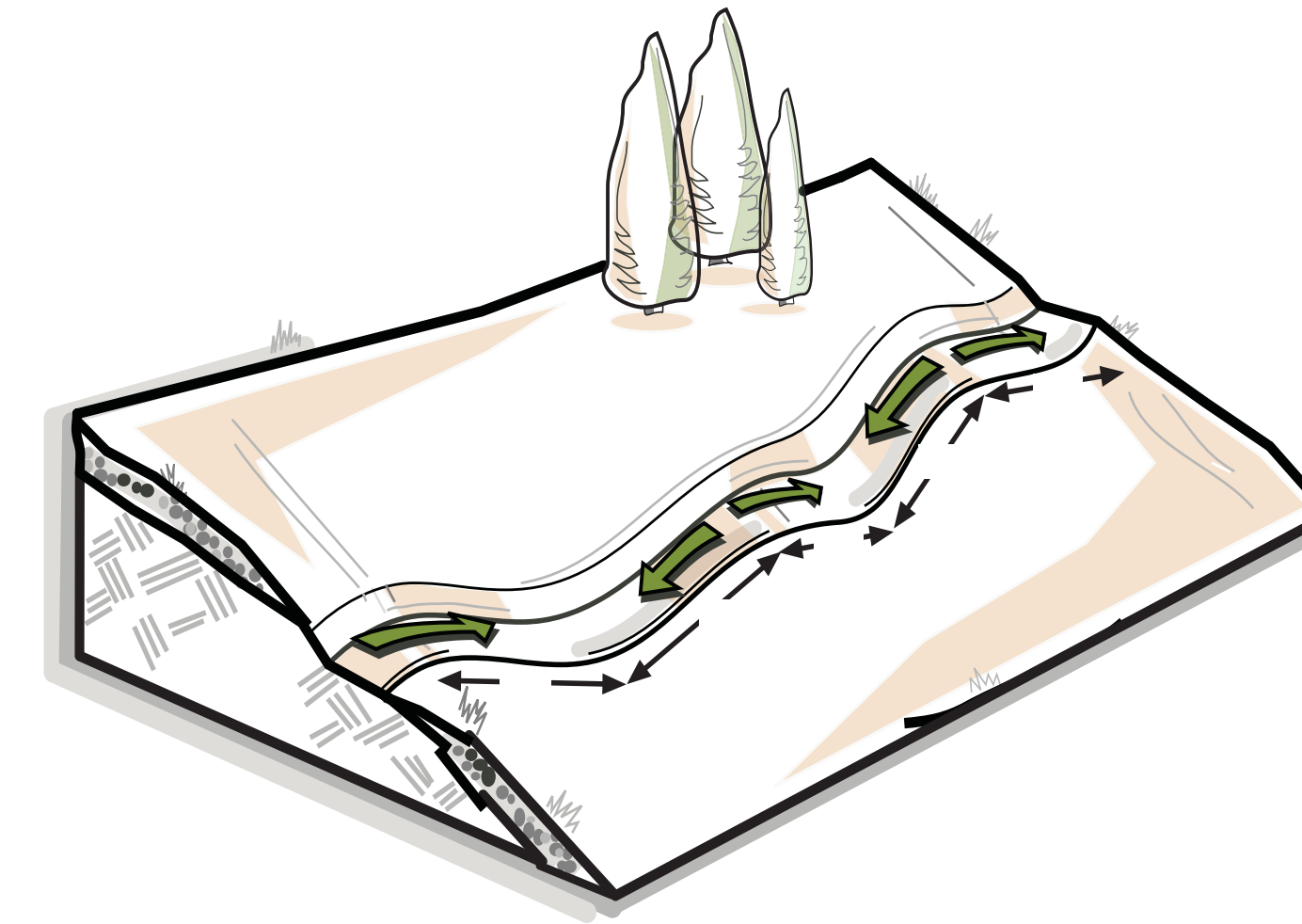
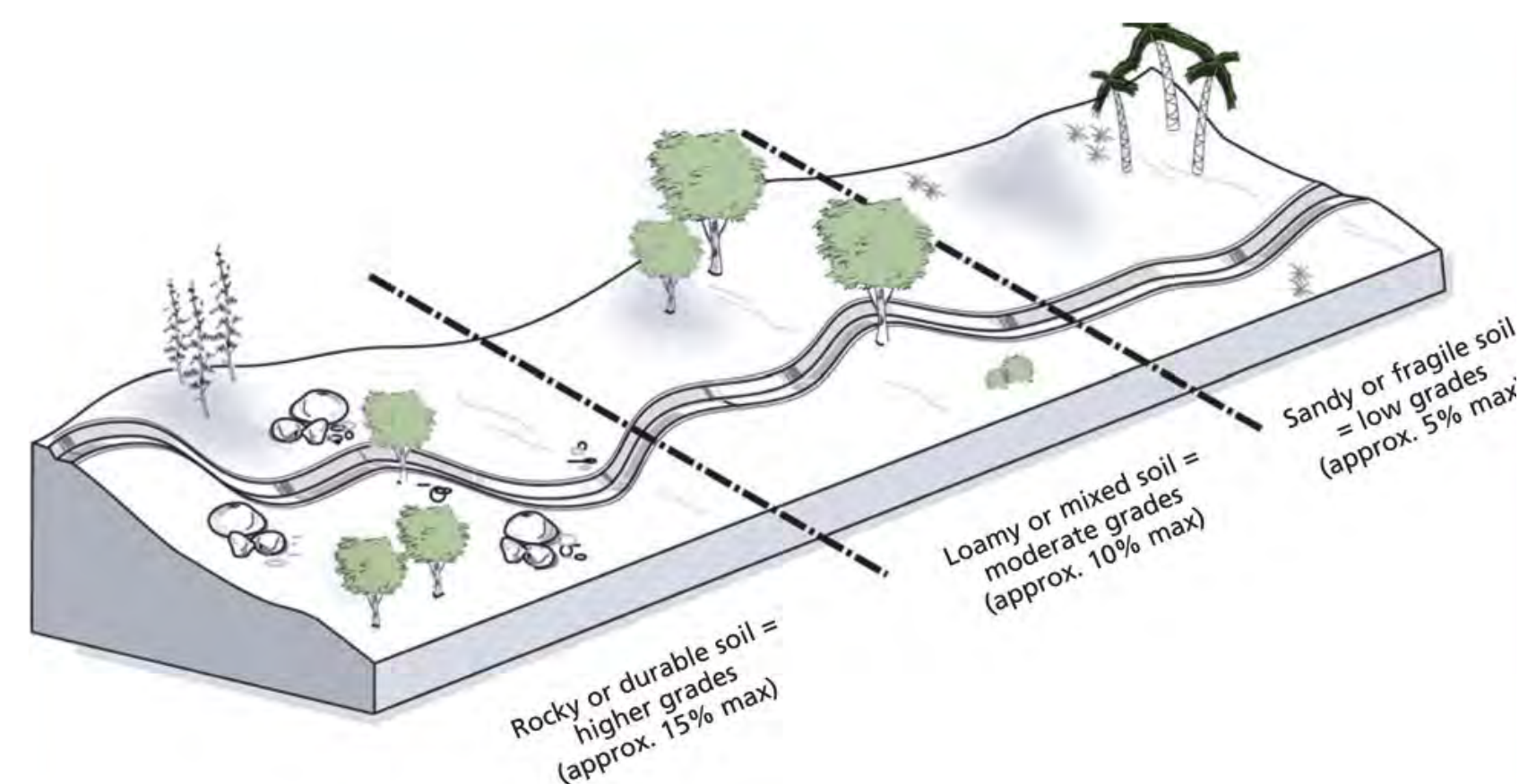
Determining Grade (Rise / Run x 100 = %)



The Half Rule – Trail Grade < ½ Sideslope Grade



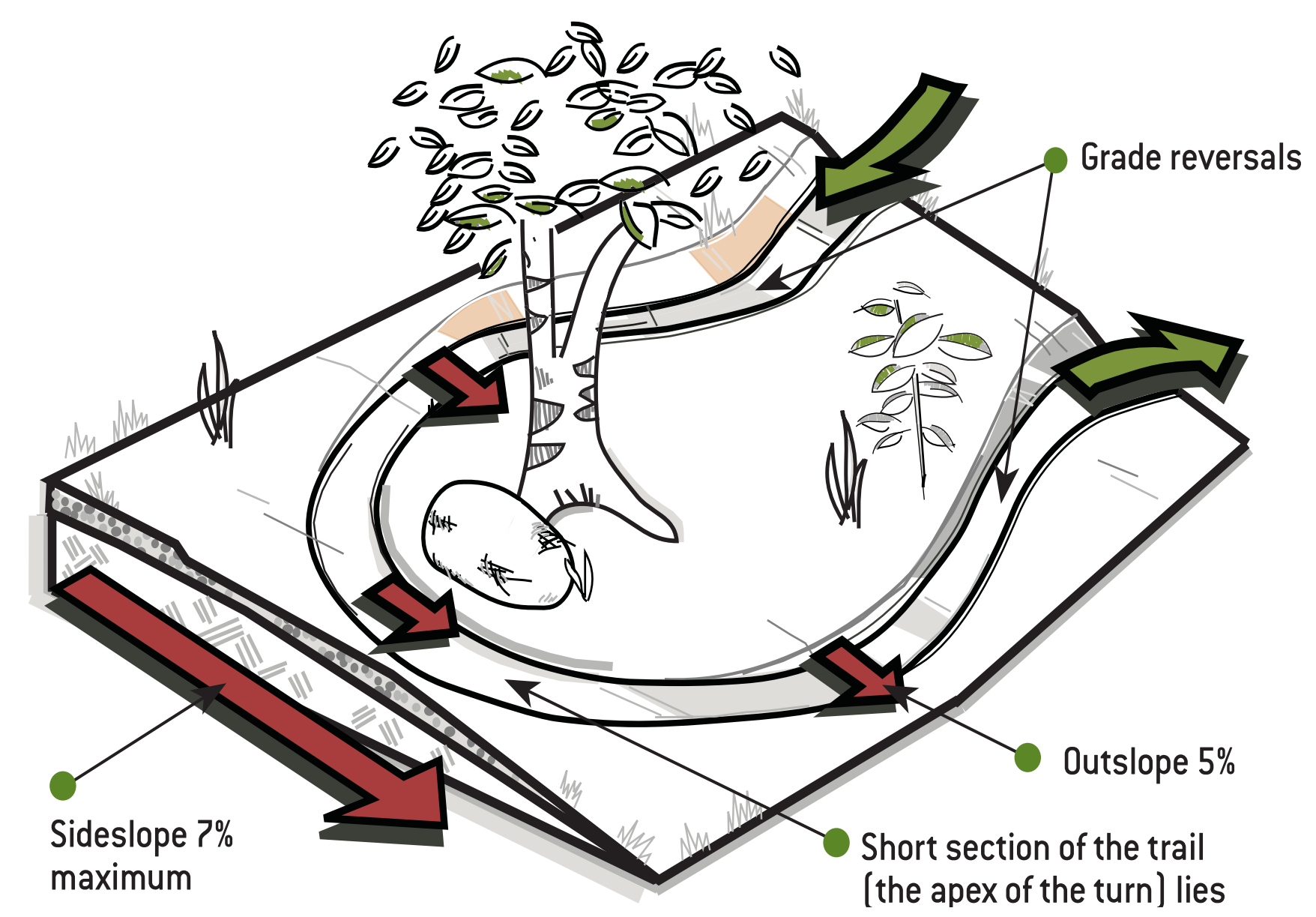
Maximum Sustainable Grade, 15% Dependent



Rolling singletrack is sustainable and fun to ride

Four Essential Elements of Sustainable Trails

- 1 The Half Rule:** A trail's grade shouldn't exceed half the grade of the hill-side or slope-side that the trail traverses.
- 2 Maximum Sustainable Grade:** Usually between 5% and 15%. Find a trail in your area that has lasted well under frequent use to determine your area's specific needs.
- 3 Grade Reversals:** A short (10-50 feet) section of trail where the grade dips down, then rises, allowing water to shed off the side of the trail.
- 4 Outslope:** The trail tread should tilt slightly down and away from the high side of the trail, encouraging water to sheet across and off the trail.



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MONO POND STATE PARK
TRAIL PLANNING & DESIGN
TRAIL TYPICALS & SPECIFICATIONS
COLUMBIA, CT

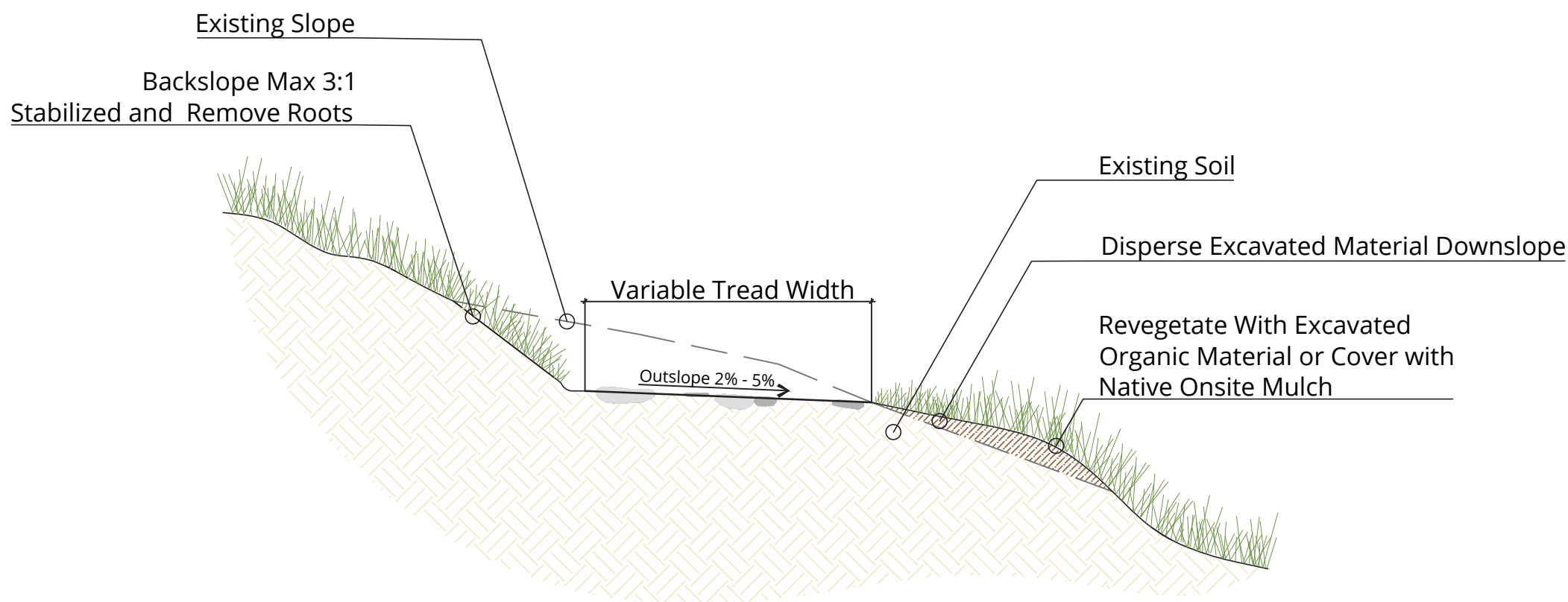
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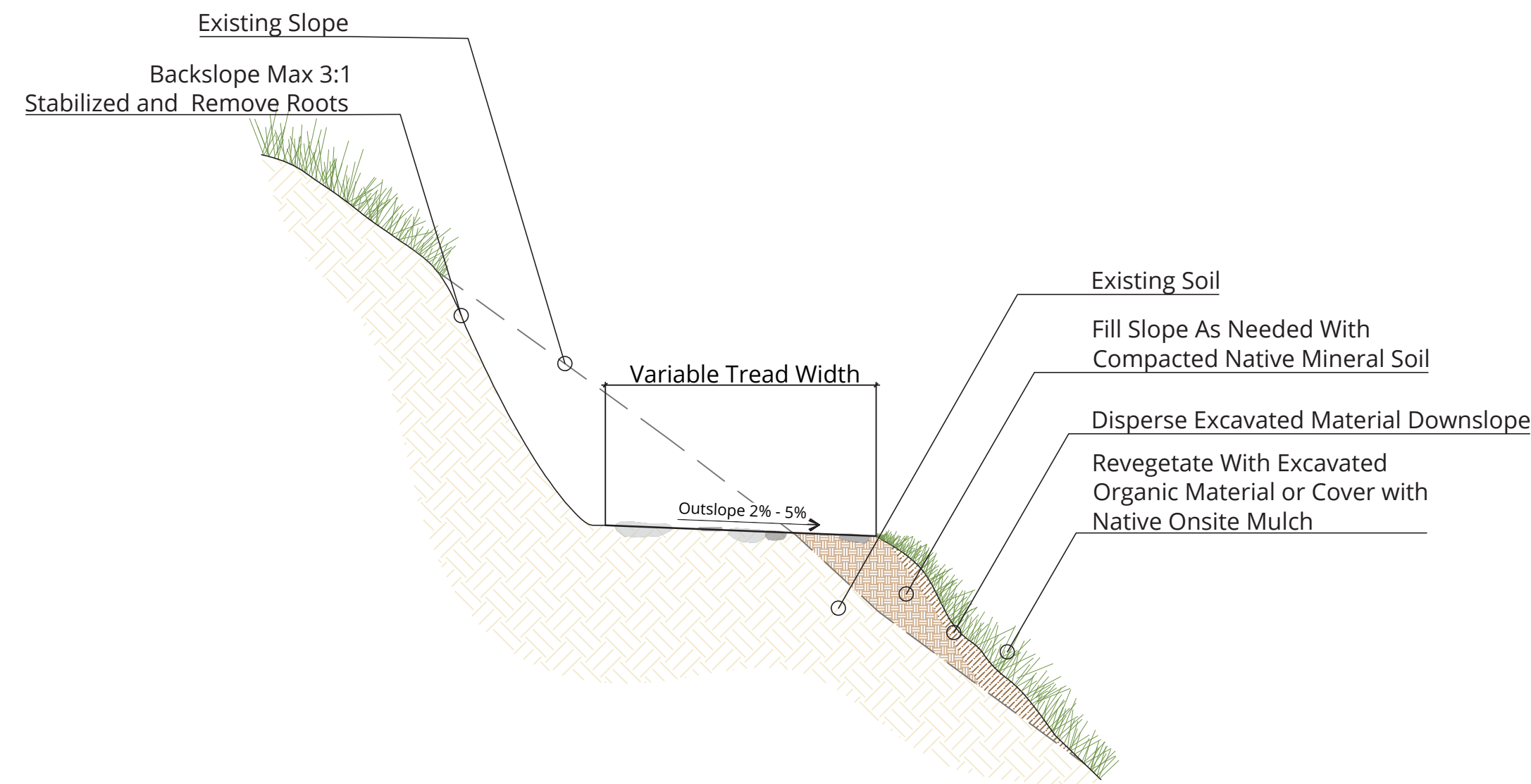
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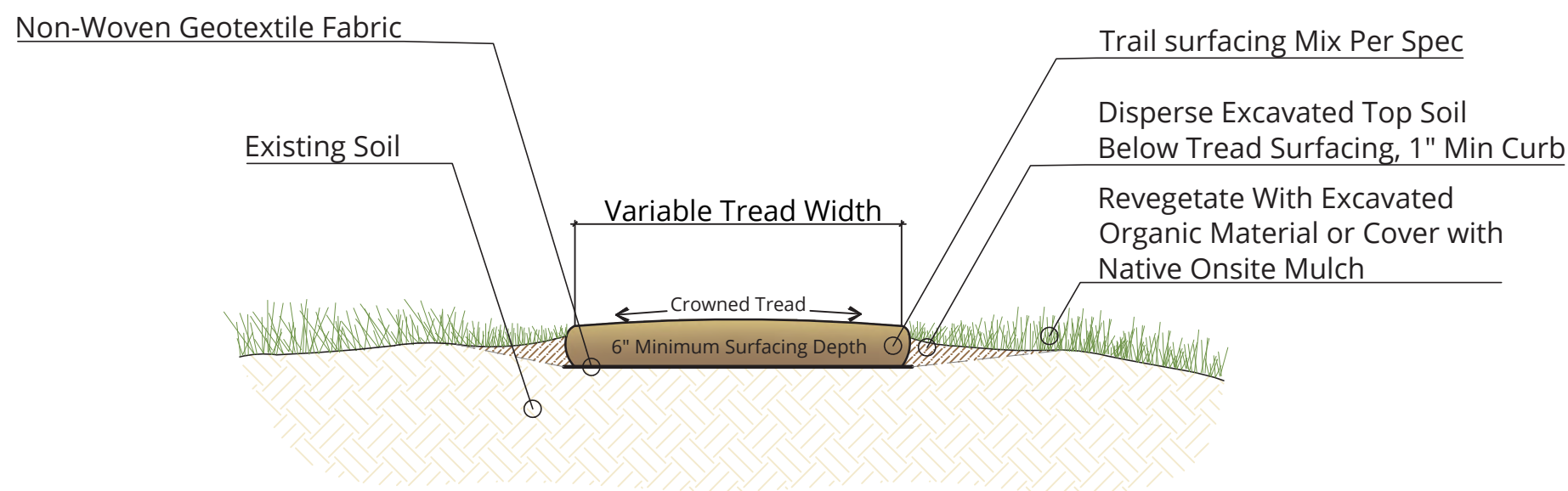
Full Bench Sidehill: Moderate Slope, Open Terrain

Typical Cross Section



Partial Bench Sidehill: Steep Slope >50%, Open Terrain

Typical Cross Section



Imported Trail Surfacing: Crowned Tread, Open Terrain

Typical Cross Section

Notes:
Trail Surface finish will be determined by trail type and ability level.

Beginner Tread

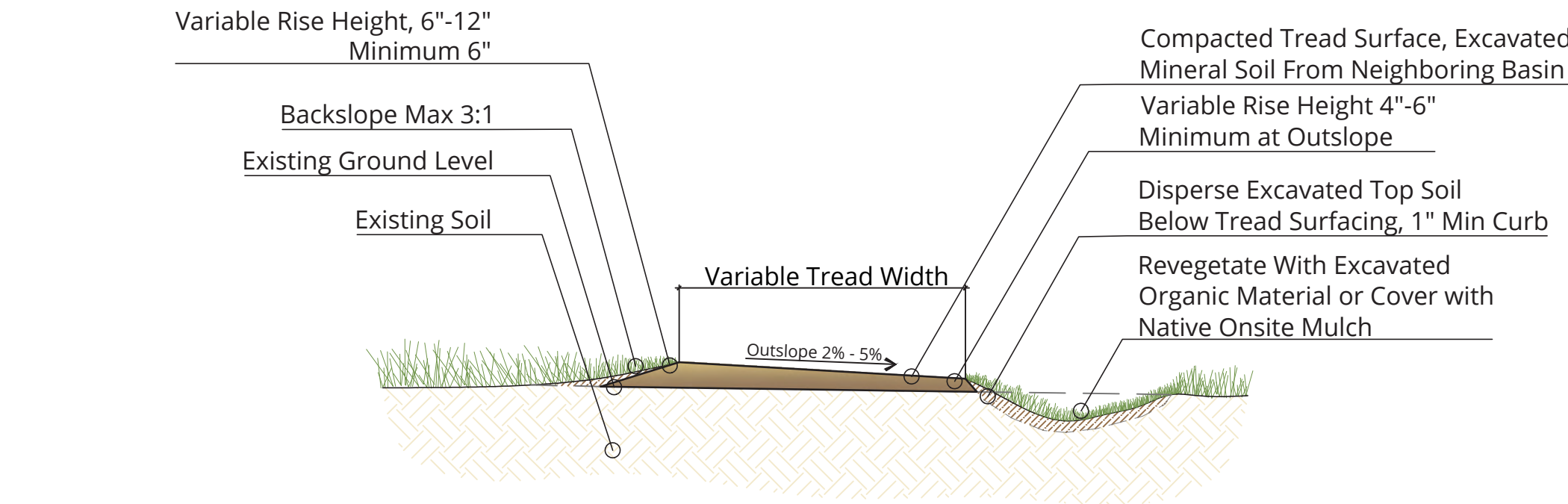
Firm and stable tread surface with minimal natural obstacles such as rocks and roots. May include rock surfacing or armoring. Avoidable obstacles will be less than 2" partial width of tread or less than 5" over full width of tread.

Intermediate Tread

Firm to semi-firm tread surface with some natural obstacles such as rocks and roots. May include rock surfacing or armoring. rocks may be uneven. Avoidable obstacles should be less than 8" over 50% of the tread or less.

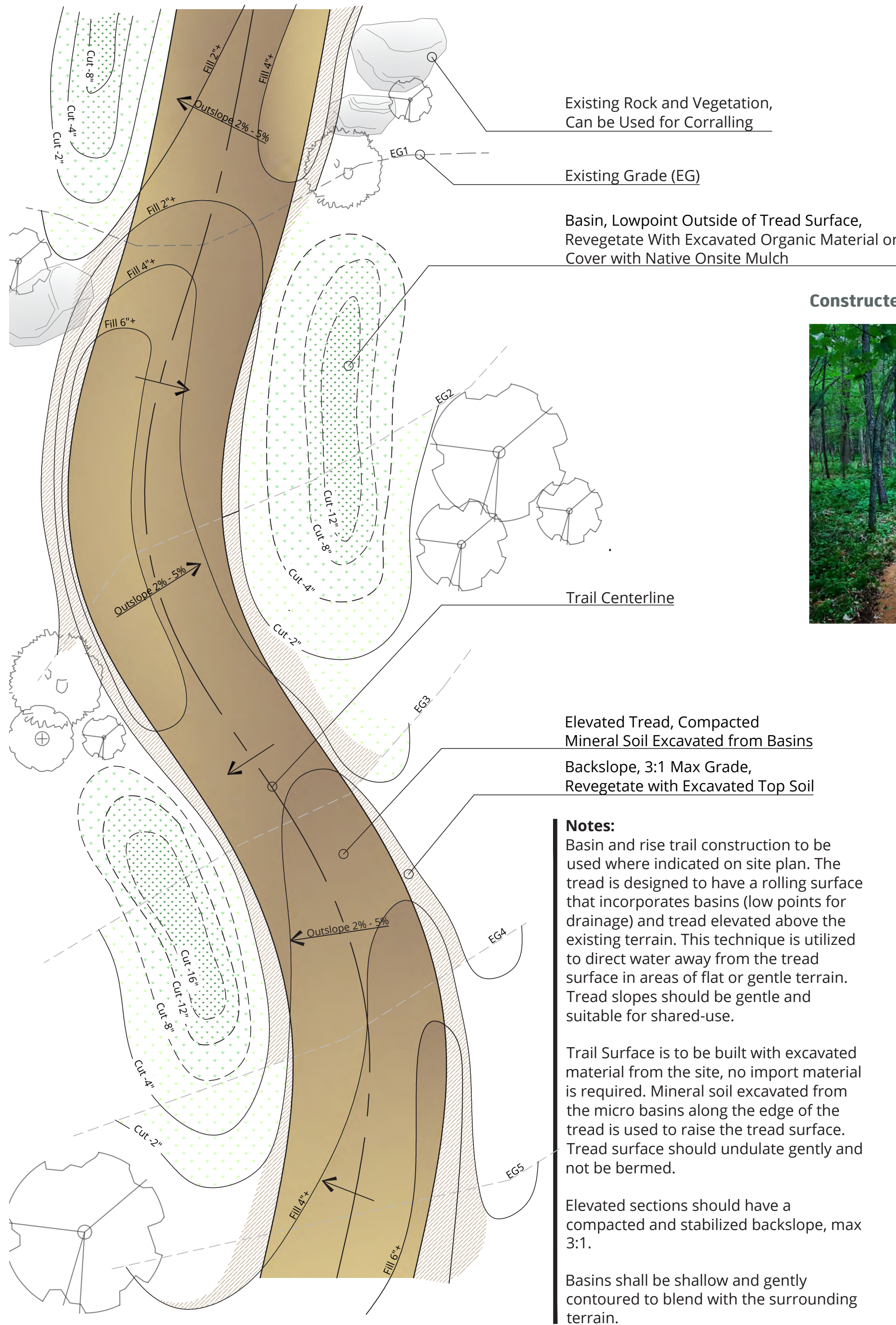
Advanced Tread

Firm, semi-firm, to loose tread surface can include natural obstacles such as rocks, roots, or other obstacles. Trail surface may be variable. May include rock surfacing or armoring. rocks may be uneven. Avoidable obstacles should be less than 16" over 50% of the tread or less for shared use trails. No restrictions for obstacles on mountain bike only downhill trails.



Basin & Rise Trail, Open Terrain

Typical Cross Section



Basin & Rise Trail

Typical Plan View



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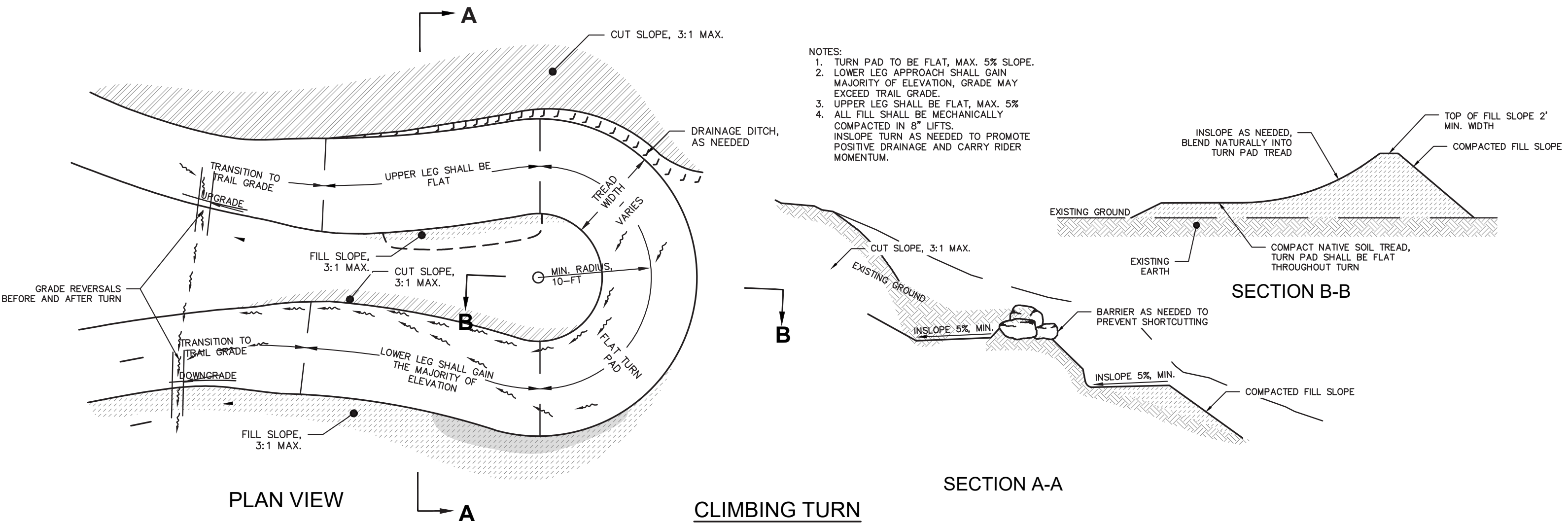
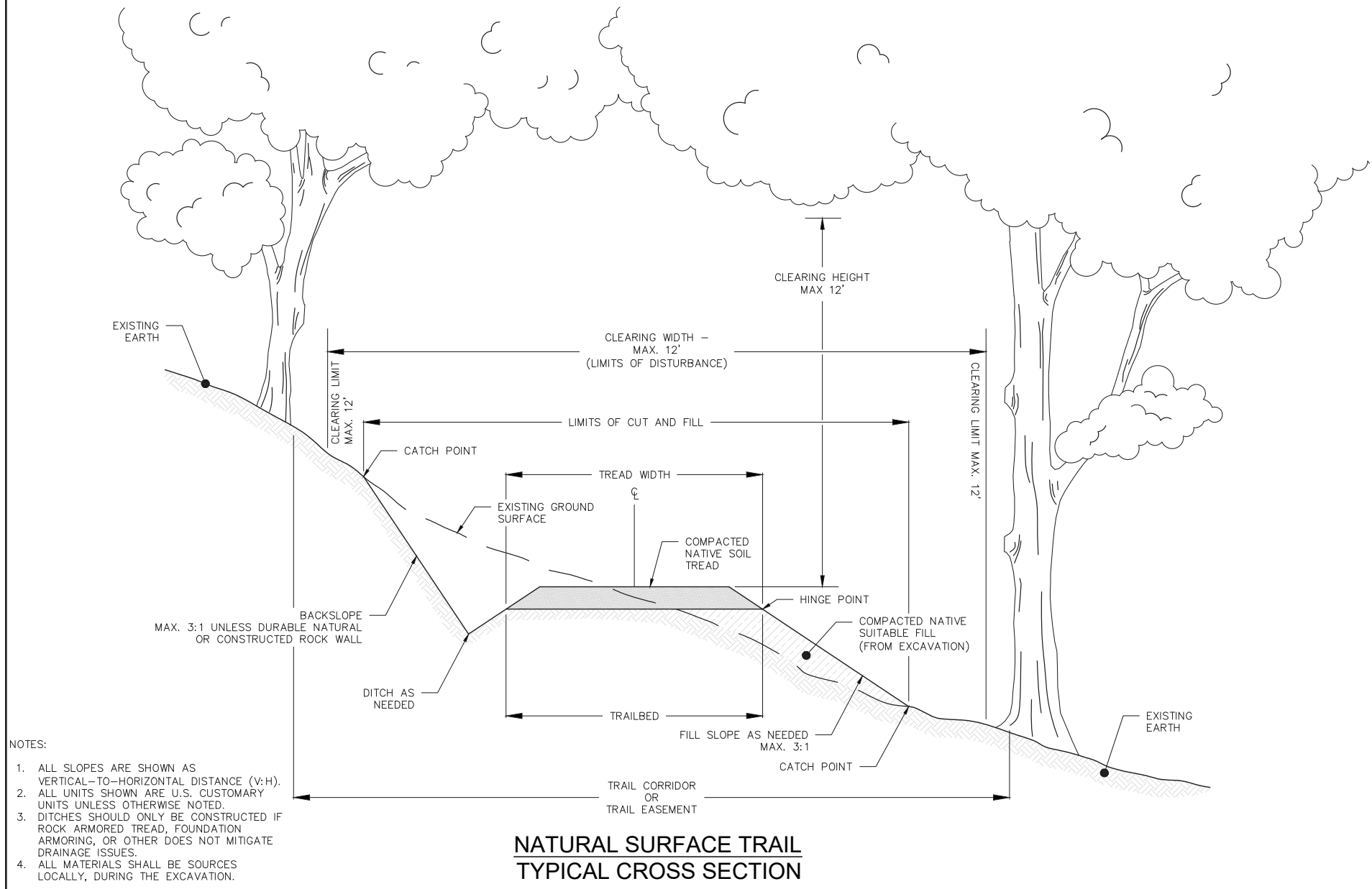
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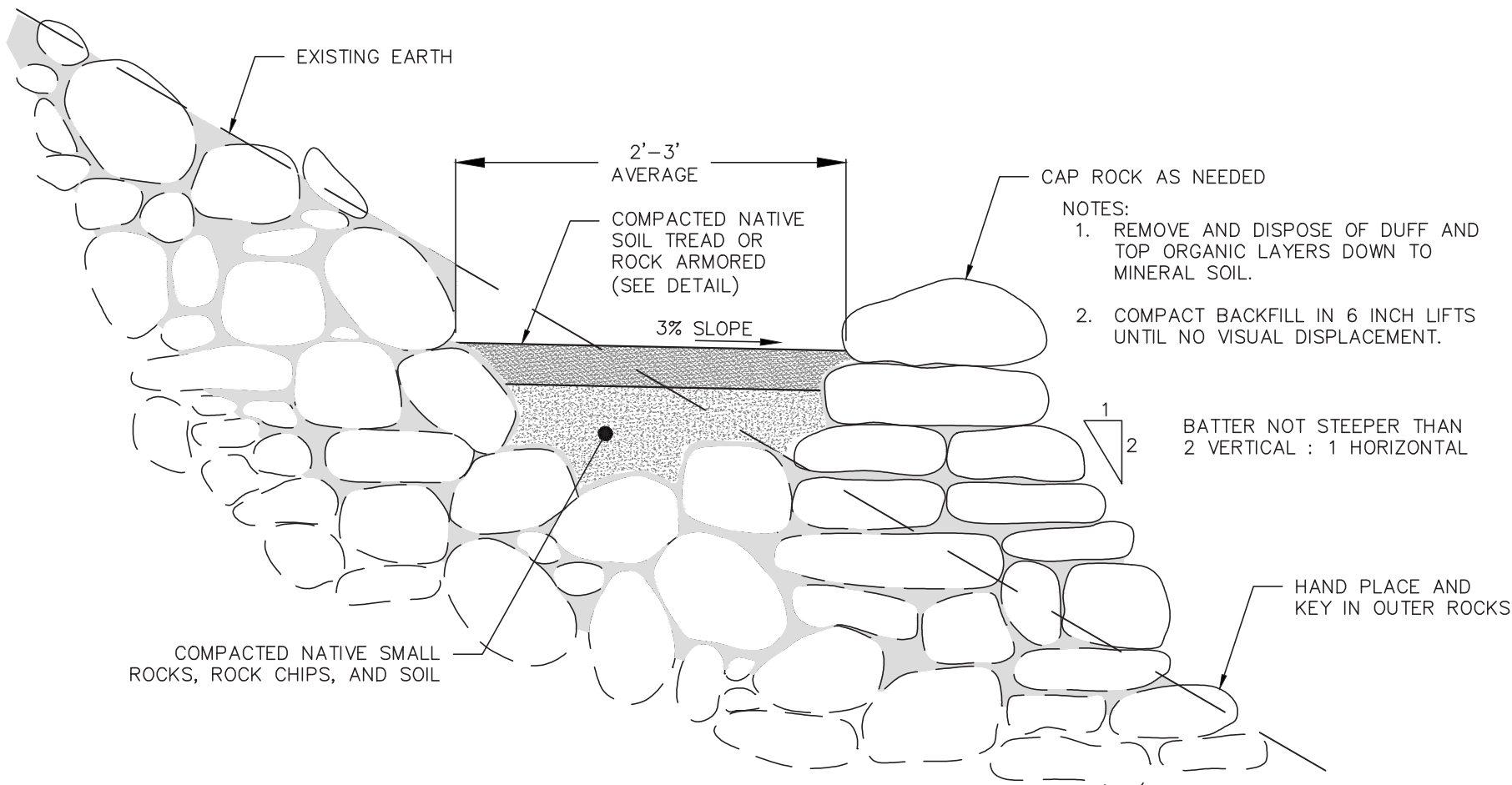
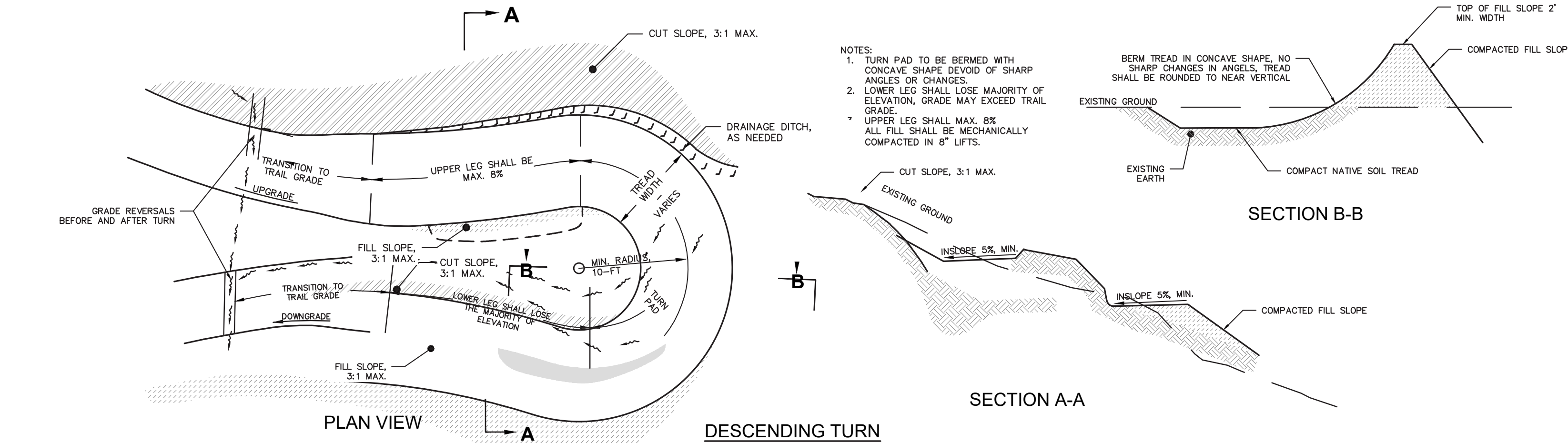
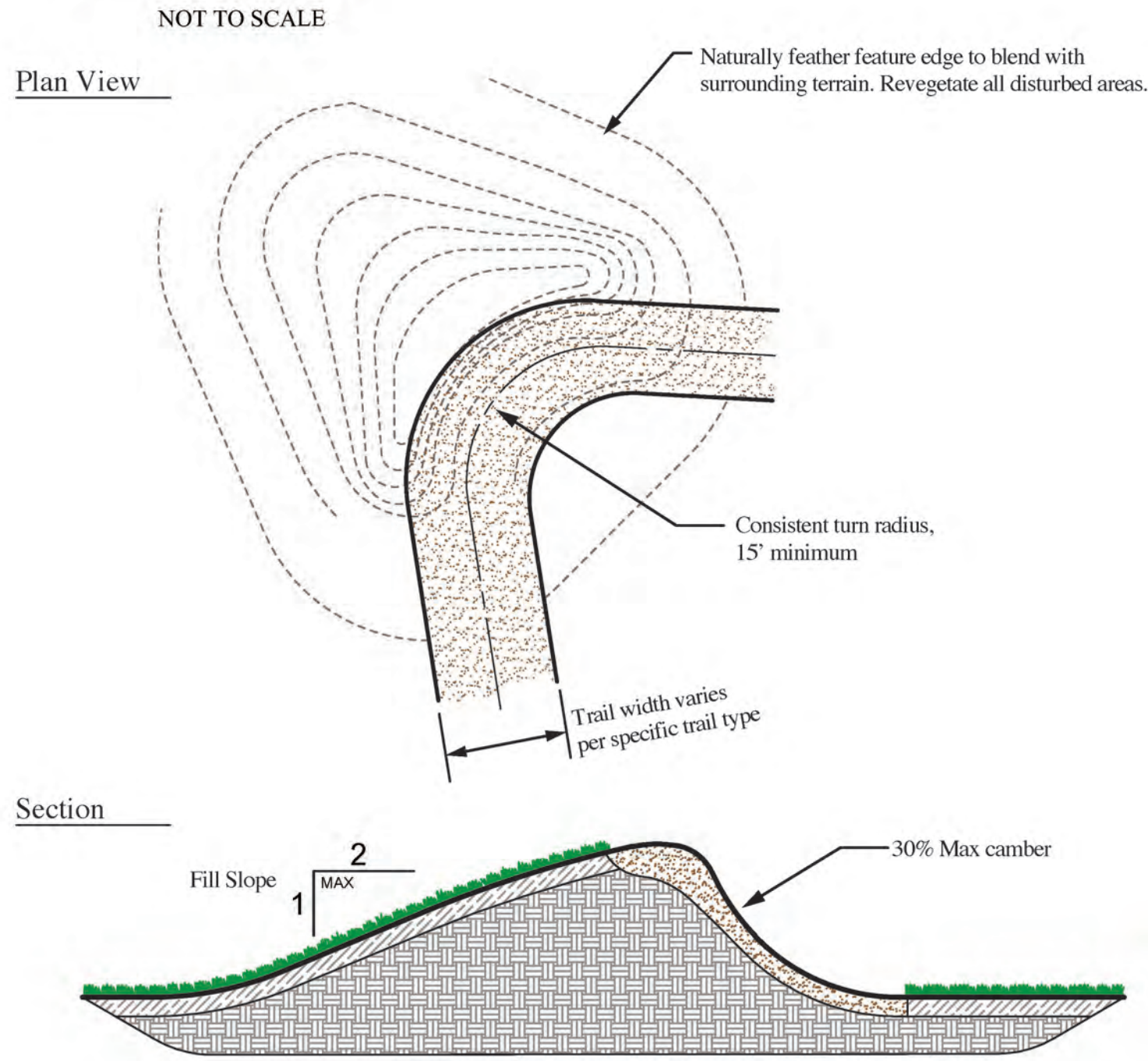
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SHEET TITLE:



2.7.1 Dirt Berm



TRAIL CONSTRUCTION - TALUS SLOPE
TYPICAL CROSS SECTION



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MONO POND STATE PARK TRAIL PLANNING & DESIGN TRAIL TYPICALS & SPECIFICATIONS COLUMBIA, CT

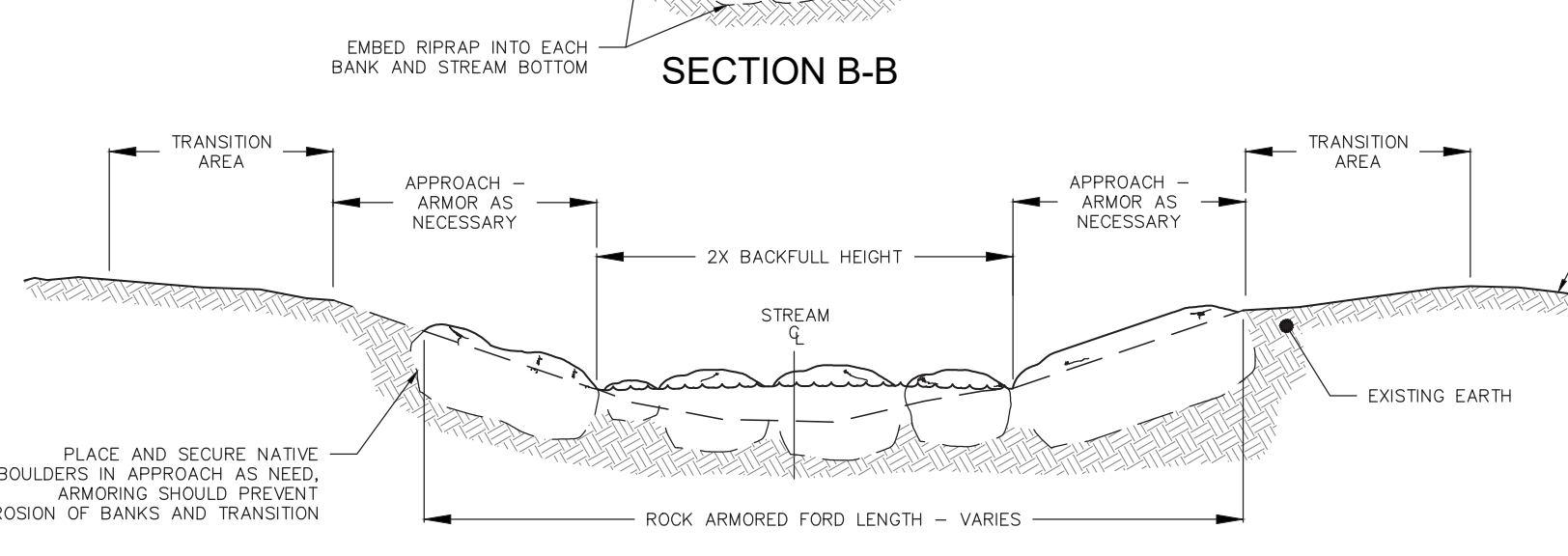
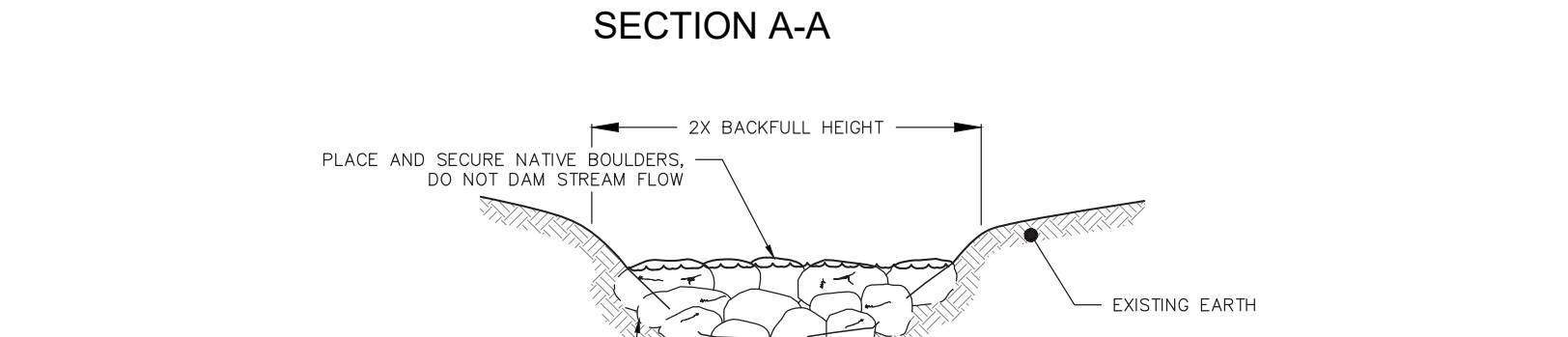
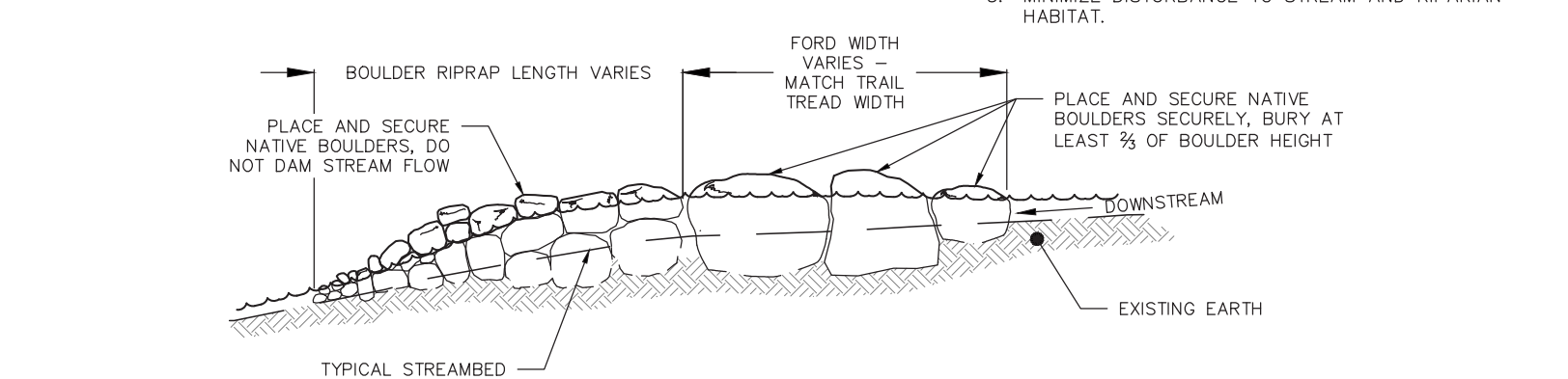
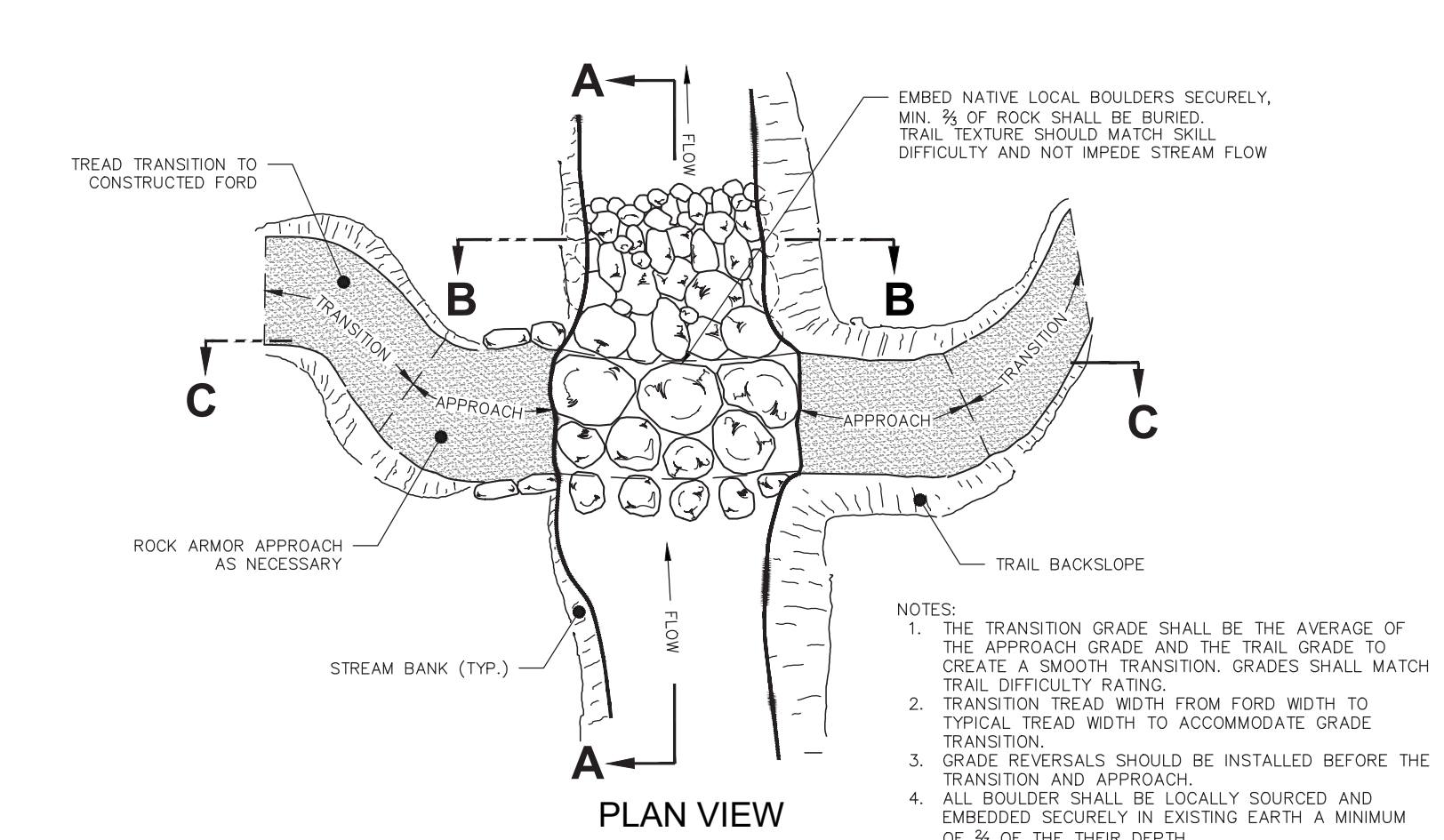
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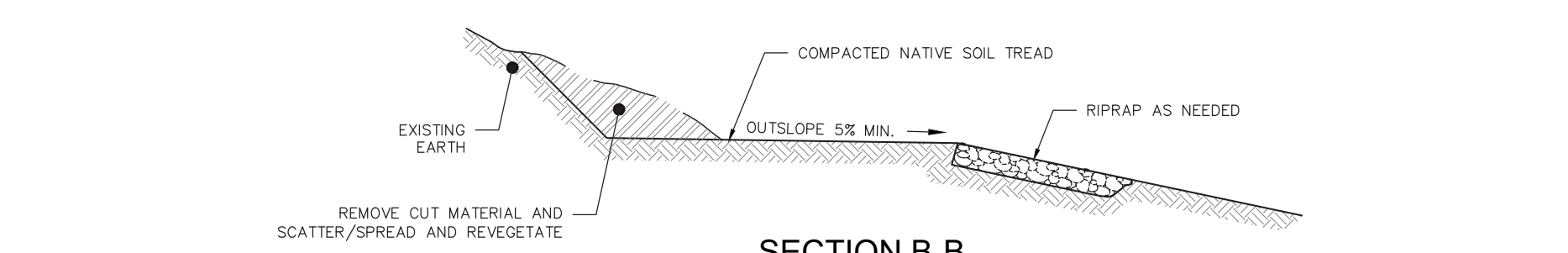
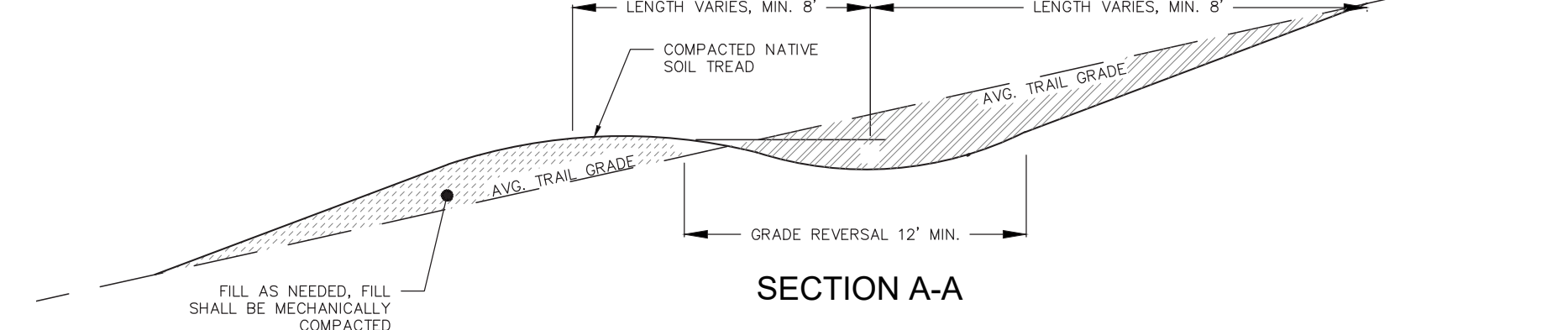
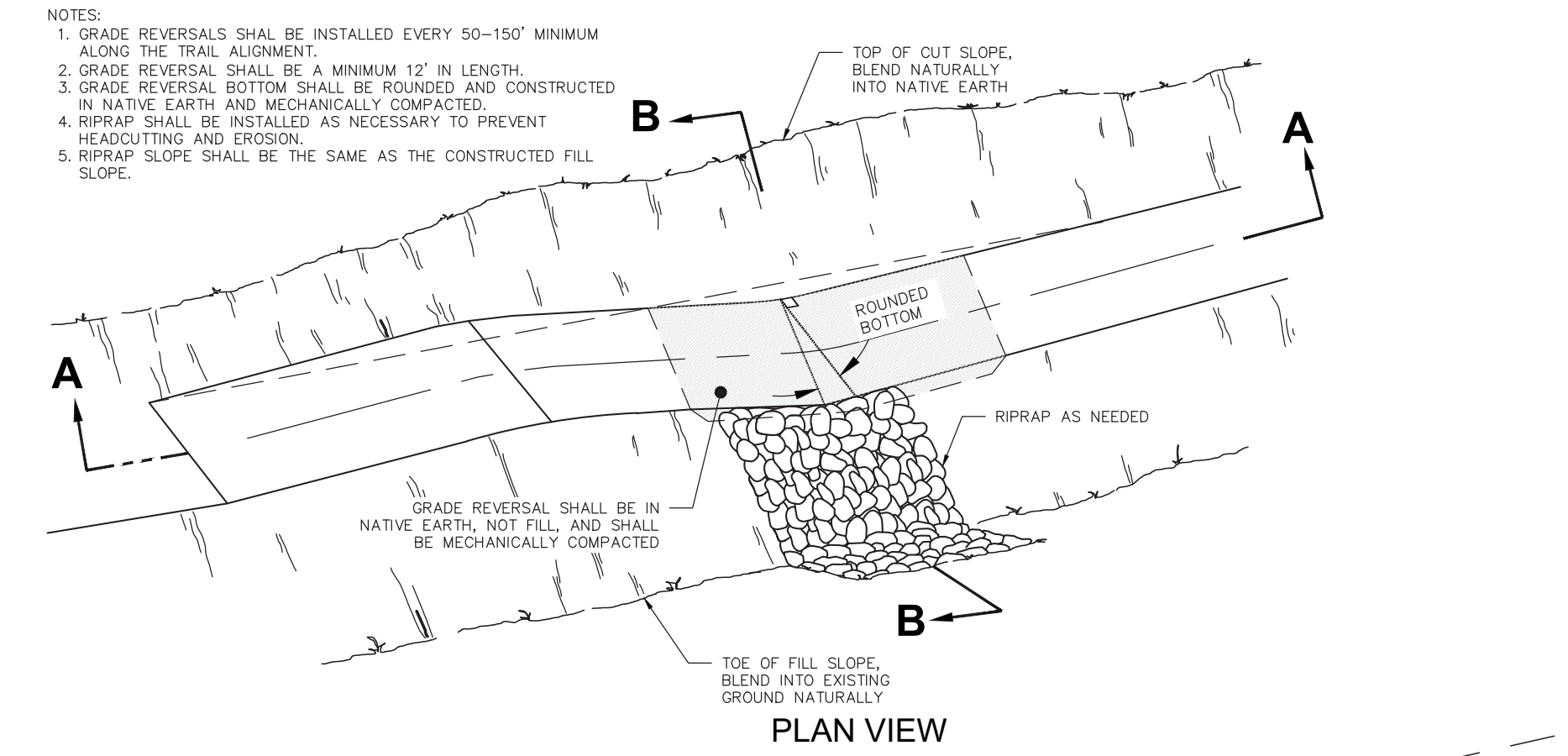
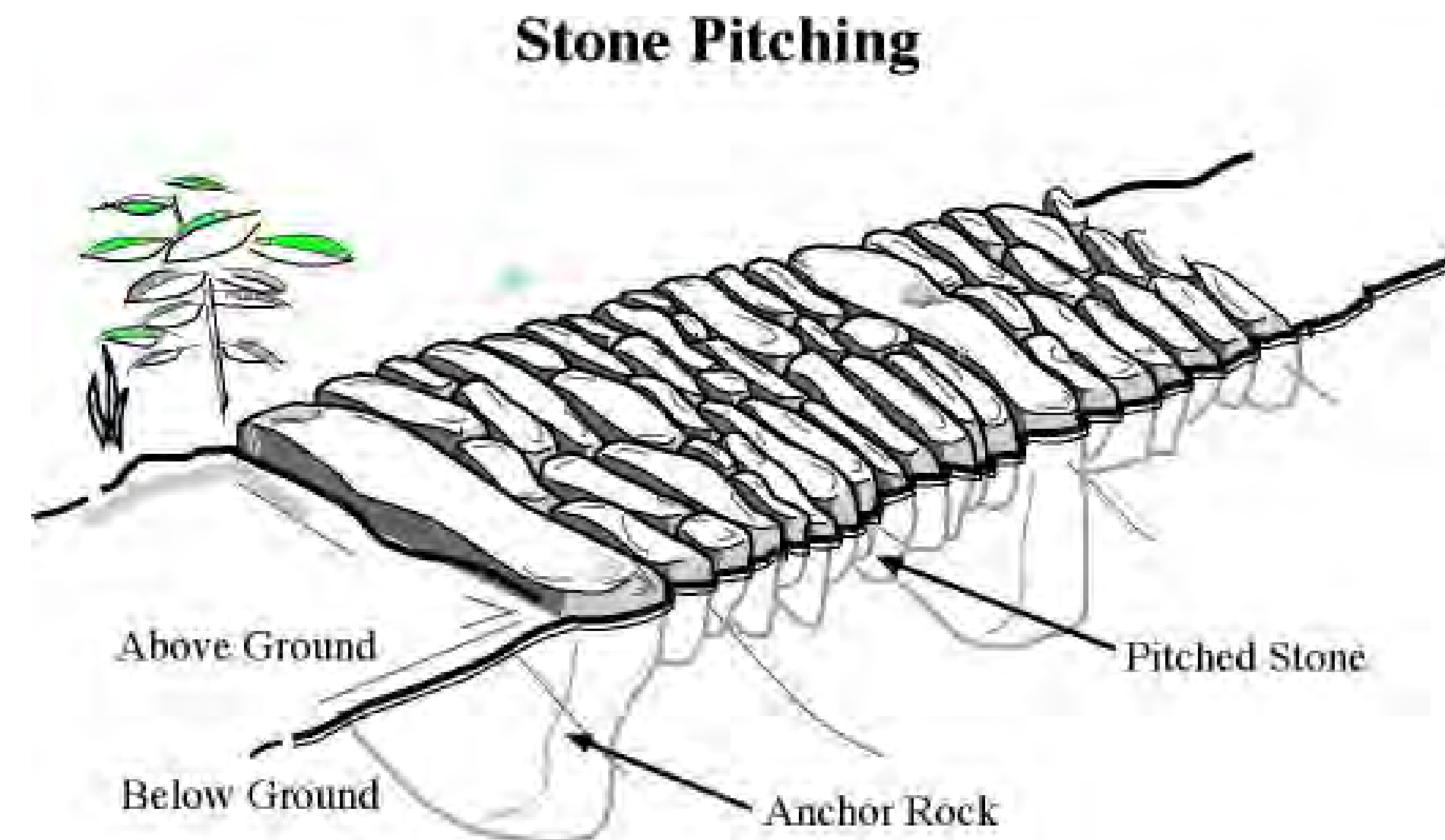
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REVISION:

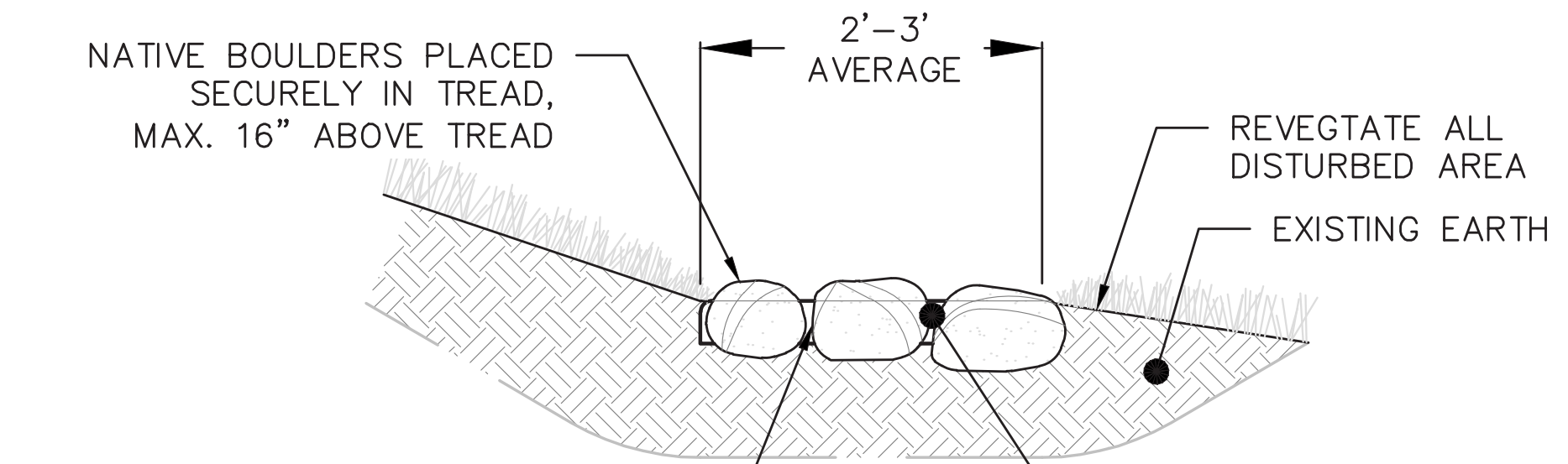
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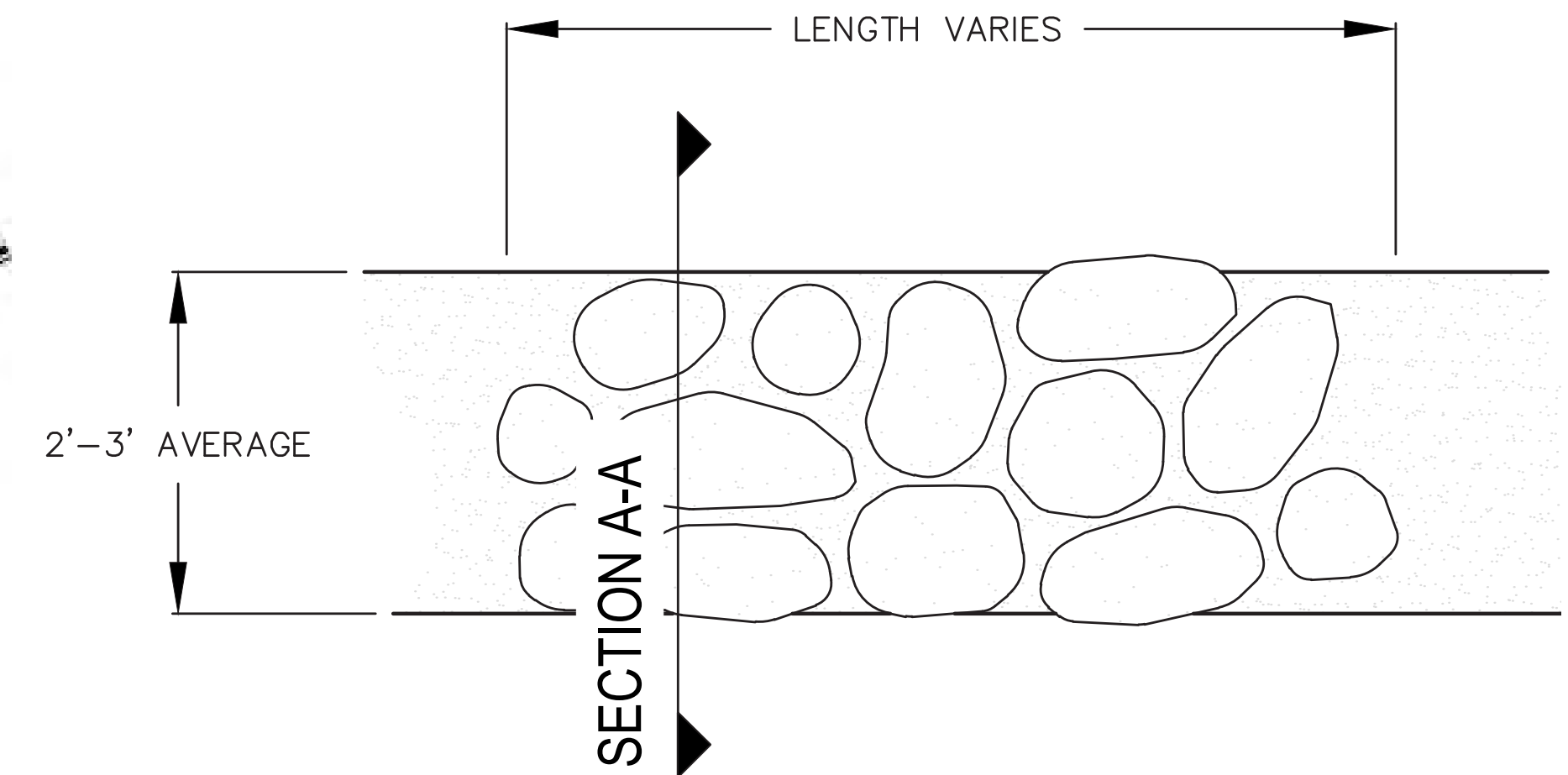
SECTION C-C
CONSTRUCTED ROCK ARMORED FORD



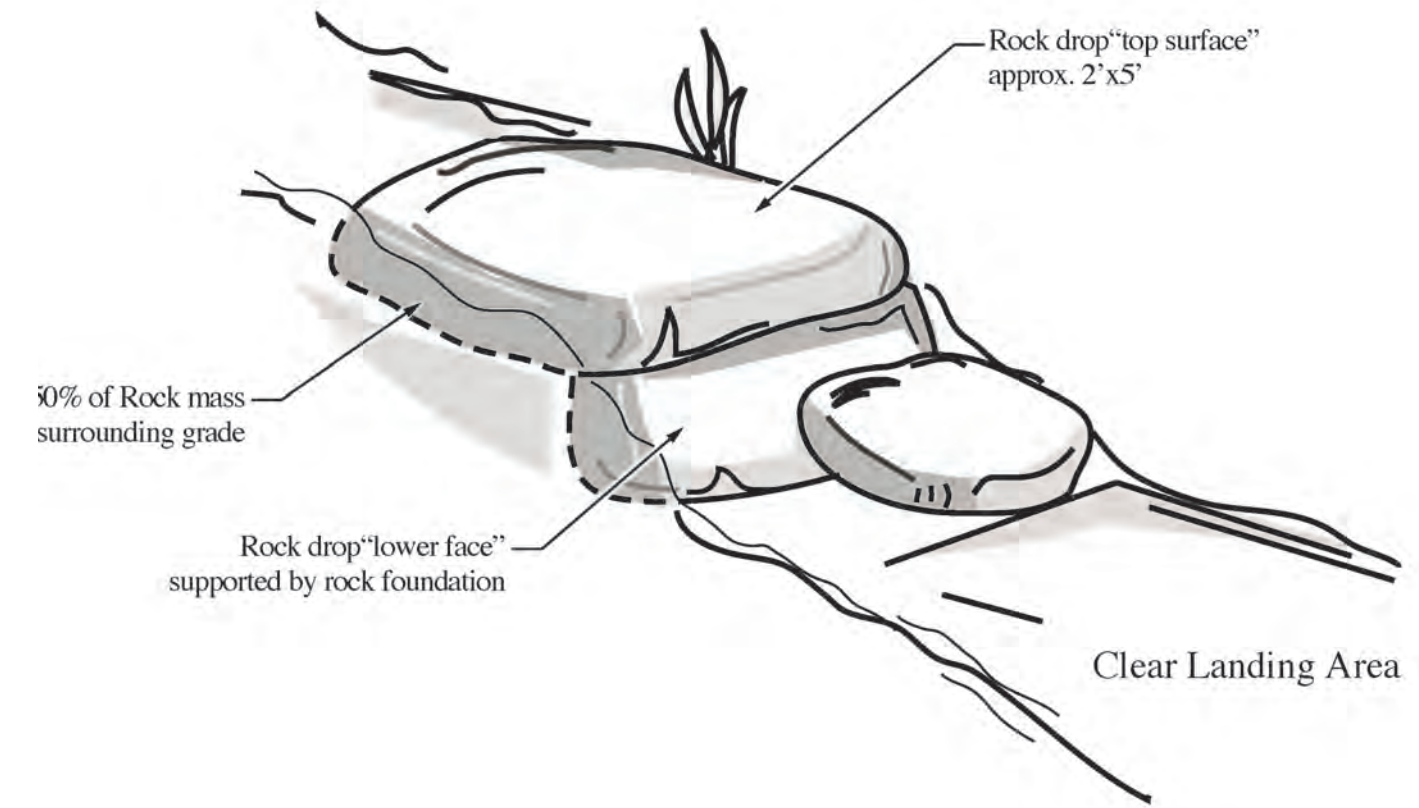
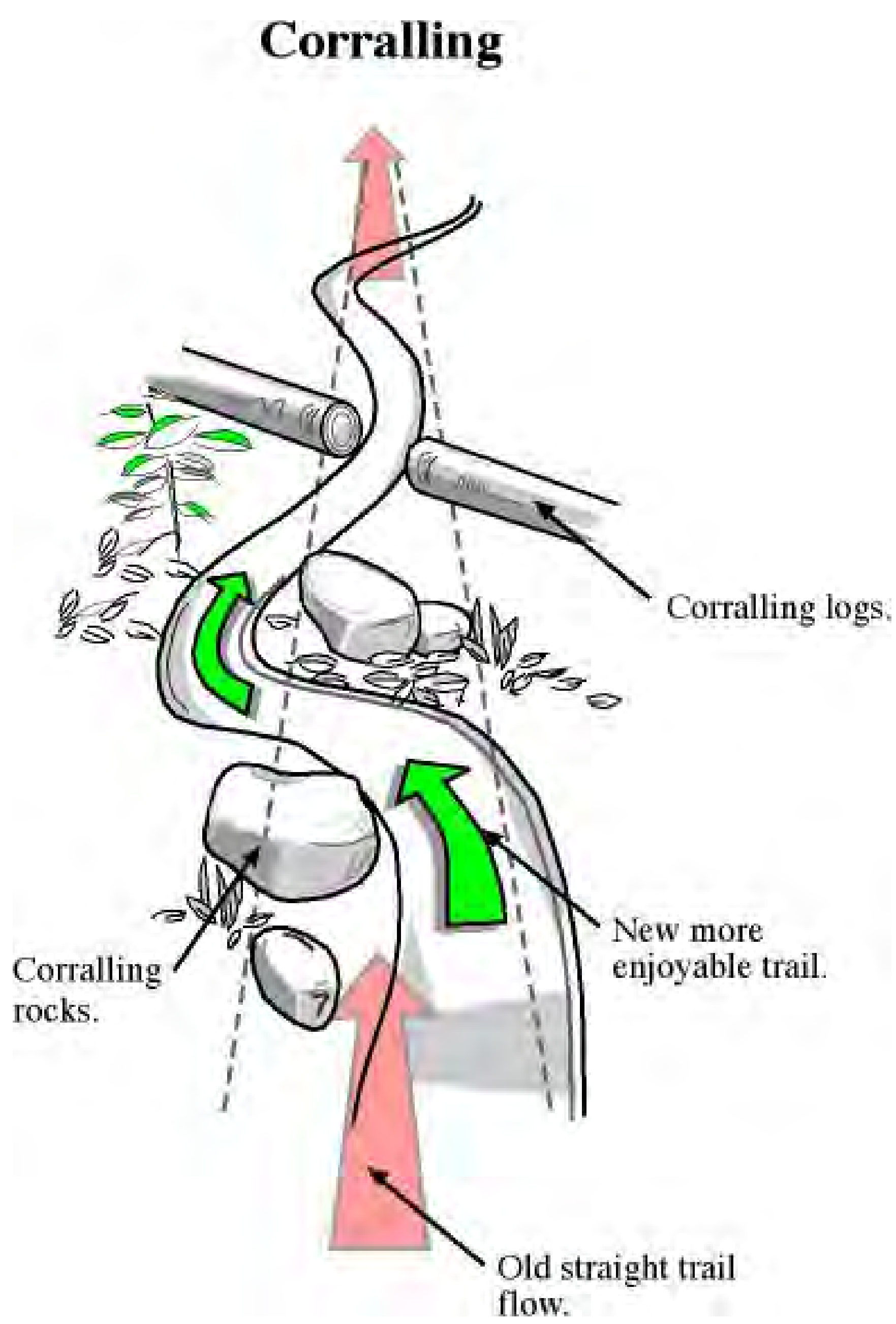
SECTION B-B
GRADE REVERSAL



SECTION A-A



ROCK ARMORED TREAD
TYPICAL PLAN AND CROSS SECTION



P.O. Box 20280
Boulder, CO 80308
303.545.9011
www.IMBA.com

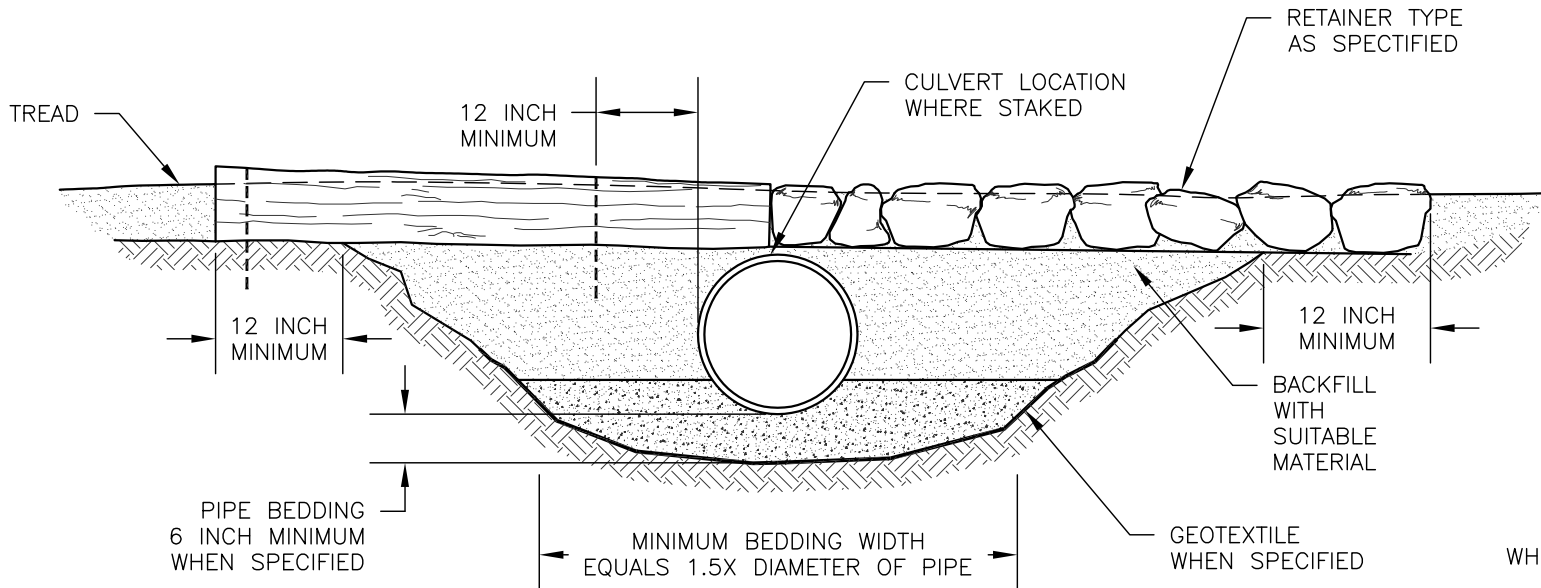
MONO POND STATE PARK
TRAIL PLANNING & DESIGN
TRAIL TYPICALS & SPECIFICATIONS
COLUMBIA, CT

PROJECT:	SHEET TITLE:
DATE:	
REVISION:	
SHEET NUMBER:	

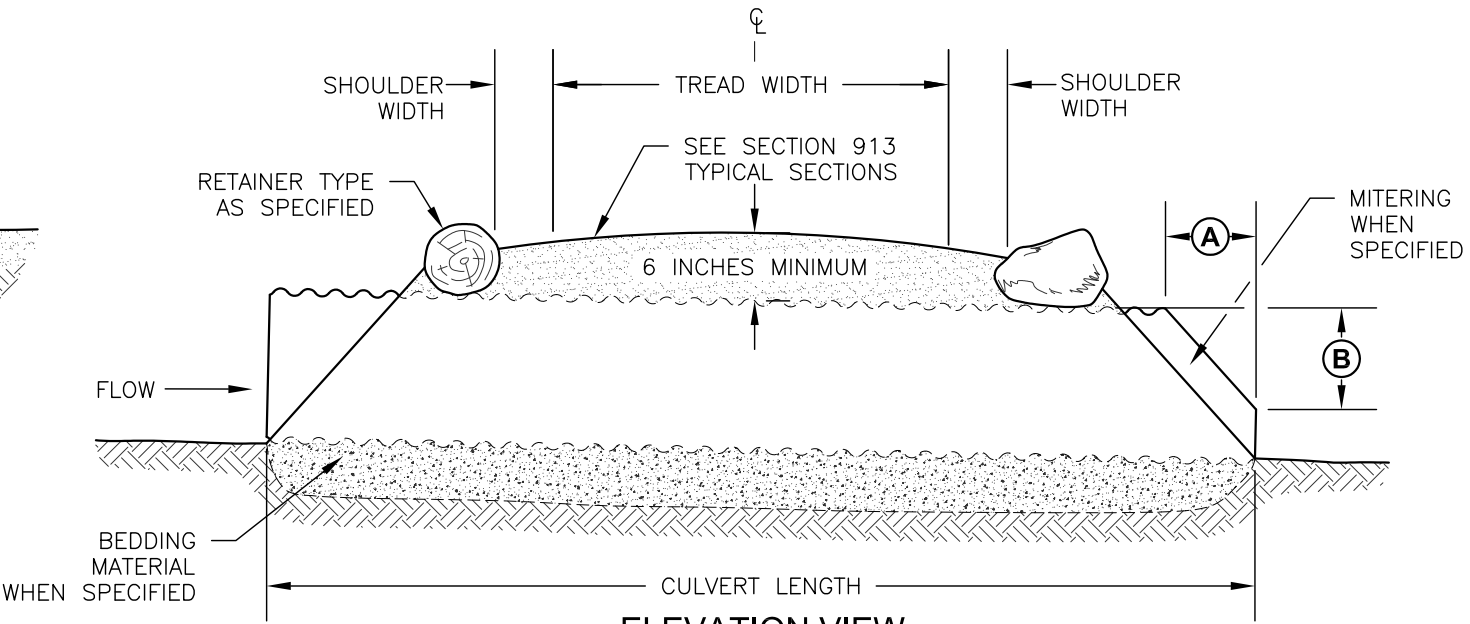
STANDARD CULVERT

		BEDDING	CULVERT			RETAINER*	COMMENTS
TYPICAL ID	GEOTEXTILE TYPE	TYPE	TYPE	MITERING		TYPE	
				(A)	(B)		
SCV-1		B	C			R	

N/A WHEN NOT APPLICABLE
*FOR TYPICAL RETAINERS SEE SHEET STD_911-03



END VIEW



ELEVATION VIEW

CULVERT TYPE

TYPE	MATERIAL	COMMENTS
C1	CMP - GALV	
C2	HDPE	
C3	PLASTIC	
C4	ALUMINUM	
C5	CONCRETE	
C6		

NOTE:
1. COMPACT BACKFILL IN 6 INCH LIFTS UNTIL NO VISUAL DISPLACEMENT.
2. NO ROCKS LARGER THAN 1 1/2 INCHES WITHIN 12 INCHES OF PIPE.

BEDDING MATERIAL TYPE

TYPE	MATERIAL	GRADATION	COMMENTS
B1	PITRUN		
B2	AGGREGATE		
B3			

[illegible]

Diagram illustrating the end view of a rock retaining wall structure with a culvert.

Labels and dimensions shown:

- TREAD
- SEE SHEET STD_935-20-01 STACKED ROCK RETAINING WALL FOR DETAILS
- CULVERT LOCATION WHERE STAKED
- CAP ROCK
- 12 INCH MINIMUM
- 12 INCH MINIMUM
- EMBED ROCKS 6 INCH MINIMUM
- MINIMUM WIDTH EQUALS 1.5X DIAMETER OF PIPE
- PIPE BEDDING 6 INCH MINIMUM WHEN SPECIFIED
- GEOTEXTILE WHEN SPECIFIED

END VIEW

CULVERT TYPE

TYPE	MATERIAL	COMMENTS
C1	CMP – GALV	
C2	HDPE	
C3	PLASTIC	
C4	ALUMINUM	
C5	CONCRETE	
C6		

A detailed cross-section diagram of a culvert headwall. The diagram shows a culvert pipe (hatched area) with a headwall structure. Key components and dimensions are labeled:

- SHOULDER WIDTH:** Indicated on both sides of the culvert.
- TREAD WIDTH:** The width of the top surface of the headwall.
- SEE SECTION 913 TYPICAL SECTIONS:** A reference to standard specifications.
- 6 INCHES MINIMUM:** The minimum thickness of the headwall structure.
- HEADWALL ROCK:** The top layer of the headwall structure.
- FOUNDATION ROCK:** The base layer of the headwall structure.
- BEDDING MATERIAL WHEN SPECIFIED:** The material supporting the culvert pipe.
- CULVERT LENGTH:** The length of the culvert pipe.
- EXTEND BASE OF HEADWALL ____ INCHES BEYOND END OF PIPE (TYP):** A dimension indicating the extension of the headwall base beyond the pipe end.
- FLOW:** Indicated by an arrow pointing towards the culvert.
- 1** and **2**: Slope indicators on the left side of the headwall.

ELEVATION VIEW

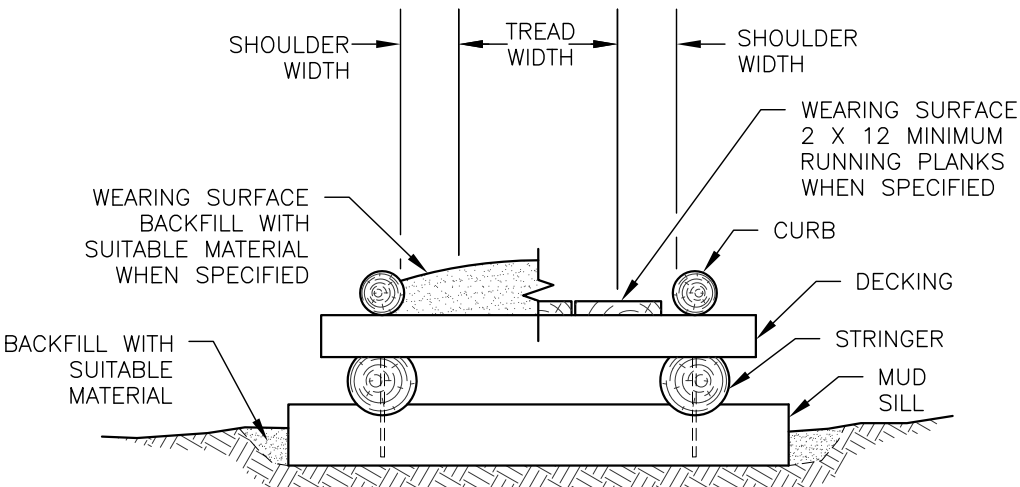
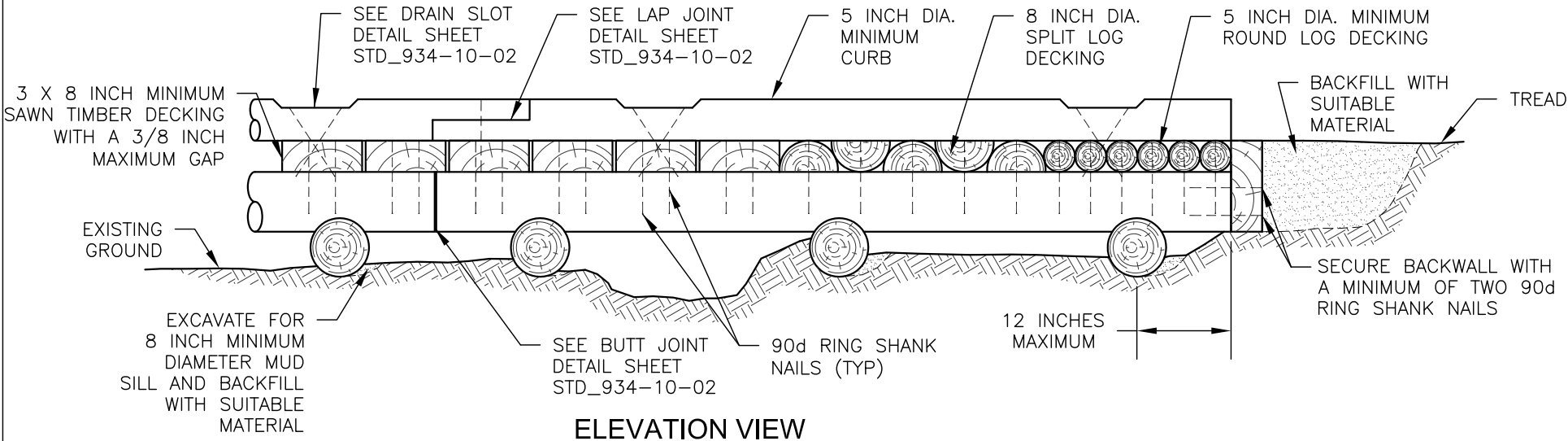
BEDDING MATERIAL TYPE

TYPE	MATERIAL	GRADATION	COMMENTS
B1	PITRUN		
B2	AGGREGATE		
B3			

STANDARD PUNCHEON

TYPICAL ID	STRINGER/MUD SILL				DECK/BACKWALL				CURB			WEARING SURFACE				COMMENTS
	SIZE	SPECIES	NUMBER	PRESERV. TYPE	TYPE	SIZE	SPECIES	PRESERV. TYPE	SIZE	SPECIES	PRESERV. TYPE	TYPE	SIZE	SPECIES	PRESERV. TYPE	
SP1-1				P				P			P				P	

N/A WHEN NOT APPLICABLE



- NOTES:
- PRE-DRILL HOLES FOR FASTENERS TO PREVENT SPLITTING OF LOGS OR SAWN TIMBERS.
 - RECESS END OF REBAR 1/2 INCH BELOW TOP OF STRINGERS.
 - COMPACT BACKFILL IN 6 INCH LIFTS UNTIL NO VISUAL DISPLACEMENT.
 - ALL FIELD DRILLED HOLES AND CUTS SHALL BE FIELD TREATED.
 - FINAL DECK ELEVATION FOR RUNNING PLANKS OR DECKING SHALL BE NO MORE THAN 1/2 INCH DIFFERENCE IN ELEVATION.

PRESERVATIVE TREATMENT - (REFER TO AWPA USE CATEGORY SYSTEM)			
PRESERVATIVE TYPE	TREATMENT TYPE	USE CATEGORY	COMMENTS
P1	WB	UC4A	
P2	WB	UC3B	
P3			

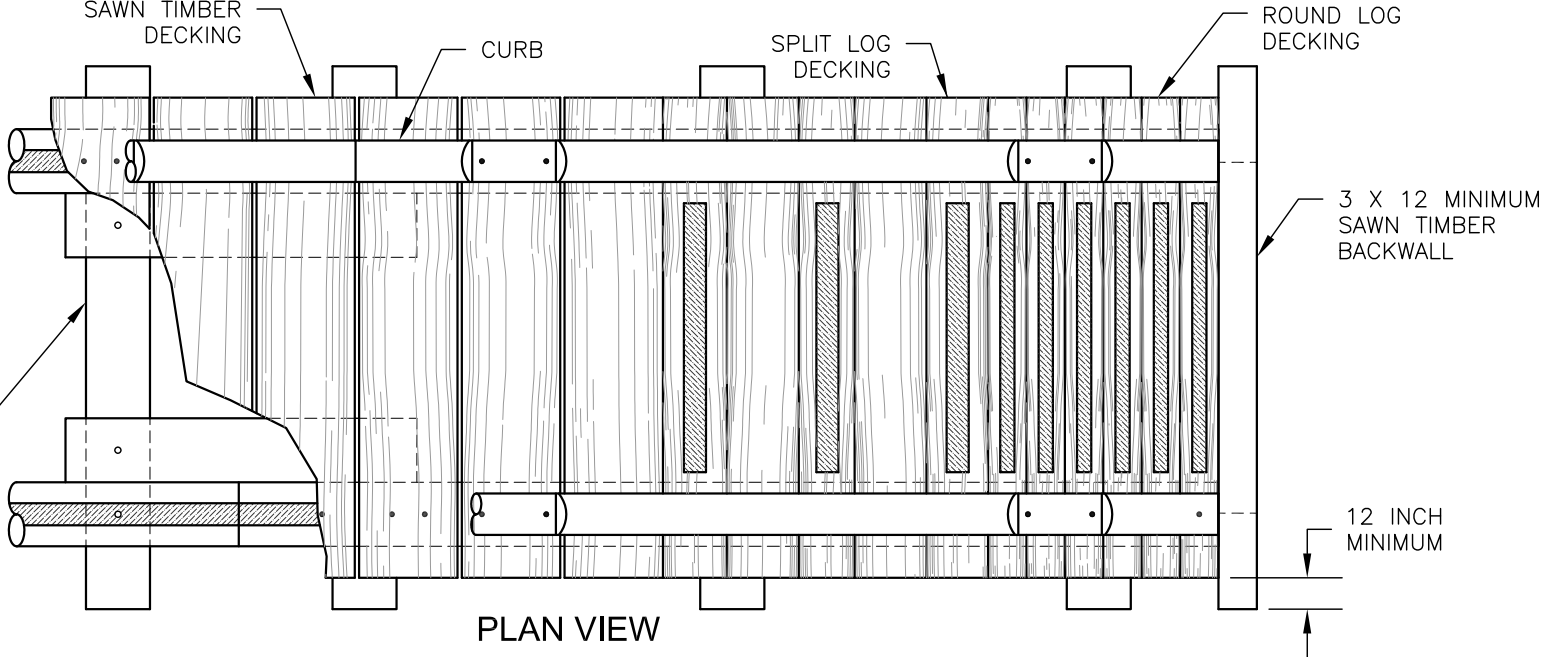
TREATMENT TYPE USE CATEGORY

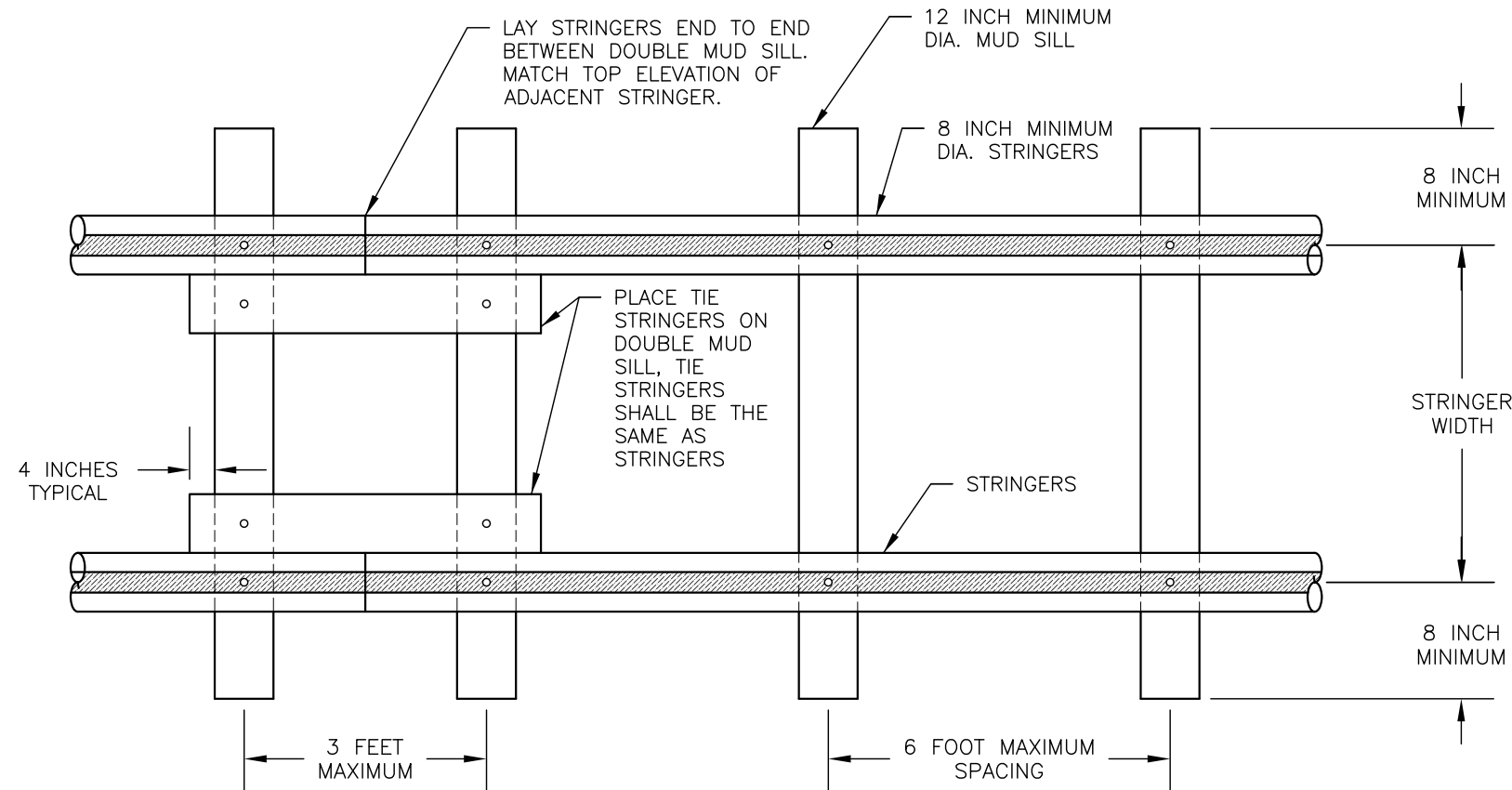
WB = WATERBORNE UC3B = ABOVE GROUND - EXPOSED

OT = OIL-BORNE UC4A = GROUND CONTACT - GENERAL USE

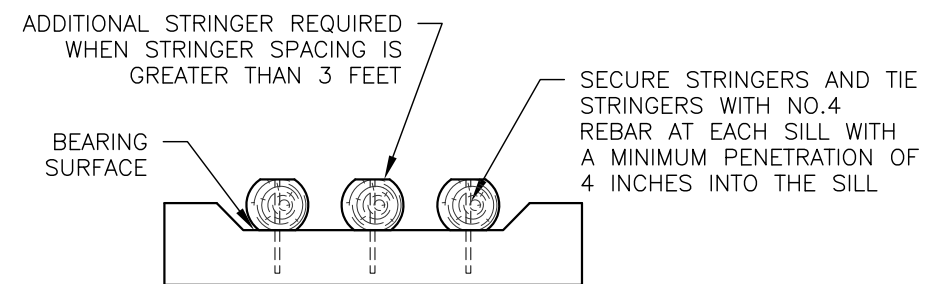
UC4B = GROUND CONTACT - HEAVY DUTY

SHEET 1 OF 2

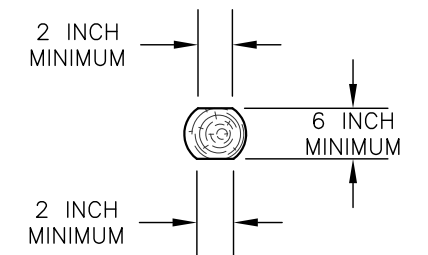




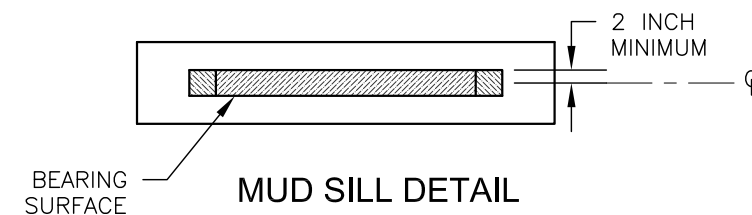
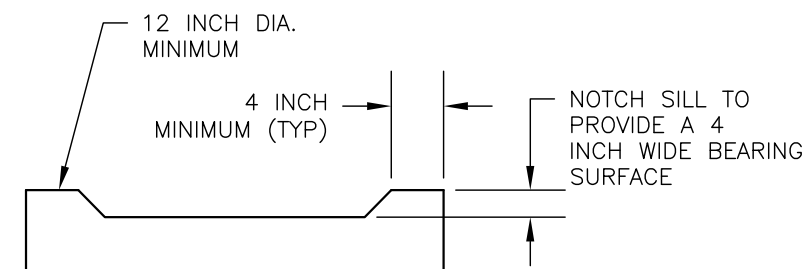
MUD SILL AND STRINGER LAYOUT



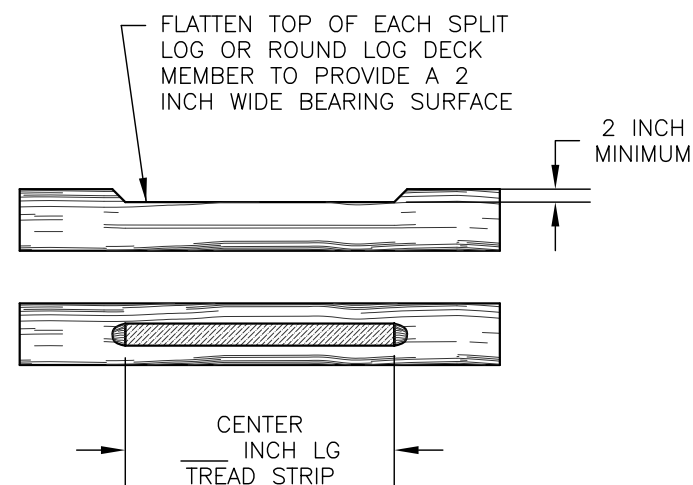
MUD SILL AND STRINGER LAYOUT



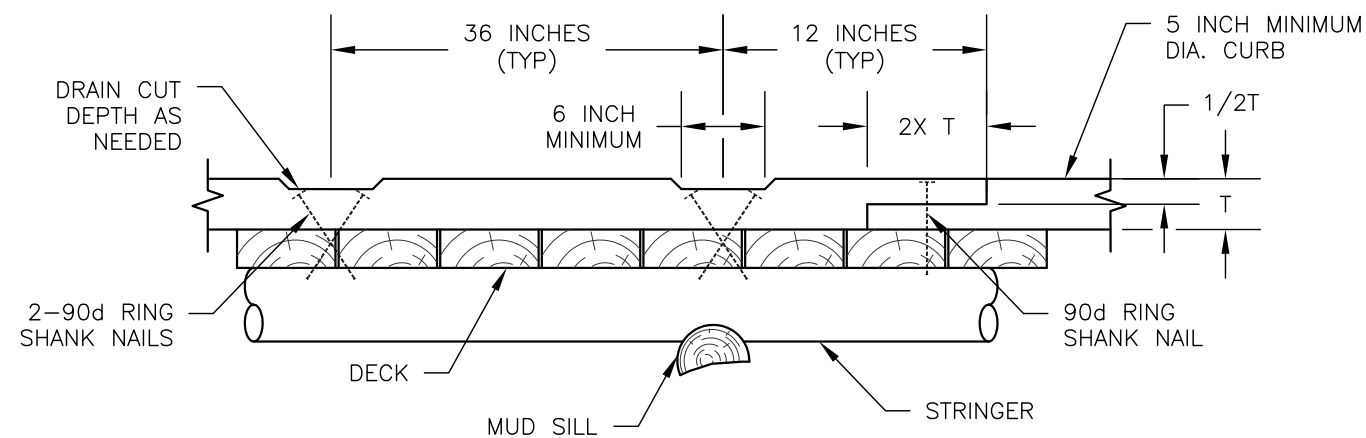
LOG STRINGER DETAIL



MUD SILL DETAIL

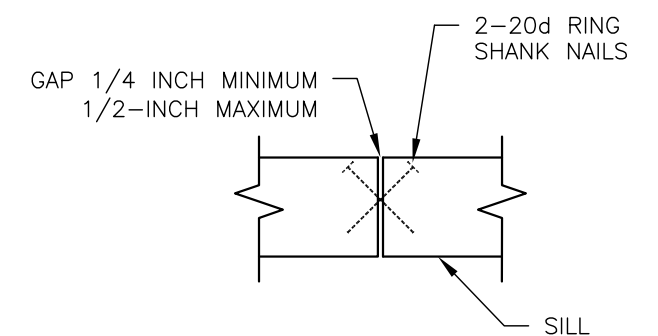


TREAD STRIP DETAIL



DRAIN SLOT DETAIL

TYPICAL LAP JOINT
T = THICKNESS OF RETAINER

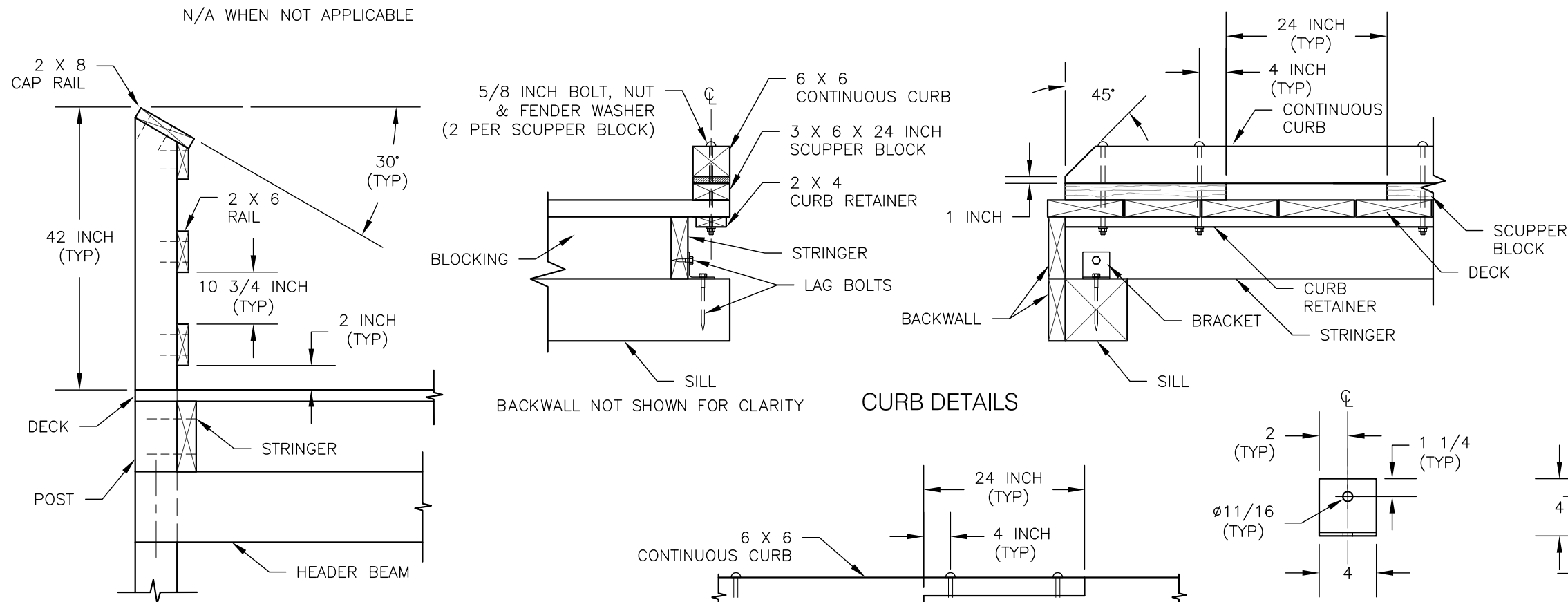


TYPICAL BUTT JOINT

STANDARD BOARDWALK

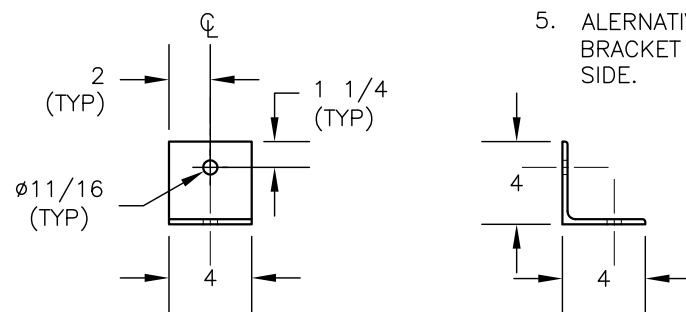
[illegible]

N/A WHEN NOT APPLICABLE



NOTES:

1. DESIGN LOAD: 100 PSF PEDESTRIAN LOAD.
2. ALL MATERIAL TYPE SHALL BE DOUGLAS FIR OR SOUTHERN PINE NO. 2 OR BETTER AS SPECIFIED IN THE ABOVE TABLE.
3. ALL FASTENERS SHALL BE GALVANIZED.
4. FASTENERS:
 - DECKING: 60d 6 INCH RING SHANK NAILS OR DECK SCREWS 2 PER DECK STRINGER CONNECTION.
 - RAILING: NO. 10 X 4 INCH LONG WOOD SCREWS 2 PER RAIL POST CONNECTION.
 - STRINGERS & BACKWALLS: 40d 5 INCH LONG RING SHANK NAILS.
5. ALTERNATIVE FOR 7/8 BOLTS FOR HEADER BEAM IS BRACKET WITH AN ALLOWABLE LOAD OF 1100 LBS EACH SIDE.



BRACKET DETAIL

PRESERVATIVE TREATMENT – (REFER TO AWPB USE CATEGORY SYSTEM)			
PRESERVATIVE TYPE	TREATMENT TYPE	USE CATEGORY	COMMENTS
P1	WB	UC4A	
P2	WB	UC3B	
P3			

TREATMENT TYPE
WB = WATERBORNE
OT = OIL-BORNE

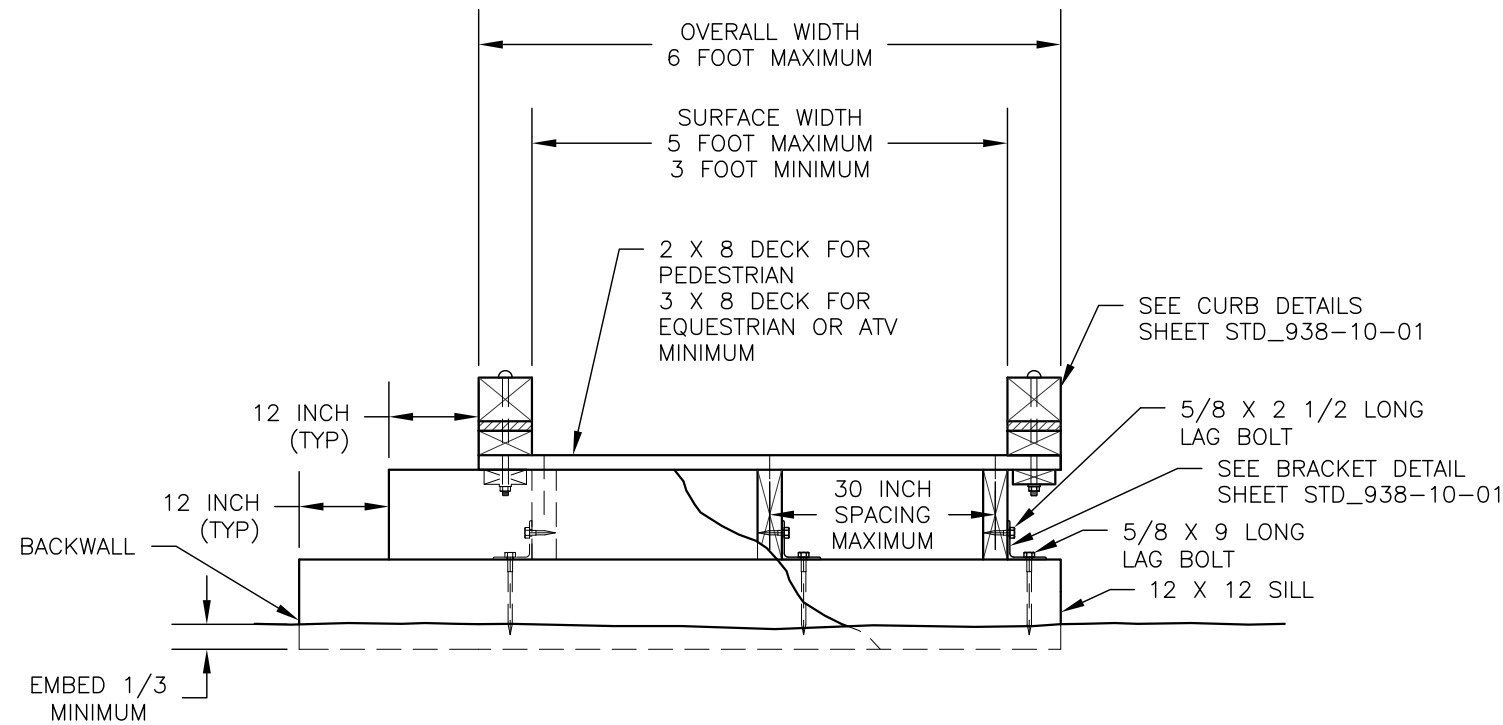
USE CATEGORY		SHEET
UC3B	= ABOVE GROUND - EXPOSED	
UC4A	= GROUND CONTACT - GENERAL USE	
UC4B	= GROUND CONTACT - HEAVY DUTY	

SHEET 1 OF 3

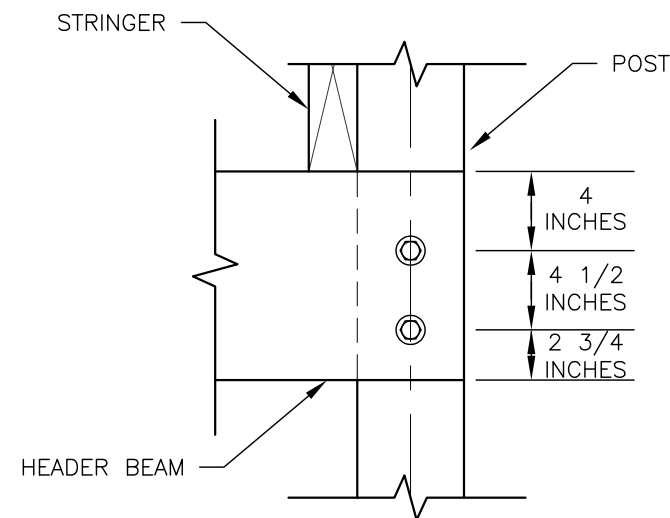
TYPE	MATERIAL	GRADATION	COMMENTS
FT1	CONCRETE		
FT2	AGGREGATE		
FT3			

FOOTING MATERIAL

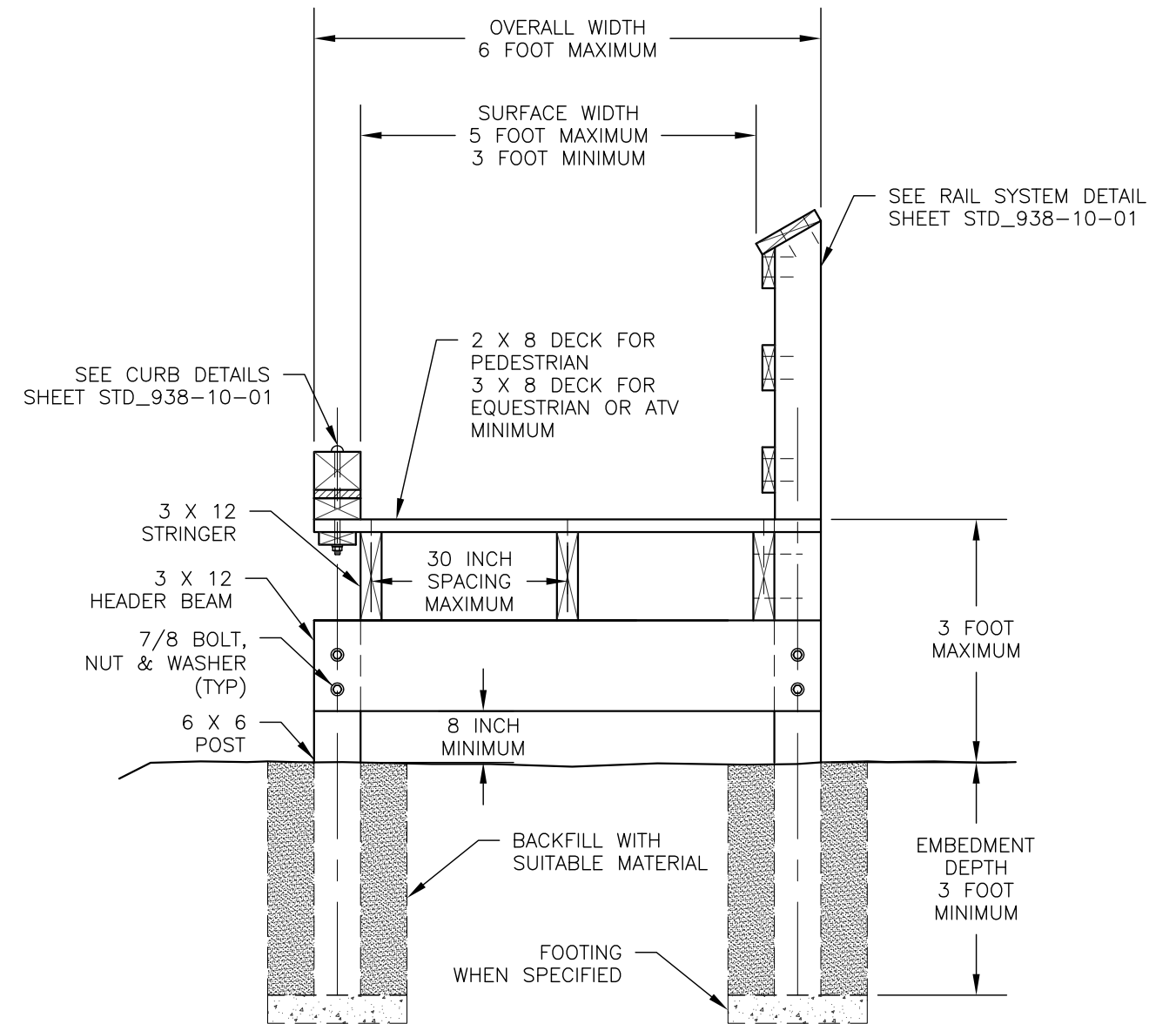
CURB SPLICING DETAIL



A TYPICAL GROUND SECTION
BLOCKING REQUIRED AT EVERY
SUPPORT NOT SHOWN FOR CLARITY

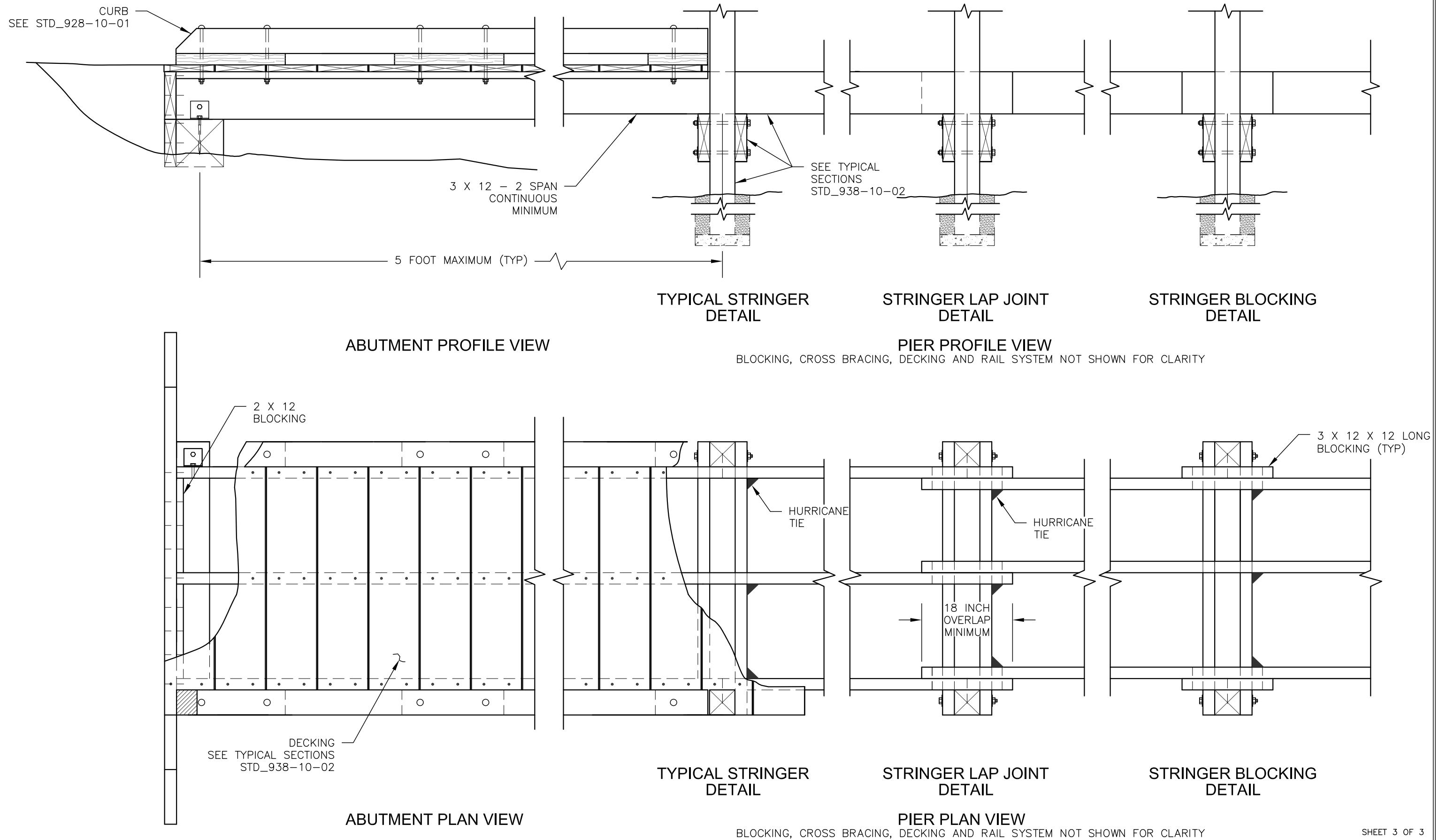


BOLT DETAIL



B TYPICAL ELEVATED SECTION
LESS THAN 3 FEET WITH CURB
BLOCKING REQUIRED AT EVERY SUPPORT
NOT SHOWN FOR CLARITY

C TYPICAL ELEVATED SECTION
LESS THAN 3 FEET WITH CURB
BLOCKING REQUIRED AT EVERY SUPPORT
NOT SHOWN FOR CLARITY

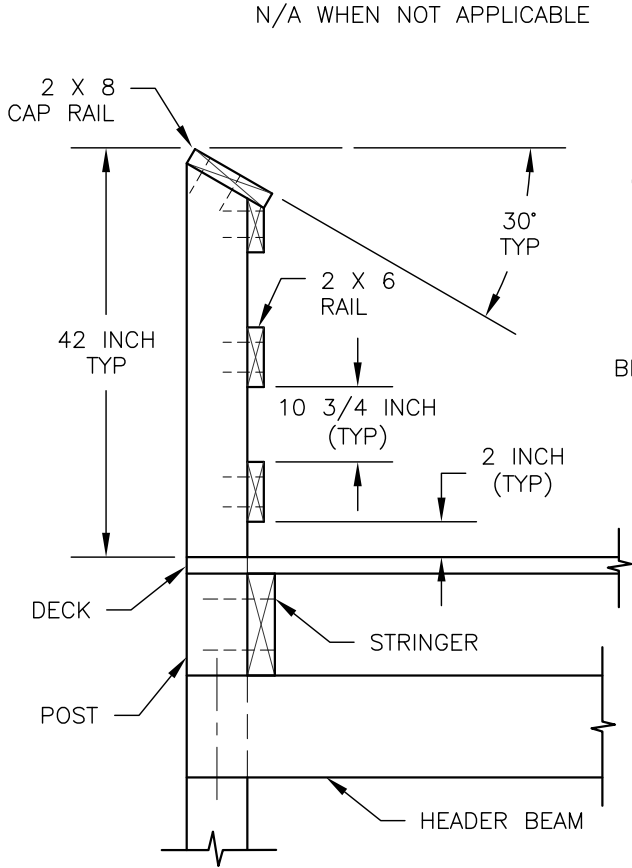


SHEET 3 OF 3

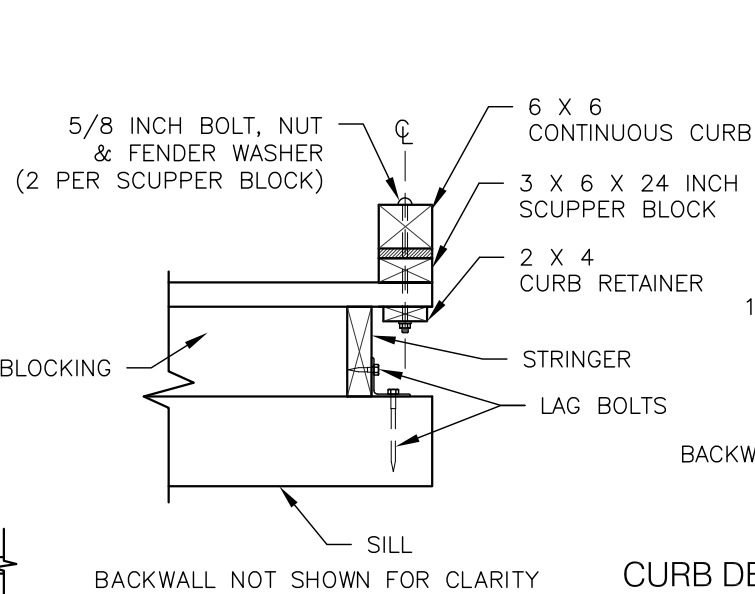
ELEVATED BOARDWALK

TYPICAL ID	SECTION TYPE	OVERALL WIDTH	SURFACE WIDTH	FOOTING MATERIAL			POST/SILLS/BACKWALLS				HEADER BEAM/STRINGERS/DECK/CURB/RAILING SYSTEM			COMMENTS
				TYPE	DEPTH	WIDTH	POST HEIGHT	POST EMBEDMENT DEPTH	SPECIES	PRESERV. TYPE	DECK SIZE	SPECIES	PRESERV. TYPE	
SBW-1				F						P			P	

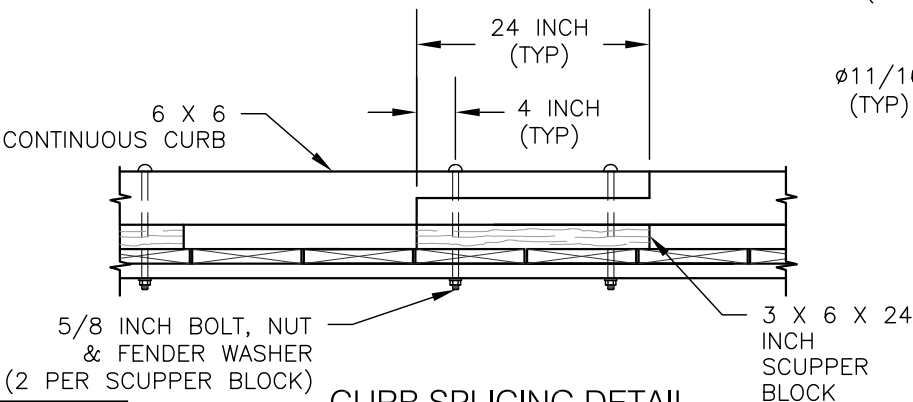
N/A WHEN NOT APPLICABLE



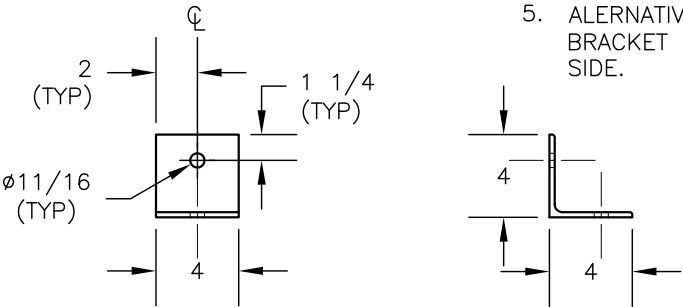
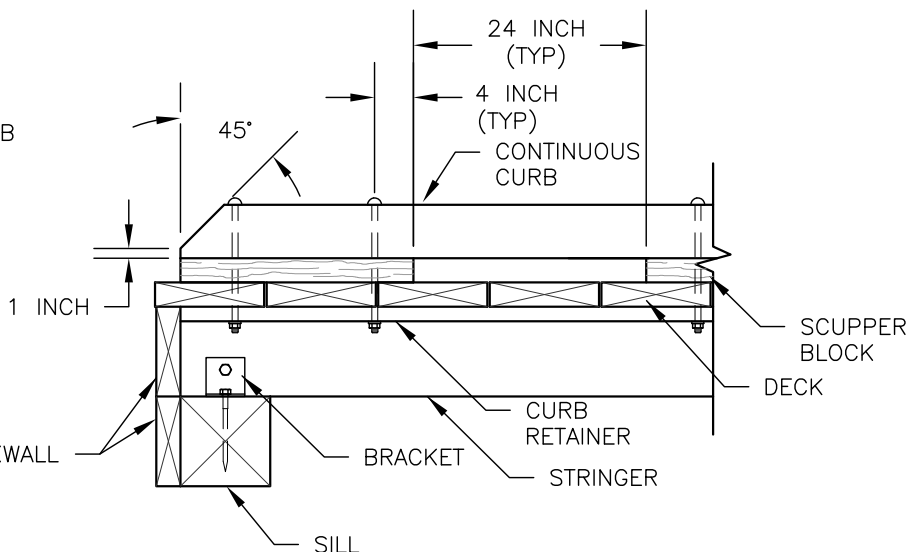
RAIL SYSTEM DETAIL



CURB DETAILS



CURB SPLICING DETAIL



BRACKET DETAIL

- NOTES:
- DESIGN LOAD: 100 PSF PEDESTRIAN LOAD.
 - ALL MATERIAL TYPE SHALL BE DOUGLAS FIR OR SOUTHERN PINE NO. 2 OR BETTER AS SPECIFIED IN THE ABOVE TABLE.
 - ALL FASTENERS SHALL BE GALVANIZED.
 - FASTENERS:
DECKING: 60d 6 INCH RING SHANK NAILS OR DECK SCREWS 2 PER DECK STRINGER CONNECTION.
RAILING: NO. 10 X 4 INCH LONG WOOD SCREWS 2 PER RAIL POST CONNECTION.
STRINGERS & BACKWALLS: 40d 5 INCH LONG RING SHANK NAILS.
 - ALTERNATIVE FOR 7/8 BOLTS FOR HEADER BEAM IS BRACKET WITH AN ALLOWABLE LOAD OF 1100 LBS EACH SIDE.

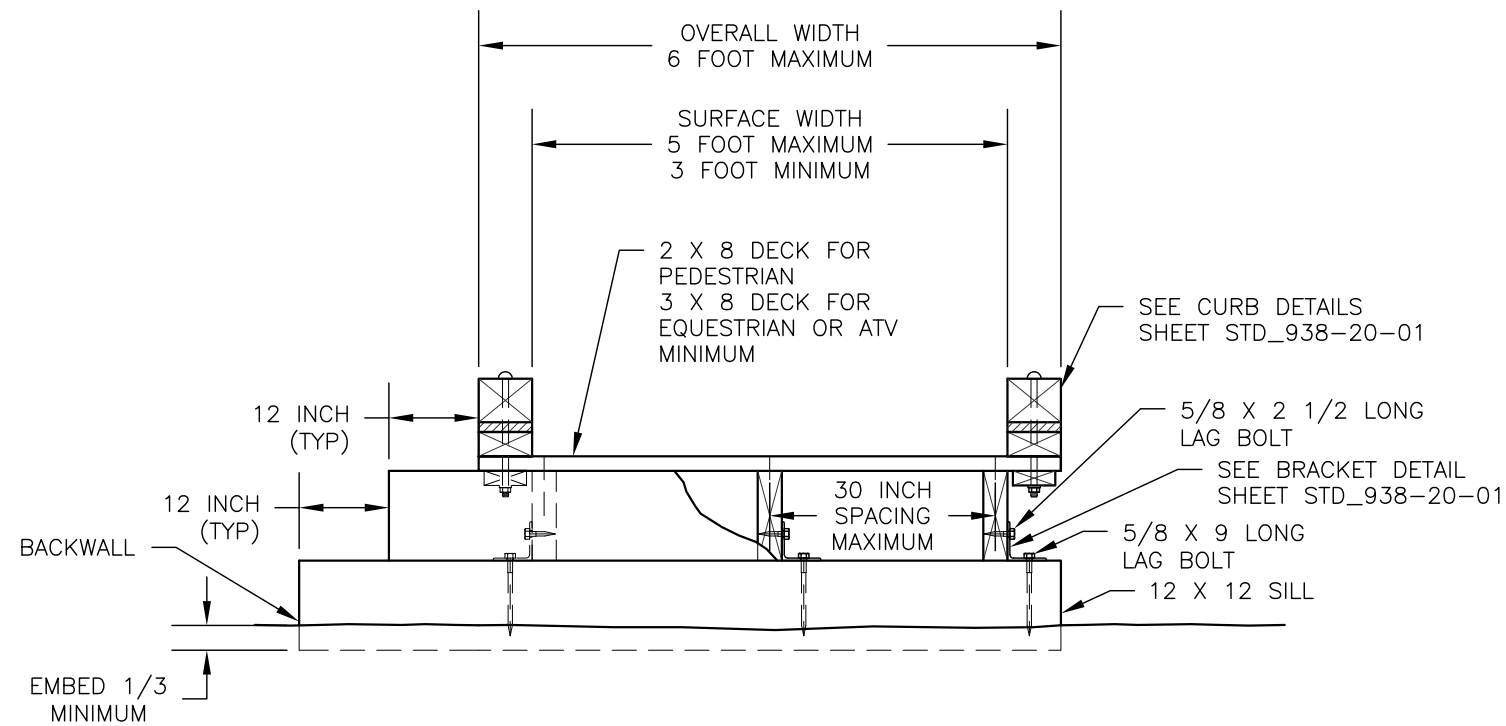
FOOTING MATERIAL

TYPE	MATERIAL	GRADATION	COMMENTS
FT1	CONCRETE		
FT2	AGGREGATE		
FT3			

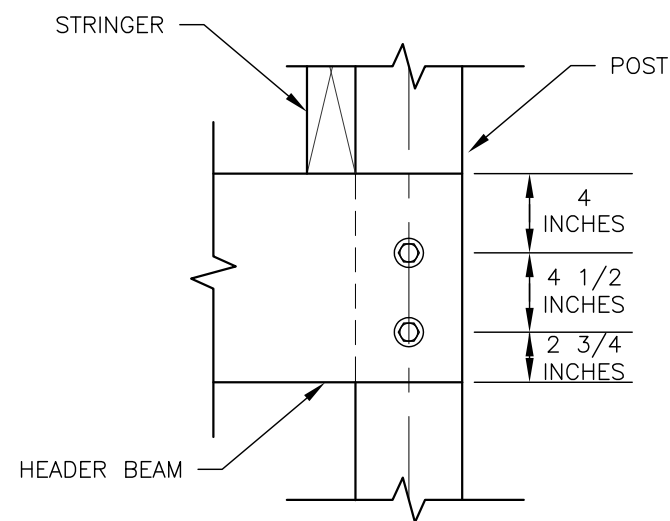
PRESERVATIVE TREATMENT - (REFER TO AWPA USE CATEGORY SYSTEM)			
PRESERVATIVE TYPE	TREATMENT TYPE	USE CATEGORY	COMMENTS
P1	WB	UC4A	
P2	WB	UC3B	
P3			

TREATMENT TYPE USE CATEGORY SHEET 1 OF 4

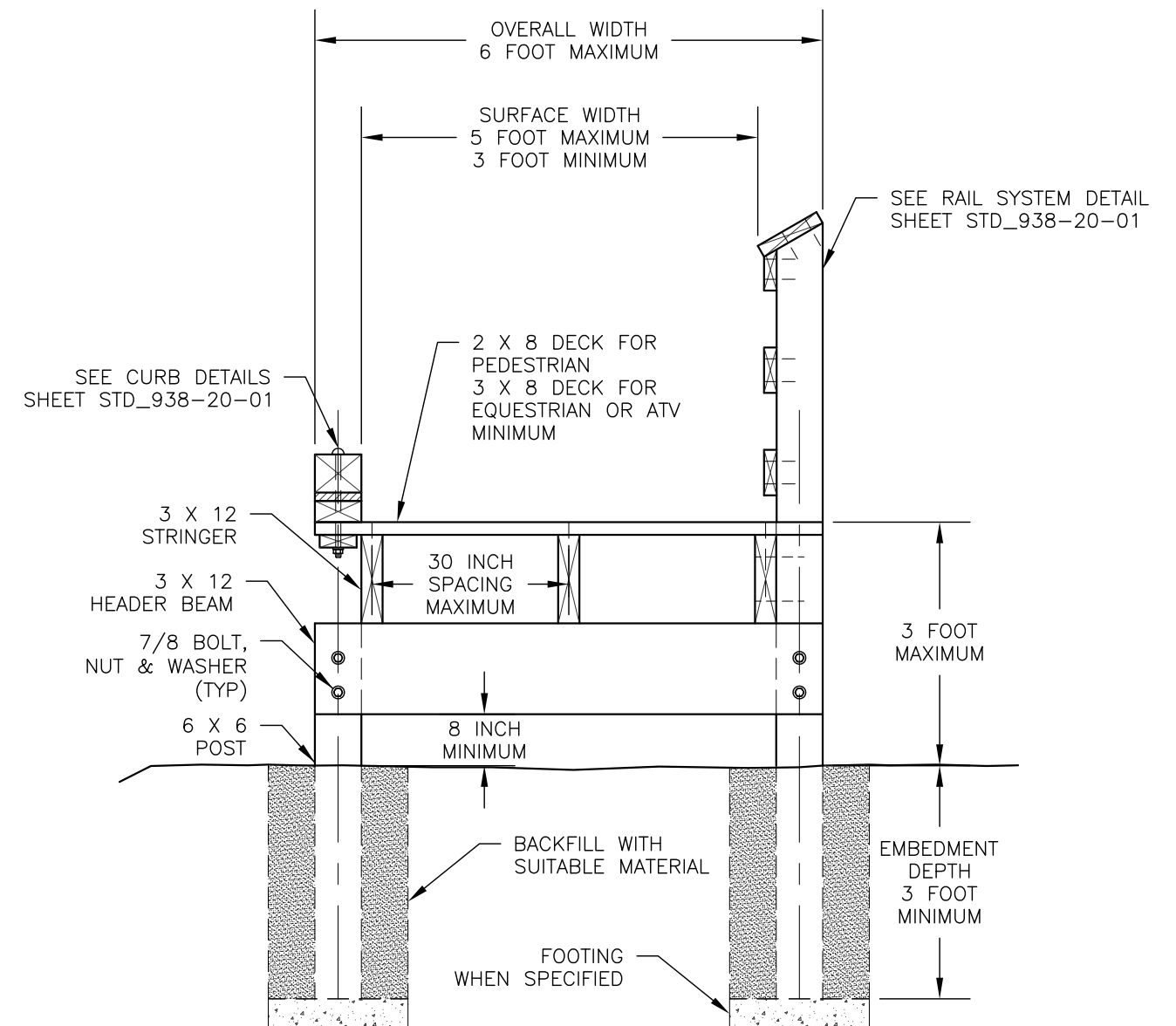
WB = WATERBORNE UC3B = ABOVE GROUND - EXPOSED
OT = OIL-BORNE UC4A = GROUND CONTACT - GENERAL USE
UC4B = GROUND CONTACT - HEAVY DUTY



A TYPICAL GROUND SECTION
BLOCKING REQUIRED AT EVERY
SUPPORT NOT SHOWN FOR CLARITY

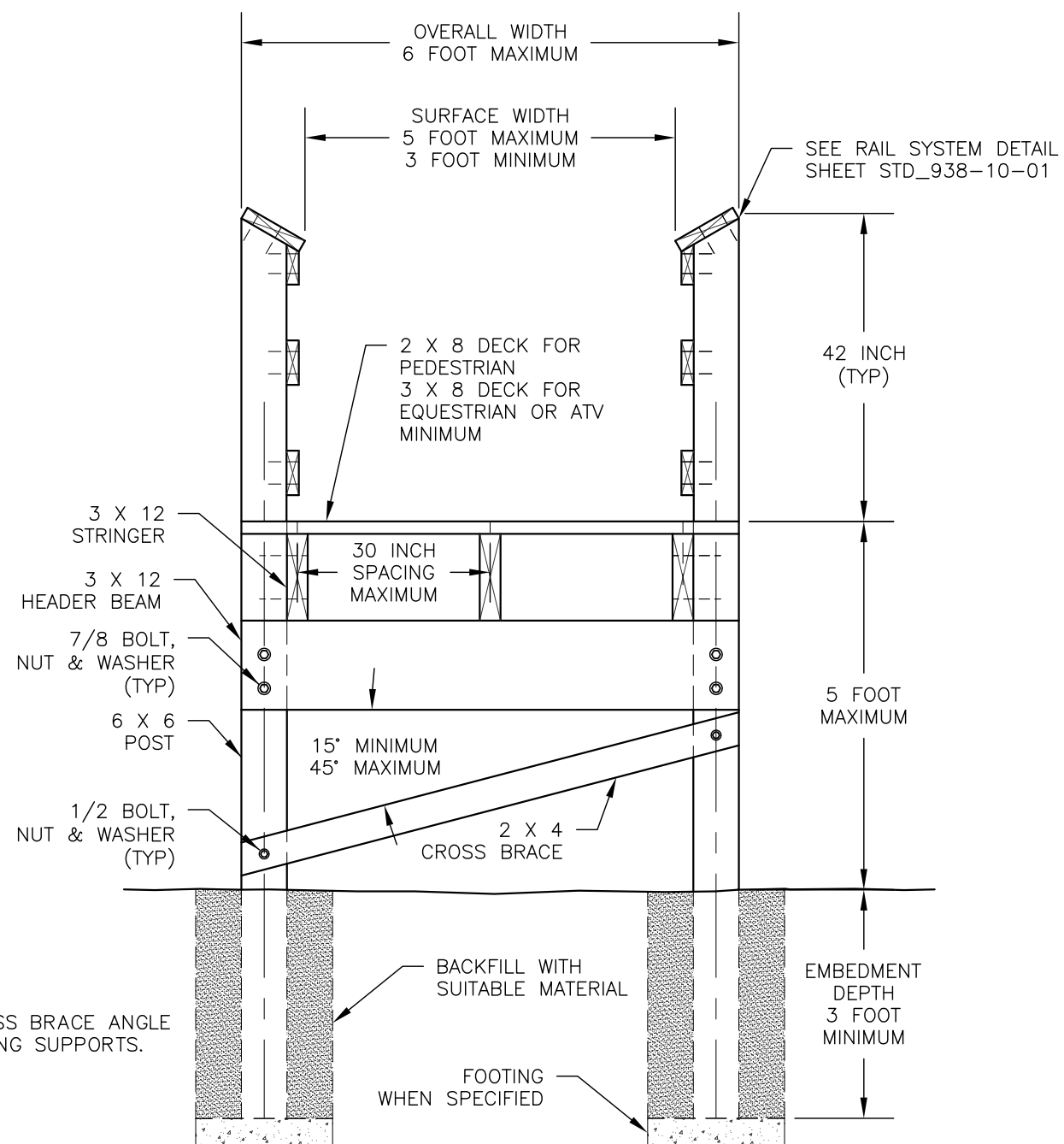


BOLT DETAIL

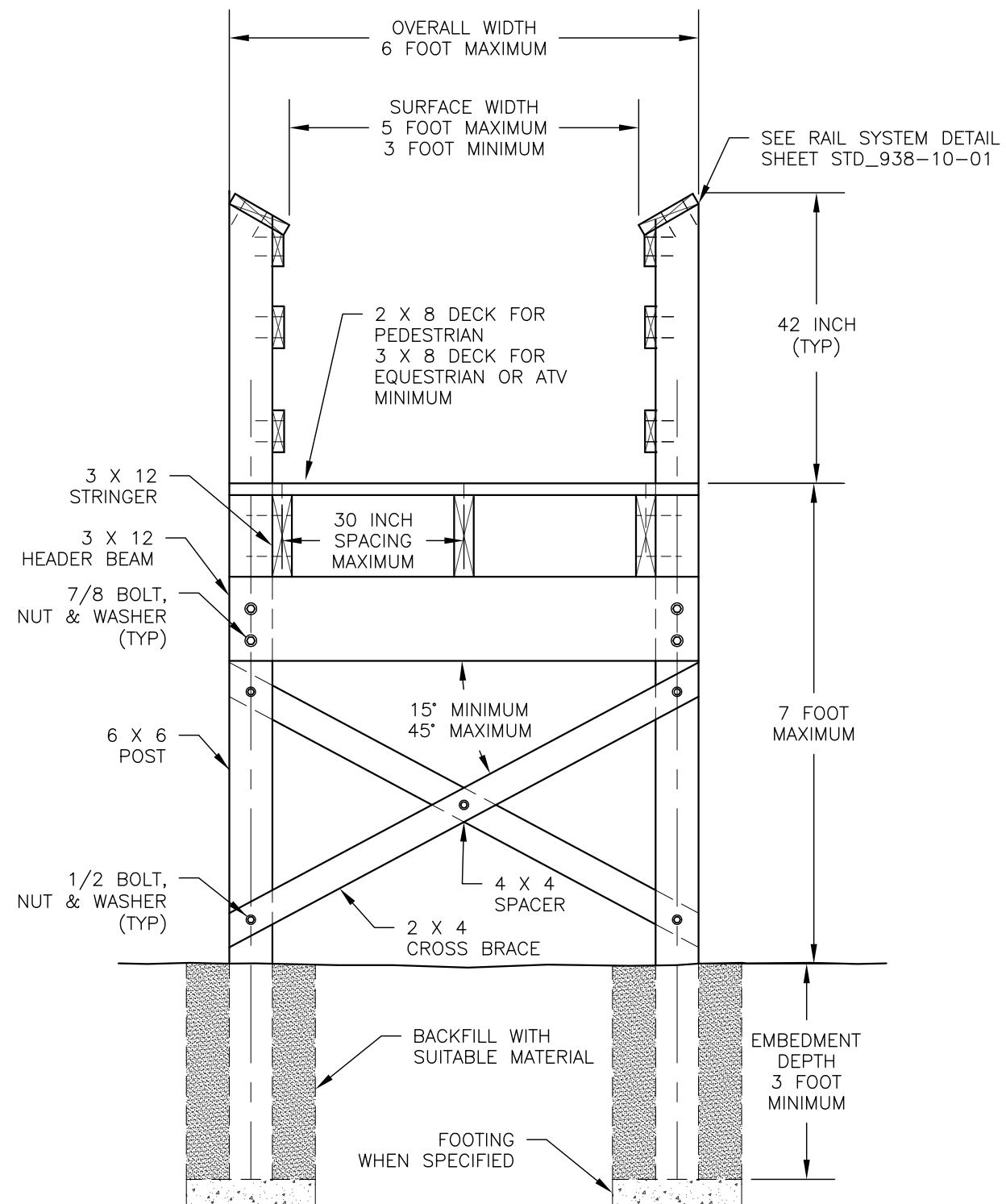


B TYPICAL ELEVATED
SECTION
LESS THAN 3 FEET WITH CURB
BLOCKING REQUIRED AT EVERY SUPPORT
NOT SHOWN FOR CLARITY

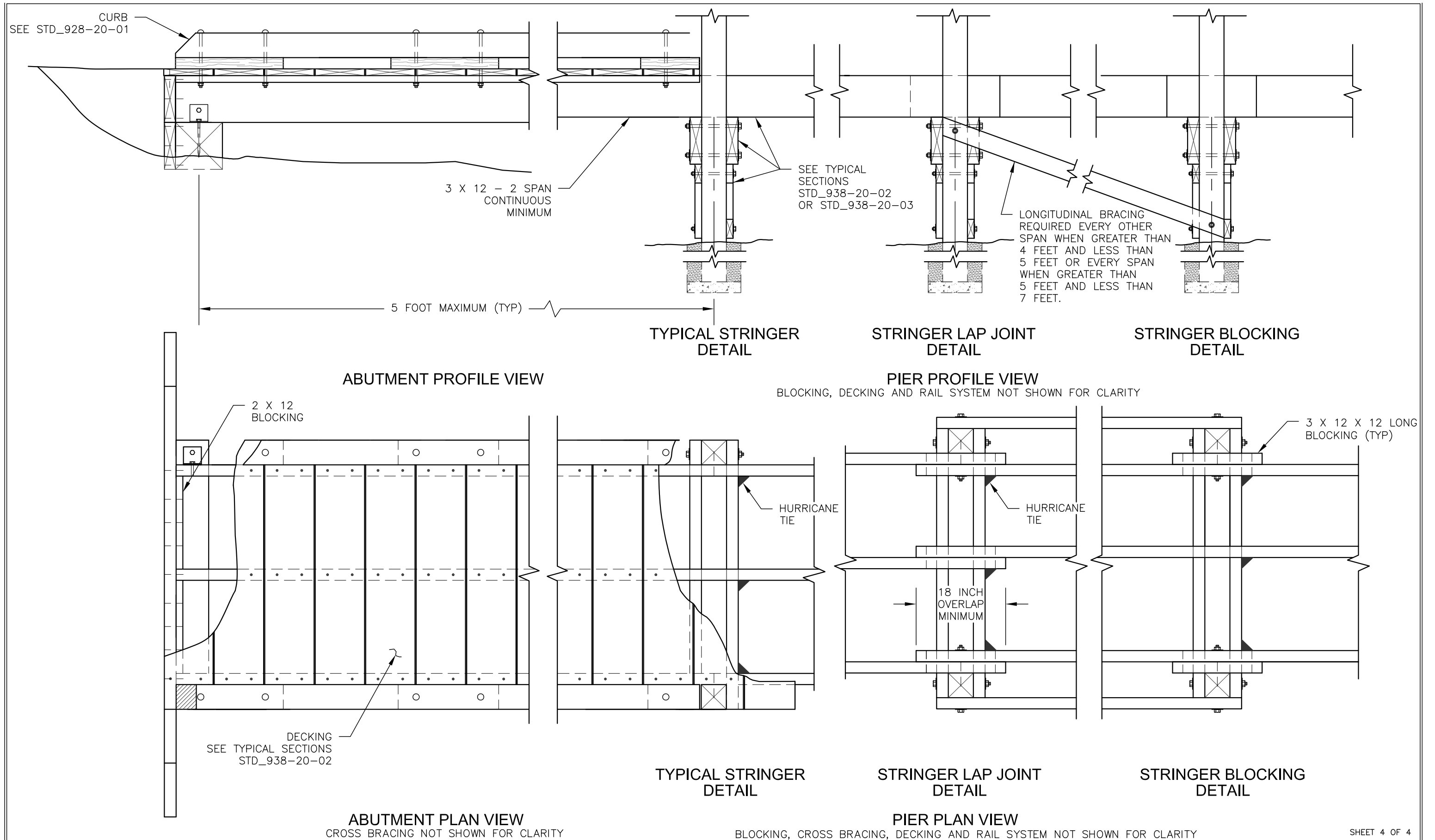
C TYPICAL ELEVATED
SECTION
LESS THAN 3 FEET WITH CURB
BLOCKING REQUIRED AT EVERY SUPPORT
NOT SHOWN FOR CLARITY



D TYPICAL ELEVATED
SECTION
GREATER THAN 3 FEET LESS THAN
5 FEET BLOCKING REQUIRED AT EVERY
SUPPORT NOT SHOWN FOR CLARITY



E TYPICAL ELEVATED
SECTION
GREATER THAN 5 FEET LESS THAN
7 FEET BLOCKING REQUIRED AT EVERY
SUPPORT NOT SHOWN FOR CLARITY

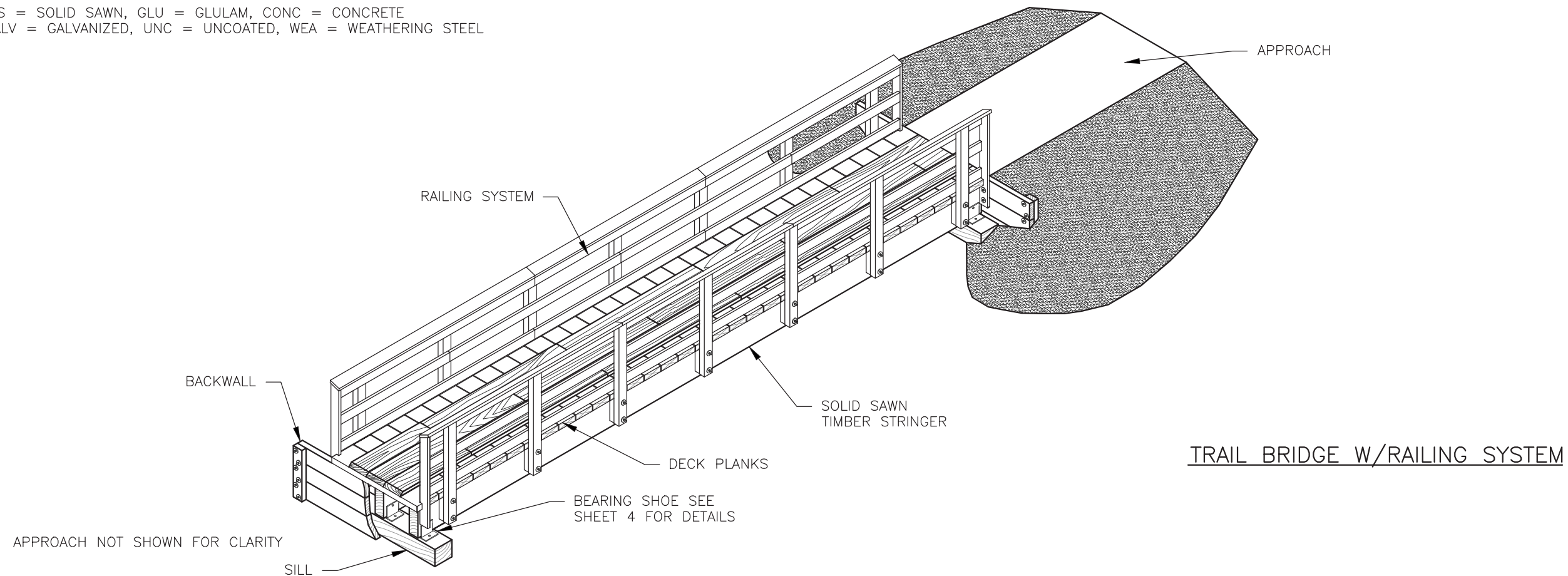


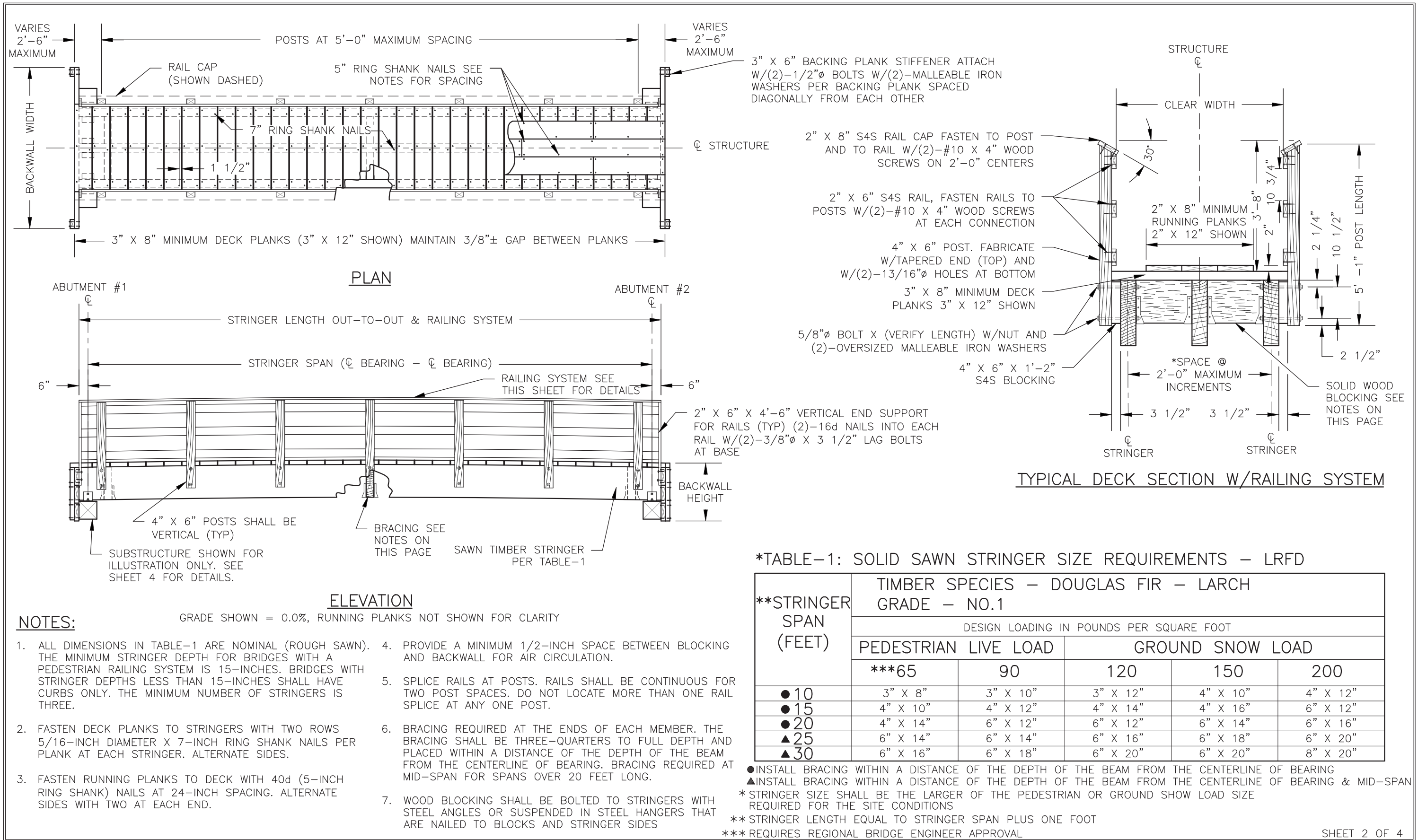
								STRINGERS					DECK			BACKWALL						
STRUCTURE NUMBER	TRAIL NO.	BRIDGE LOCATION	BRIDGE LENGTH OUT-TO-OUT	STRINGER SPAN CL-CL BRNG	BRIDGE CLEAR WIDTH	PEDESTRIAN LOAD	GROUND SNOW LOAD	SPECIES	NUMBER	MATERIAL SIZE	TREATMENT		SPECIES	SIZE	TREATMENT	TYPE	SPECIES	SIZE	WIDTH	HEIGHT	TREATMENT	
											YES	NO										

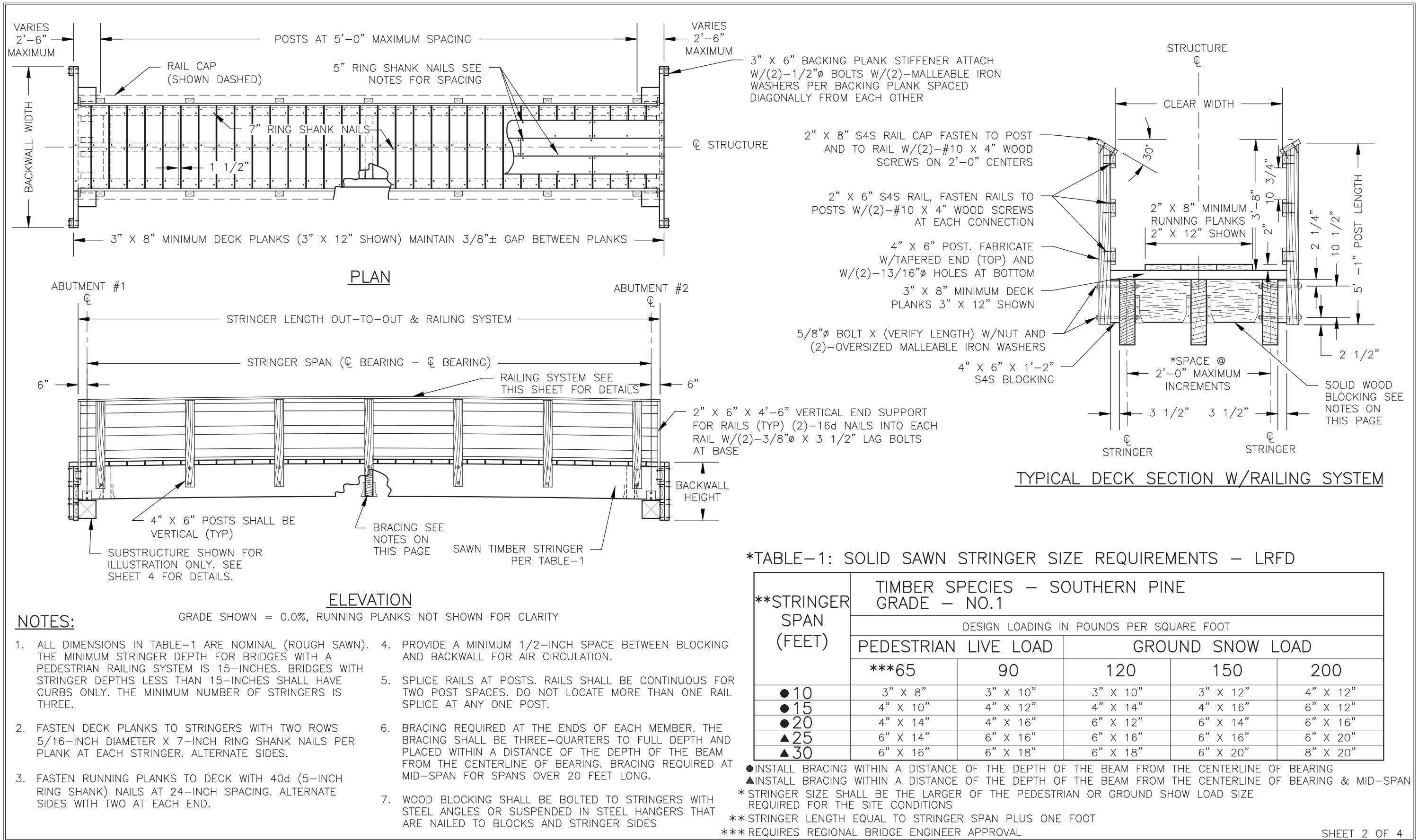
NA = NOT APPLICABLE

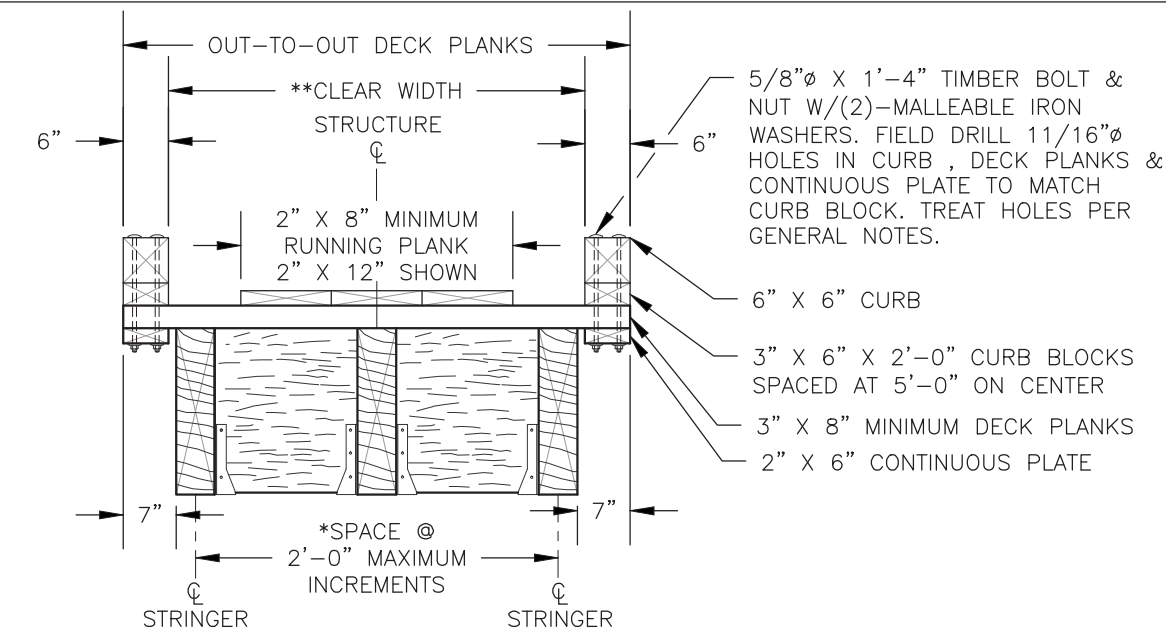
	RAILING SYSTEM/CURB						RUNNING PLANK					SILL			APPROACHES						HARDWARE	
STRUCTURE NUMBER	SPECIES	TYPE	HEIGHT	MATERIAL TYPE	TREATMENT		SPECIES	SIZE	WIDTH	TREATMENT		TYPE	SIZE	TREATMENT	LENGTH		WIDTH	MATERIAL TYPE	MATERIAL DEPTH	GEO— SYNTHETIC TYPE	COATINGS	COMMENTS
					YES	NO				YES	NO				NEAR	FAR						
X																						

ABUTMENT MATERIAL TYPE: SS = SOLID SAWN, GLU = GLULAM, CONC = CONCRETE
HARDWARE COATING TYPE: GALV = GALVANIZED, UNC = UNCOATED, WEA = WEATHERING STEEL



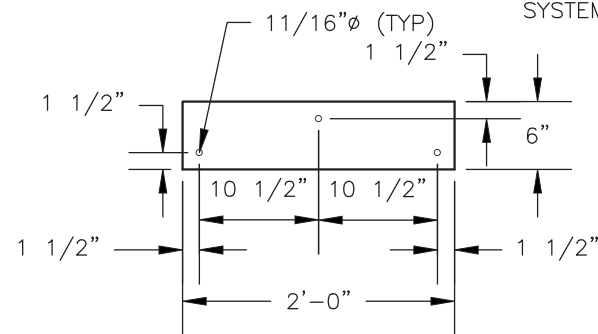




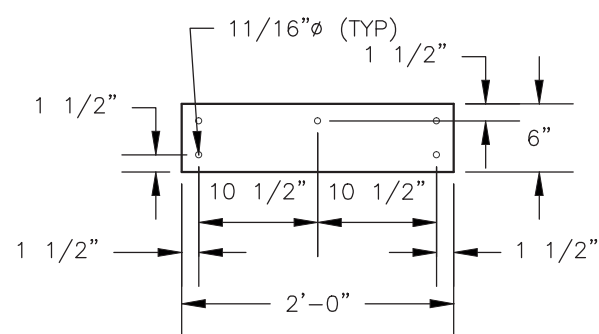


BRIDGE WITH CURBS ONLY
DECK SECTION W/STRINGERS @2'-0" O.C.

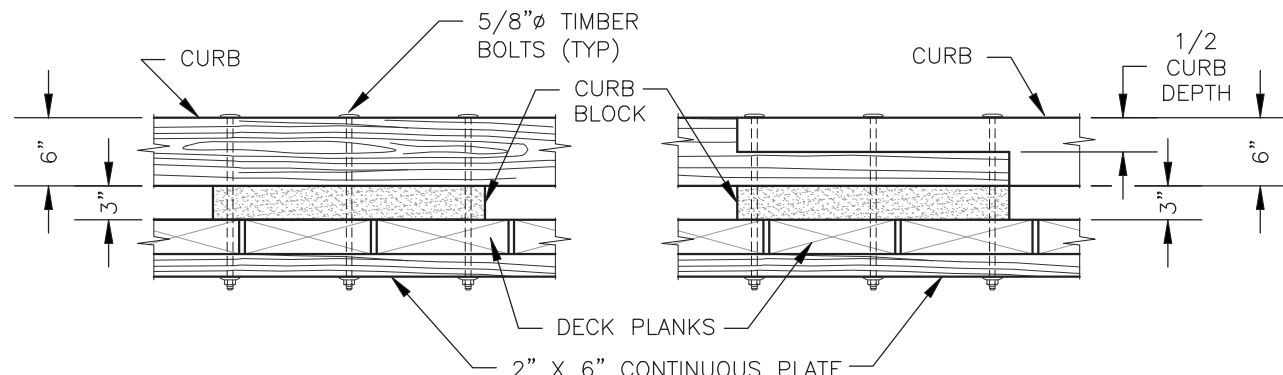
* MINIMUM NUMBER OF STRINGERS IS THREE
** INSIDE FACE TO INSIDE FACE OF RAILING SYSTEM



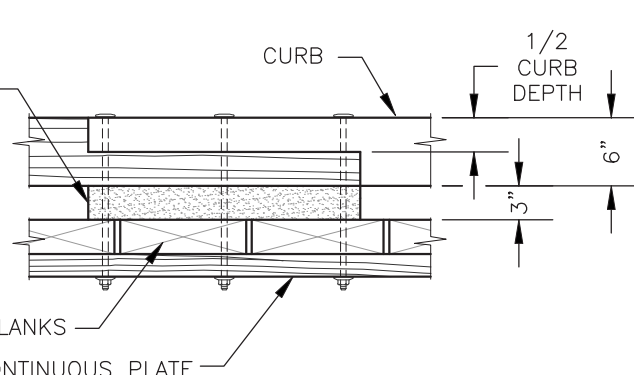
PLAN-CURB BLOCK



PLAN-CURB BLOCK AT SPLICE



ELEVATION-TYPICAL CONNECTION



ELEVATION-CONNECTION AT SPLICE

SOLID SAWN CURB CONNECTION DETAILS

GENERAL NOTES:

SPECIFICATIONS: MATERIALS AND CONSTRUCTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03) AND STANDARD SPECIFICATIONS FOR CONSTRUCTION OF TRAILS AND TRAIL BRIDGES ON FEDERAL PROJECTS,

TIMBER & LUMBER: SOLID SAWN TIMBER MEMBERS SHALL CONFORM TO THE REQUIREMENTS OF THE GRADING RULES AGENCY FOR THE SPECIES, TYPE, AND GRADE SPECIFIED BELOW.

DECK PLANKS, CURBS, SILLS, & BACKING PLANKS

- COASTAL REGION DOUGLAS FIR-LARCH ROUGH SAWN NO.1 GRADE, GRADING RULES AGENCY - WWPA, WCLIB

RUNNING PLANKS

- COASTAL REGION DOUGLAS FIR-LARCH ROUGH SAWN NO.2 GRADE, GRADING RULES AGENCY - WWPA, WCLIB

RAILS & POSTS (SEE PROJECT CRITERIA)

UNTREATED

- REDWOOD, S4S, NO.1 GRADE GRADING RULES AGENCY - RIS
- WESTERN RED CEDAR, S4S, SELECT STRUCTURAL GRADE GRADING RULES AGENCY - WWPA, WCLIB

TREATED

- HEM-FIR/DOUGLAS FIR, S4S, NO.1 GRADE GRADING RULES AGENCY - WWPA, WCLIB

TREATMENT: SEE PROJECT CRITERIA FOR MEMBERS IDENTIFIED TO BE TREATED AND FOR TREATMENT TYPE. PRESERVATIVE TREATMENT SHALL BE IN ACCORDANCE WITH THE CURRENT AMERICAN WOOD PROTECTION ASSOCIATION (AWPA) SPECIFICATIONS USING THE TREATMENT MATERIALS LISTED BELOW. TREATMENT WILL COMPLY WITH THE REQUIREMENTS OF THE CURRENT EDITION OF WESTERN WOOD PRESERVERS INSTITUTE (WWPI) "BEST MANAGEMENT PRACTICES FOR THE USE OF TREATED WOOD IN AQUATIC ENVIRONMENTS".

STRINGERS, DECKING, RUNNING PLANKS, & RAILING SYSTEM, IF TREATED

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 3B ABOVE GROUND-EXPOSED (UC3B)
- PENTACHLOROPHENOL IN LIGHT OIL (TYPE C SOLVENT)
- COPPER NAPHTHENATE (CuN) IN LIGHT OIL (TYPE C SOLVENT)

SILLS, BACKING PLANKS, CRIBS, & TIMBER WALLS, IF TREATED

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 4B GROUND CONTACT-HEAVY DUTY (UC4B)
- PENTACHLOROPHENOL IN HEAVY OIL (TYPE A SOLVENT)
- COPPER NAPHTHENATE (CuN) IN HEAVY OIL (TYPE A SOLVENT)

FIELD TREATMENT: COPPER NAPHTHENATE (2% SOLUTION) SHALL BE FURNISHED FOR FIELD TREATING OD WOOD. ALL ABRASIONS AND FIELD CUTS -APPROVED BY THE C.O.R.- SHALL BE CAREFULLY TRIMMED AND GIVEN THREE BRUSH COATS OF THE FIELD TREATMENT SOLUTION. WHERE APPROVED FIELD DRILLING OF BOLT OR NAIL HOLES IS REQUIRED, THE HOLES SHALL BE FILLED WITH PRESERVATIVE PRIOR TO INSERTING THE FASTENERS.

HARDWARE AND STRUCTURAL STEEL: SEE PROJECT DESIGN CRITERIA FOR STEEL HARDWARE FINISH. GALVANIZED OR UNFINISHED HARDWARE SHALL MEET THE REQUIREMENTS OF AASHTO M270, GRADE 36, WITH NUTS AND BOLTS CONFORMING TO ASTM A307, GRADE A. WEATHERING STEEL AND HARDWARE SHALL MEET THE REQUIREMENTS OF AASHTO M270, GRADE 50W, WITH BOLTS AND NUTS CONFORMING TO ASTM A325, TYPE 3. USE MALLEABLE IRON WASHERS AGAINST WOOD UNLESS OTHERWISE NOTED.

WHEN STRUCTURAL STEEL IS TO BE WELDED, THE WELDING PROCEDURE SHALL BE IN ACCORDANCE WITH AWS D1.1 AND SHALL BE SUITABLE FOR THE GRADE OF STEEL AND INTENDED USE OR SERVICE.

FABRICATION: SUBMIT SHOP DRAWINGS FOR ALL BRIDGE COMPONENTS (EXCEPT TIMBER RUNNING PLANKS). SHOW ALL DIMENSIONS AND FABRICATION DETAILS FOR ALL CUT OR BORED TIMBER. FIELD DRILLING OF HOLES SHALL NOT BE ALLOWED UNLESS OTHERWISE NOTED ON THE PLANS.

SHEET 3 OF 4

PROJECT NAME & LOCATION

DRAWING NAME

SAWN TIMBER STRINGER TRAIL BRIDGE

SECTION

962 - SAWN TIMBER TRAIL BRIDGE

TYPICAL ID

STS

REVISION DATE

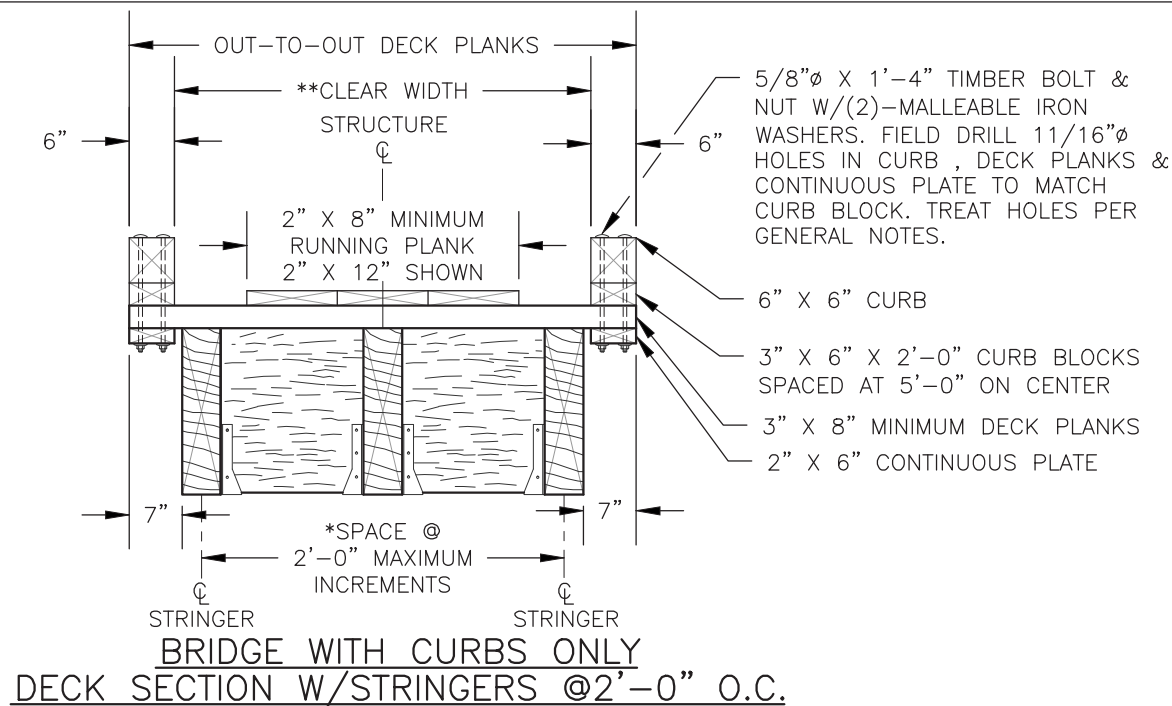
NOT TO SCALE

DRAWING NO.

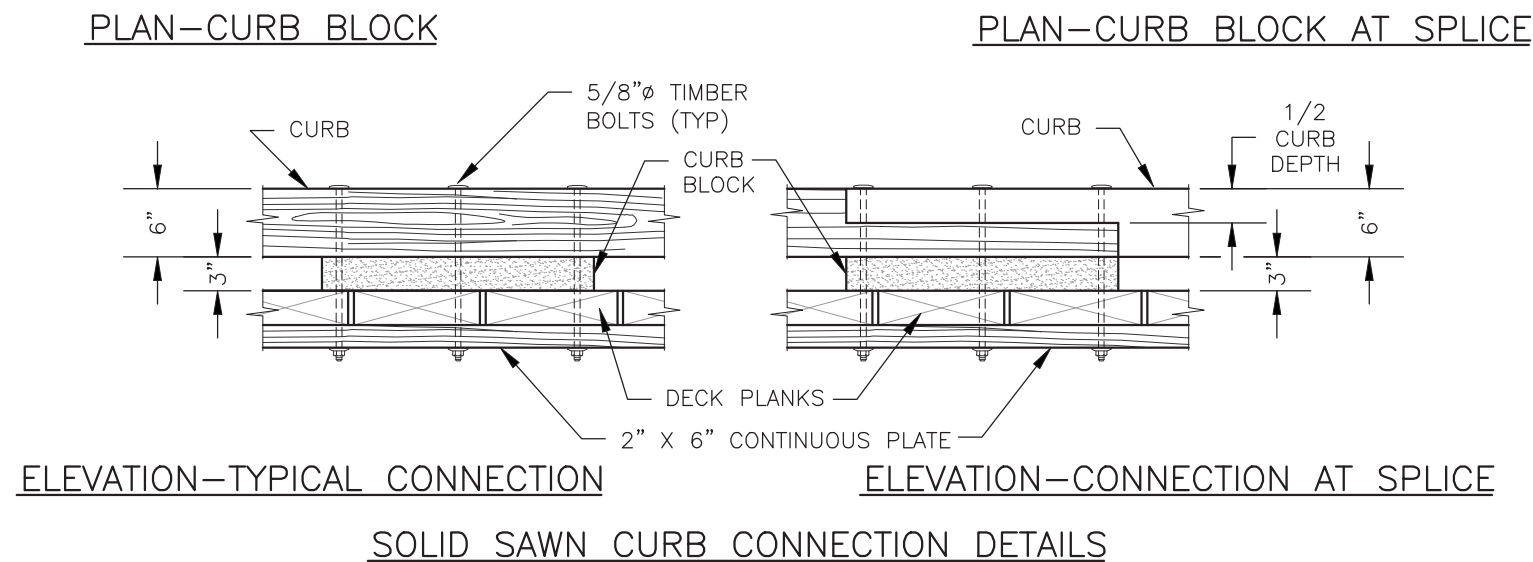
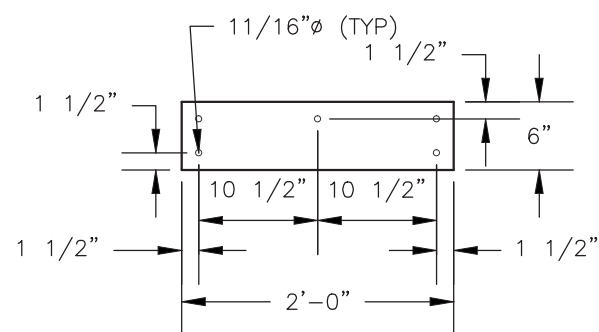
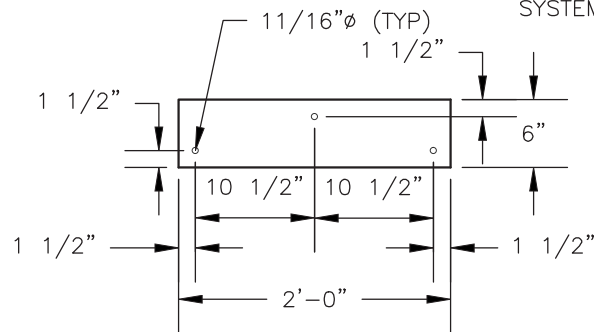
STD_962-10-03a

SHEET

X OF



* MINIMUM NUMBER OF STRINGERS IS THREE
** INSIDE FACE TO INSIDE FACE OF RAILING SYSTEM



GENERAL NOTES:

SPECIFICATIONS: MATERIALS AND CONSTRUCTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03) AND STANDARD SPECIFICATIONS FOR CONSTRUCTION OF TRAILS AND TRAIL BRIDGES ON FEDERAL PROJECTS,

TIMBER & LUMBER: SOLID SAWN TIMBER MEMBERS SHALL CONFORM TO THE REQUIREMENTS OF THE GRADING RULES AGENCY FOR THE SPECIES, TYPE, AND GRADE SPECIFIED BELOW.

DECK PLANKS, CURBS, SILLS, & BACKING PLANKS RUNNING PLANKS

- SOUTHERN PINE NO.2 GRADE GRADING RULES AGENCY - SPIB
- SOUTHERN PINE NO.2 GRADE GRADING RULES AGENCY - SPIB

RAILS & POSTS (SEE PROJECT CRITERIA)

UNTREATED

- BALDCYPRESS, S4S, NO.1 GRADE GRADING RULES AGENCY - SPIB
- WHITE OAK, S4S, SELECT STRUCTURAL GRADE GRADING RULES AGENCY - NELMA

TREATED

- SOUTHERN PINE, S4S, NO.1 GRADE GRADING RULES AGENCY - SPIB

TREATMENT: SEE PROJECT CRITERIA FOR MEMBERS IDENTIFIED TO BE TREATED AND FOR TREATMENT TYPE. PRESERVATIVE TREATMENT SHALL BE IN ACCORDANCE WITH THE CURRENT AMERICAN WOOD PROTECTION ASSOCIATION (AWPA) SPECIFICATIONS USING THE TREATMENT MATERIALS LISTED BELOW. TREATMENT WILL COMPLY WITH THE REQUIREMENTS OF THE CURRENT EDITION OF WESTERN WOOD PRESERVERS INSTITUTE (WWPI) "BEST MANAGEMENT PRACTICES FOR THE USE OF TREATED WOOD IN AQUATIC ENVIRONMENTS".

STRINGERS, DECKING, RUNNING PLANKS, & RAILING SYSTEM, IF TREATED

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 3B ABOVE GROUND-EXPOSED (UC3B)
- PENTACHLOROPHENOL IN LIGHT OIL (TYPE C SOLVENT)
- COPPER NAPHTHENATE (CuN) IN LIGHT OIL (TYPE C SOLVENT)

SILLS, BACKING PLANKS, CRIBS, & TIMBER WALLS, IF TREATED

- AWPA USE CATEGORY SYSTEM (U1) FOR USE CATEGORY 4B GROUND CONTACT-HEAVY DUTY (UC4B)
- PENTACHLOROPHENOL IN HEAVY OIL (TYPE A SOLVENT)
- COPPER NAPHTHENATE (CuN) IN HEAVY OIL (TYPE A SOLVENT)

FIELD TREATMENT: COPPER NAPHTHENATE (2% SOLUTION) SHALL BE FURNISHED FOR FIELD TREATING OD WOOD. ALL ABRASIONS AND FIELD CUTS -APPROVED BY THE C.O.R.- SHALL BE CAREFULLY TRIMMED AND GIVEN THREE BRUSH COATS OF THE FIELD TREATMENT SOLUTION. WHERE APPROVED FIELD DRILLING OF BOLT OR NAIL HOLES IS REQUIRED, THE HOLES SHALL BE FILLED WITH PRESERVATIVE PRIOR TO INSERTING THE FASTENERS.

HARDWARE AND STRUCTURAL STEEL: SEE PROJECT DESIGN CRITERIA FOR STEEL HARDWARE FINISH. GALVANIZED OR UNFINISHED HARDWARE SHALL MEET THE REQUIREMENTS OF AASHTO M270, GRADE 36, WITH NUTS AND BOLTS CONFORMING TO ASTM A307, GRADE A. WEATHERING STEEL AND HARDWARE SHALL MEET THE REQUIREMENTS OF AASHTO M270, GRADE 50W, WITH BOLTS AND NUTS CONFORMING TO ASTM A325, TYPE 3. USE MALLEABLE IRON WASHERS AGAINST WOOD UNLESS OTHERWISE NOTED.

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FABRICATION: SUBMIT SHOP DRAWINGS FOR ALL BRIDGE COMPONENTS (EXCEPT TIMBER RUNNING PLANKS). SHOW ALL DIMENSIONS AND FABRICATION DETAILS FOR ALL CUT OR BORED TIMBER. FIELD DRILLING OF HOLES SHALL NOT BE ALLOWED UNLESS OTHERWISE NOTED ON THE PLANS.

SHEET 3 OF 4

PROJECT NAME & LOCATION

DRAWING NAME
SAWN TIMBER STRINGER TRAIL BRIDGE

SECTION

962 - SAWN TIMBER TRAIL BRIDGE

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STS

REVISION DATE

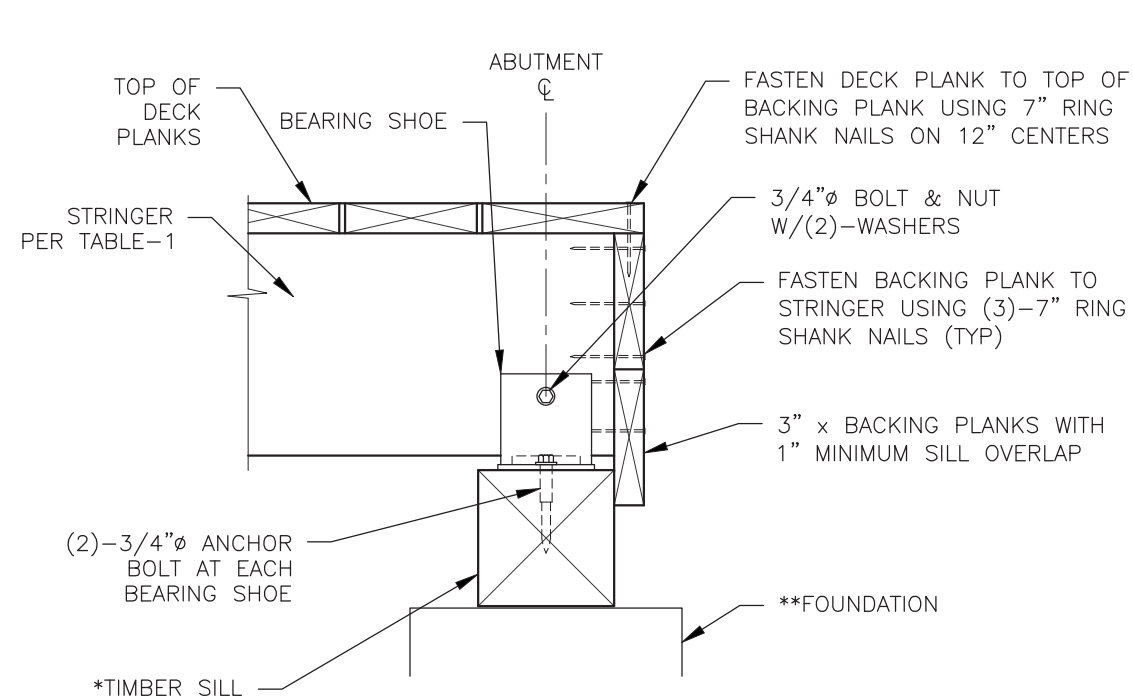
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DRAWING NO.

STD_962-10-03b

SHEET

OF

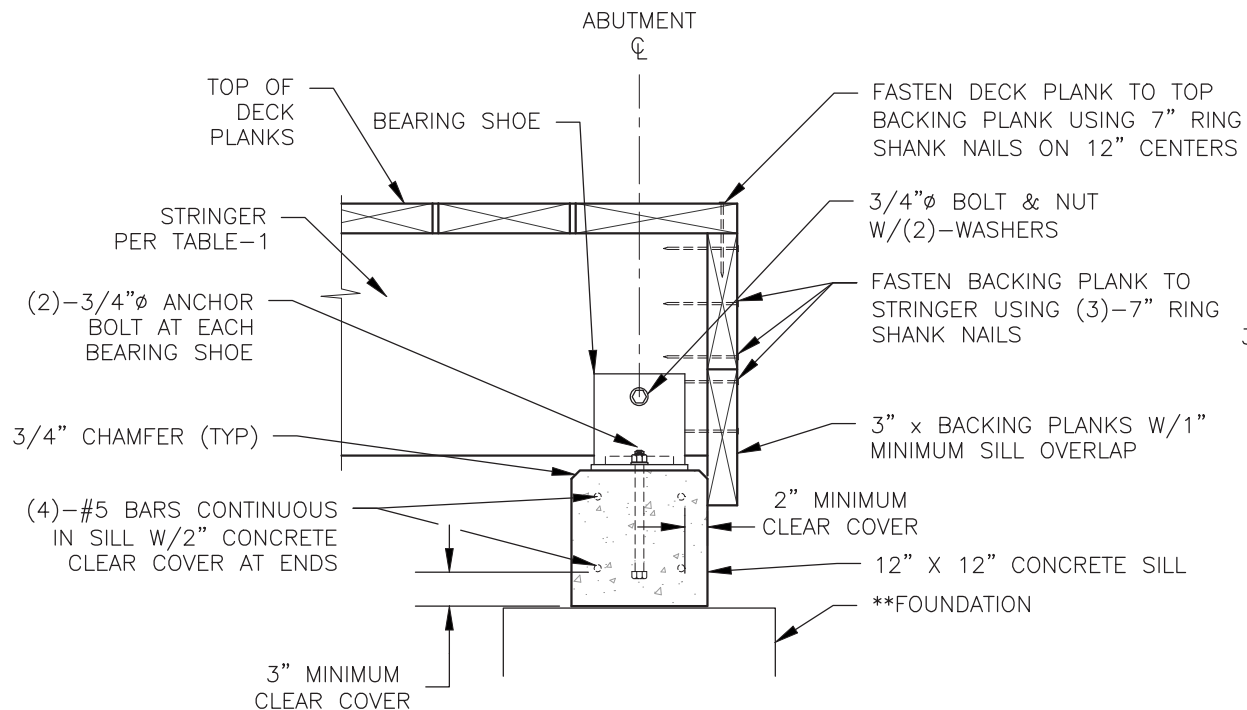


GLU-LAM/SAWN TIMBER SILL
CONNECTION DETAIL

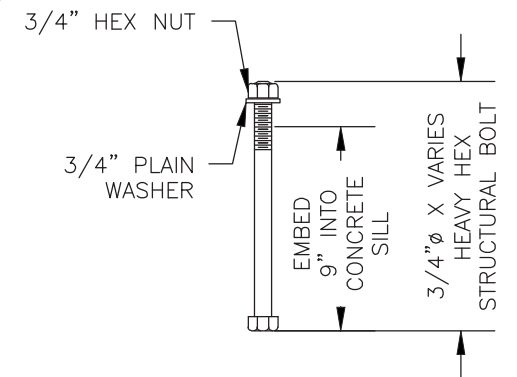
BACKING PLANK STIFFENER NOT SHOWN FOR CLARITY

** TIMBER SILL CAN BE EITHER 12" X 12" SOLID SAWN 10 3/4" X 12" GLUE-LAMINATED, BUILT-UP 3" X 12", 4" X 12", & 6" X 12" TREATED MEMBERS.

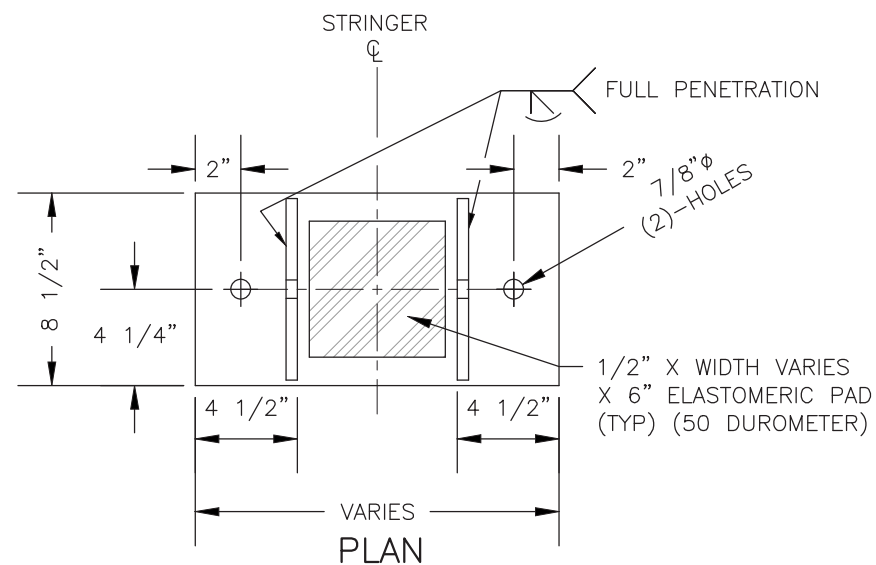
** SEE STANDARD DRAWINGS 965-10, 965-20, 965-30, & 965-40 FOR FOUNDATION ALTERNATIVES



CONCRETE SILL CONNECTION DETAIL

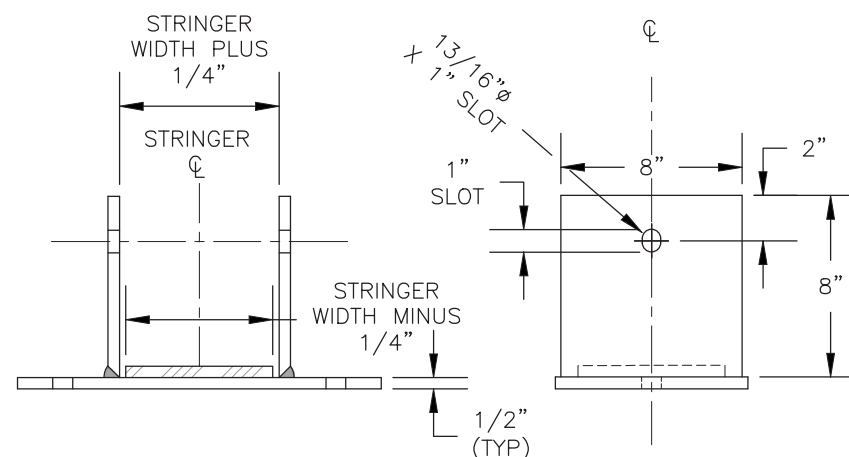


CONCRETE SILL
ANCHOR BOLT DETAIL



BEARING SHOE DETAIL

MATERIAL = 1/2" STEEL PLATE A36



END VIEW

SIDE VIEW

NOTES:

SPECIFICATIONS: MATERIALS AND CONSTRUCTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03) AND STANDARD SPECIFICATIONS FOR CONSTRUCTION OF TRAILS AND TRAIL BRIDGES ON FEDERAL PROJECTS,

CONCRETE: USE STRUCTURAL CONCRETE WITH 7 SACK MINIMUM MIX APPROVED BY THE C.O., CONCRETE SHALL RECEIVE A TOWELED SURFACE FINISH. CONCRETE SHALL HAVE 4%-6% ENTRAINED AIR. MAXIMUM SIZE AGGREGATE SHALL BE 3/4-INCH AND CONCRETE SLUMP SHALL NOT EXCEED 4-INCHES.

REINFORCING STEEL: PROVIDE REINFORCING STEEL THAT CONFORMS TO ASTM A615 (AASHTO M31), GRADE 40 OR 60. PROVIDE 2-INCH CLEAR CONCRETE COVER FOR ALL REBAR, UNLESS NOTED OTHERWISE ON THE PLANS.

HARDWARE AND STRUCTURAL STEEL: SEE SHEET 3 FOR PROJECT DESIGN CRITERIA AND GENERAL NOTES.

TREATED TIMBER & LUMBER: REFER TO THE GENERAL NOTES ON THE SUBSTRUCTURE DRAWINGS FOR TREATED TIMBER & LUMBER SPECIFICATIONS AND FIELD TREATING OF WOOD

LAG SCREW INSTALLATION: PRE-BORE LAG SCREW HOLES USING TWO DIAMETERS, ONE FOR THE SHANK AND ONE FOR THE THREADS. THE LEAD HOLE FOR THE SHANK IS TO BE 1/16-INCH LARGER THAN THE SHANK DIAMETER AND IS TO BE BORED TO THE DEPTH OF PENETRATION OF THE SHANK. THE LEAD HOLE FOR THE THREADED PORTION IS TO BE 70% OF THE BOLT DIAMETER AS SHOWN ON THE PLANS AND IS TO BE BORED AT LEAST TO THE LENGTH OF THE THREADS. **DO NOT DRIVE LAG SCREWS WITH A HAMMER.**

BENEFITS OF MOUNTAIN BICYCLING TRAILS - APPENDIX

B

PROMOTING ACTIVE AND HEALTHY LIFESTYLES

The benefits of mountain biking may start on the trails, but they don't end there. Learning to ride a bike is a rite of passage. Bikes and the sport of mountain biking provide a multitude of opportunities to teach children valuable lessons that will carry into adulthood.

Obesity is at a high, while activity levels among Americans are plummeting. With its progressive nature and way of stimulating the senses, mountain biking is appealing, especially to youth, and provides an excellent form of recreation for reversing the trend toward poor health. Since riding a bike provides excellent cardio conditioning, improves strength and coordination, and burns several hundred calories an hour, it is an activity as appealing to parents as it is to kids.

The unstructured play that mountain biking provides inspires people to explore and appreciate the natural world, leading to positive associations with outdoor activities and exercise.

Mountain biking allows individuals to advance at their own pace, so kids looking for a challenge can have just as much fun as children who are more interested in exploring the scenery. Riding in nature provides an environment where children can work on their skills, have fun, and pedal their bikes without parents having to worry. Mountain biking is a cross-generational endeavor, accessible to all ages and levels of physical fitness. Going for a trail ride is an excellent way for parents to do more than support their children's activities, it's a way to share the experience. Every ride is an opportunity to create a healthy lifestyle and pass on lessons that are best learned through experience.

Several studies on physical activity have indicated that proximity to recreational facilities, such as trails, is a predictor for physical activity. Simply put, if there are walking and biking trails nearby, then residents are more likely to use them and therefore be healthier. Physical health and exposure to nature also benefit mental health, reducing stress and increasing happiness. In addition, individual and community health translate to economic benefits by decreasing health care costs.



CONTRIBUTING TO ECONOMIC GROWTH

A well-designed trail system can stimulate economic growth by increasing activity within the local population as well as attracting visitors from outside. Trails can generate business in retail sales and services, support jobs, provide sustainable growth in rural communities, and produce tax revenue. Access to trails also correlates to a higher quality of life, thus making the community more desirable and capable of attracting new businesses and workers to an area.

IMBA assists local communities in increasing mountain bicycling tourism as a sustainable, renewable source of economic development. A mountain biking destination is one that attracts tourists to an area for the benefits of the mountain biking experience; provides visitors with all of the amenities needed to compliment, ease, and enhance their visit; and in turn creates word of mouth about the community that will draw new and repeat visits.

According to the Outdoor Industry Alliance, mountain bicyclists represent approximately 3.4% of the U.S. population, or nearly 10.6 million participants. IMBA's own research indicates that enthusiasts, who represent a portion of this overall number, travel extensively within a four-hour range and will typically devote one week per year specifically to travel to reach mountain bicycling destinations. Same-day visitors spend approximately \$35 per day in local communities while destination visitors spend closer to \$193 per day (due in part to lodging and increased meal purchases).

While mountain bicyclists are certainly willing to travel to ride, they will only do so if their destination contains a key ingredient: high-quality trails. These trails must be of a sufficient length and contain a variety of experiences, such as traditional singletrack, bike-optimized singletrack, bike parks, and shuttle options. The competition for these destination-quality locations is slowly increasing over time

A case study in Cable, Wisconsin, clearly illustrates how a community can benefit from offering a world-class bicycling experience. Construction of new bicycle trails in Cable resulted in:

- Increased property values.
- Increased spending on bicycle related goods.
- 35 jobs created annually, adding \$523,000 to total employee compensation.
- Nearly \$1.3 million impact related to spending from mountain bicyclists.



FOSTERING COMMUNITY PRIDE AND IDENTITY

Involving community members in the planning, building, and maintaining of trails fosters community pride. In order to maintain sustainable trails, care of the trail system should be managed by local enthusiasts and rely on an organized membership base. Volunteering to help with trails provides an opportunity for area residents to connect with each other and with the terrain and land that surround them. IMBA members donate nearly one million volunteer hours to trails throughout North America every year, making volunteerism a large part of mountain bike culture.

Trails and parks also provide informal opportunities for people to meet and interact with others in a natural setting. Connection to nature is paramount to maintaining the health of the environment and making the outdoors relevant and accessible to all. Trails serve a diverse population and cultivate unity and stewardship in the community. Trails can even revitalize blighted areas, for example, turning landfills into bike parks or gravel pits into trailheads.



PRESERVING OPEN SPACE

Trails make communities better places to live by preserving and creating open spaces for recreation. Greenways function as hands-on environmental classrooms for people of all ages, providing opportunities to enjoy nature close up. With its abundant plant life, open spaces can decrease pollution, protect water quality, and reduce soil erosion. Economic growth and property values are also tied to open space as buyers are generally willing to pay more for property located close to parks and open space. The recreation, health, economic, and environmental benefits of trails can contribute to an overall enhanced quality of life in nearby communities.



ENCOURAGING POSITIVE RECREATION USE TO DISPLACE NEGATIVE USE

Without a plan, undeveloped areas are often haphazardly transformed by users creating unauthorized sites to suit their personal wants. Purposefully designing trail systems can help create diverse recreational opportunities, encourage safe use, and meet the needs of the entire community. Unauthorized trail building and dumping or other unacceptable activities can damage ecology, cause safety hazards, and leave behind debris that is both unsightly and illegal. The best way to encourage positive use is to displace negative use. A well-planned trail system can discourage and displace destructive activities with healthy recreational use that attracts visitors of all ages.



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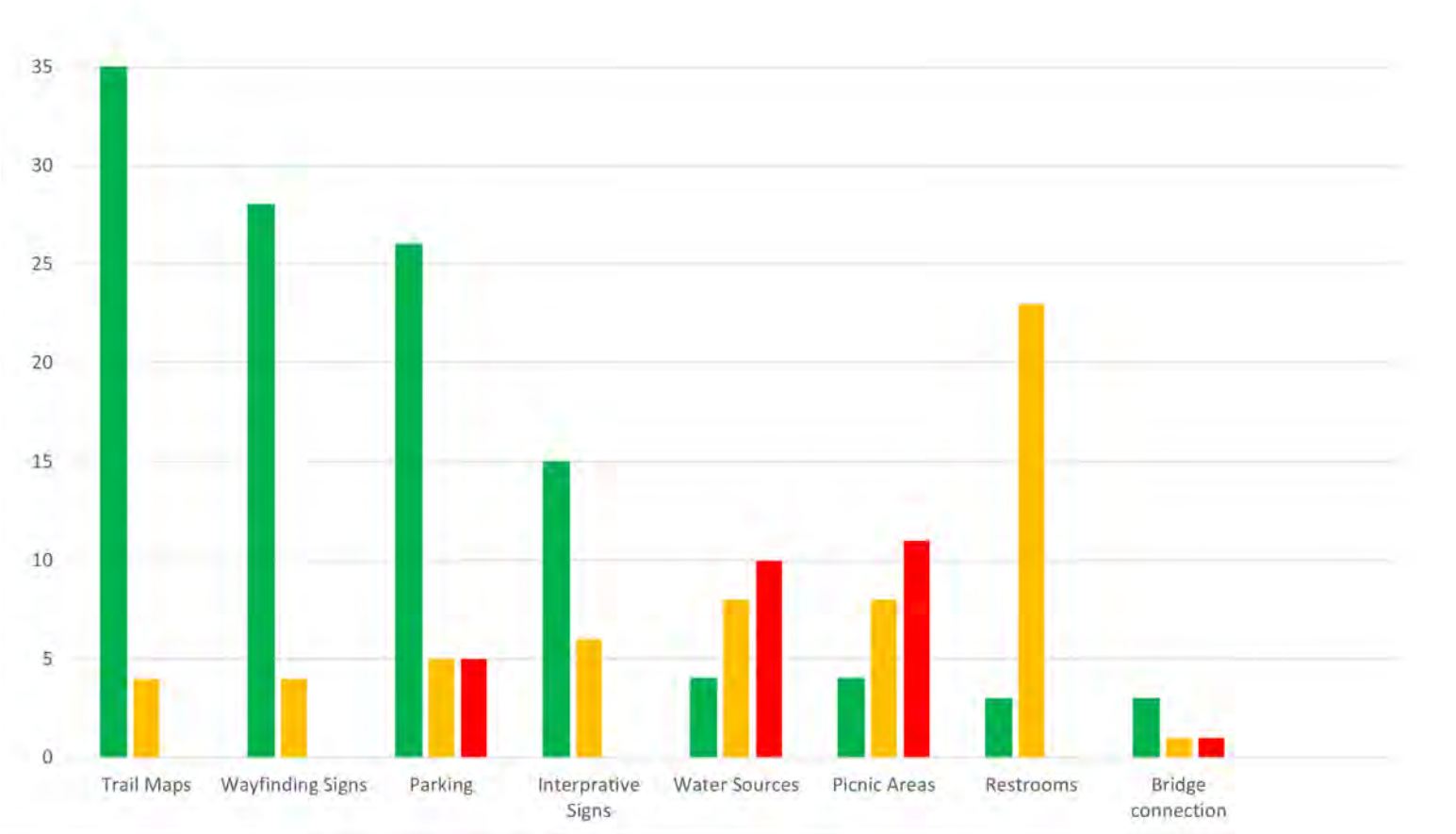
MONO POND STATE PARK

COMMUNITY ENGAGEMENT & SURVEY RESULTS

Columbia, CT - November 2024

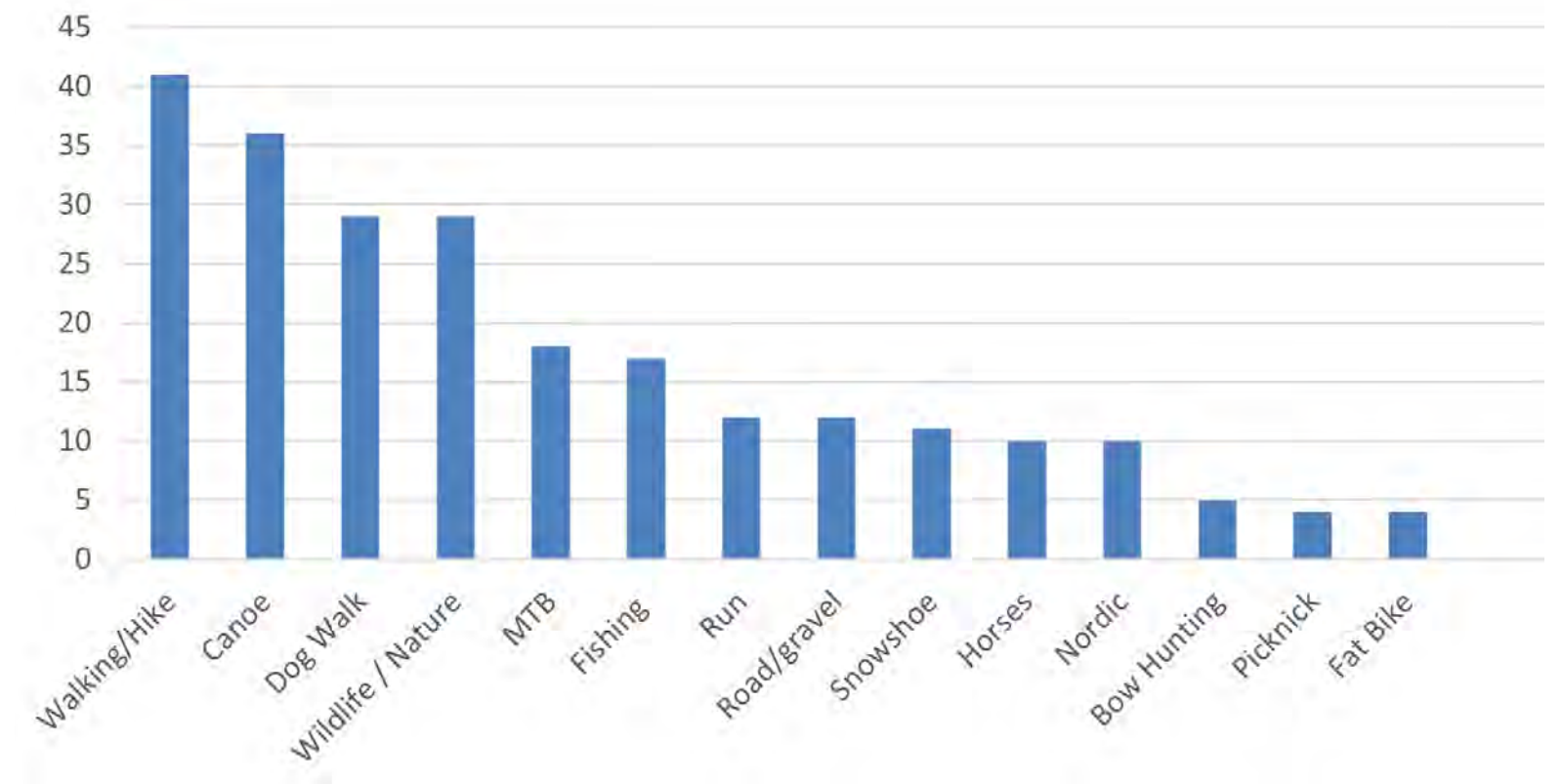


What additional amenities are needed at Mono Pond?



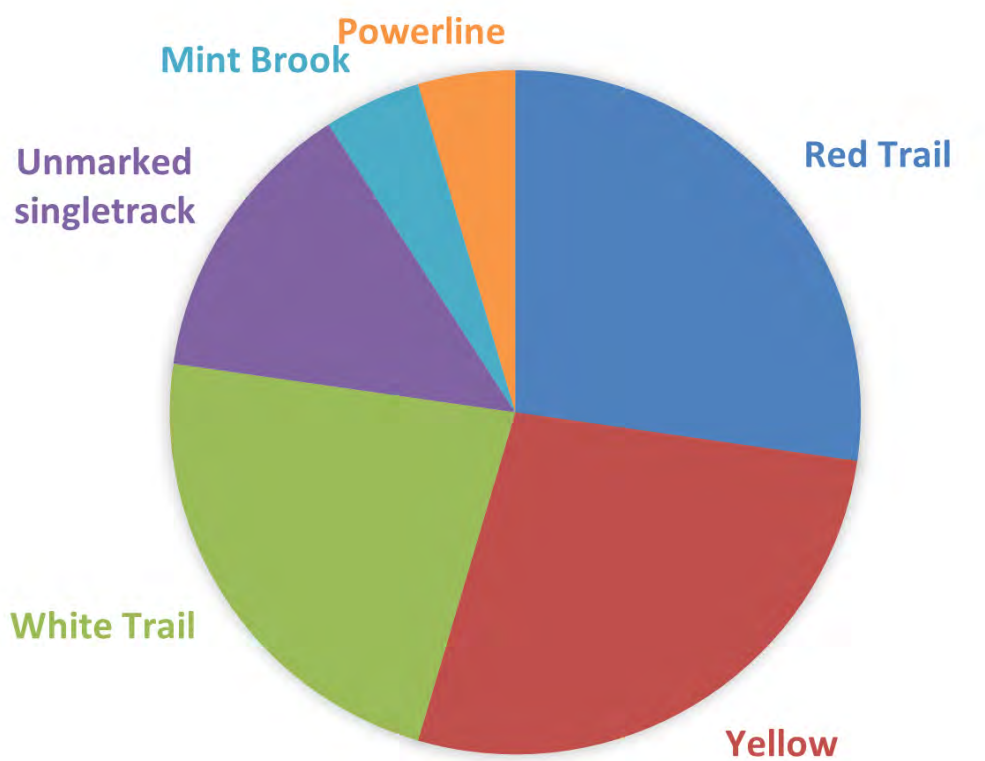
Answers	Gotta Have It	Nice to Include	Don't Need It	Response Total
Trail Maps	35 (90%)	4 (10%)	0 (0%)	39
Wayfinding Signs	28 (88%)	4 (13%)	0 (0%)	32
Parking	26 (72%)	5 (14%)	5 (14%)	36
Interprative Signs	15 (71%)	6 (29%)	0 (0%)	21
Water Sources	4 (18%)	8 (36%)	10 (45%)	22
Picnic Areas	4 (17%)	8 (35%)	11 (48%)	23
Restrooms	3 (12%)	23 (88%)	0 (0%)	26
Bridge connection	3 (60%)	1 (20%)	1 (20%)	5

What activities do you engage in within Mono Pond?



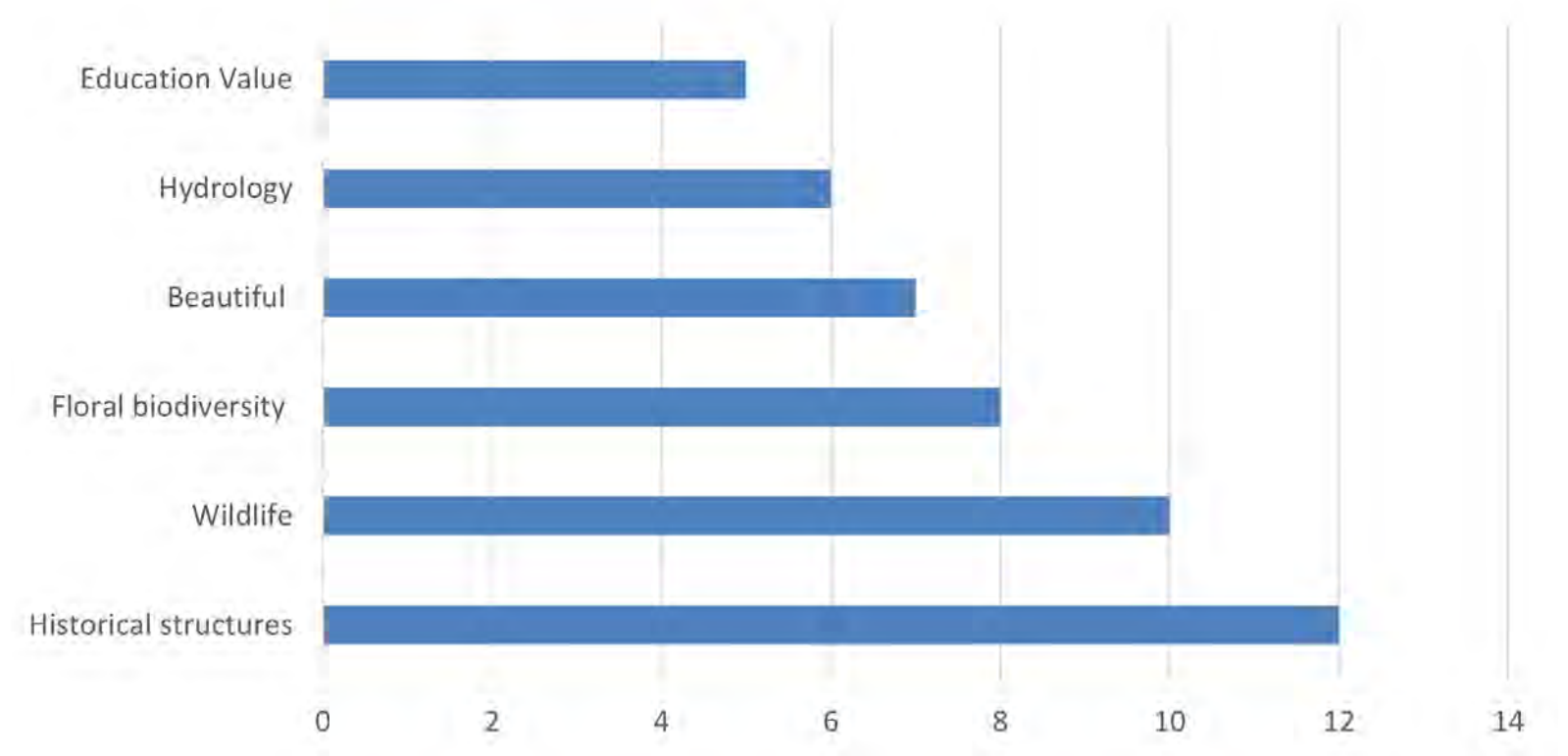
Answers	Response Count	Response Percent
Walking/Hike	41	17%
Canoe	36	15%
Dog Walk	29	12%
Wildlife / Nature	29	12%
MTB	18	8%
Fishing	17	7%
Run	12	5%
Road/gravel	12	5%
Snowshoe	11	5%
Horses	10	4%
Nordic	10	4%
Bow Hunting	5	2%
Picknick	4	2%
Fat Bike	4	2%
Ice skating	1	0%
	239	100%

What are your favorite trails at Mono Pond?



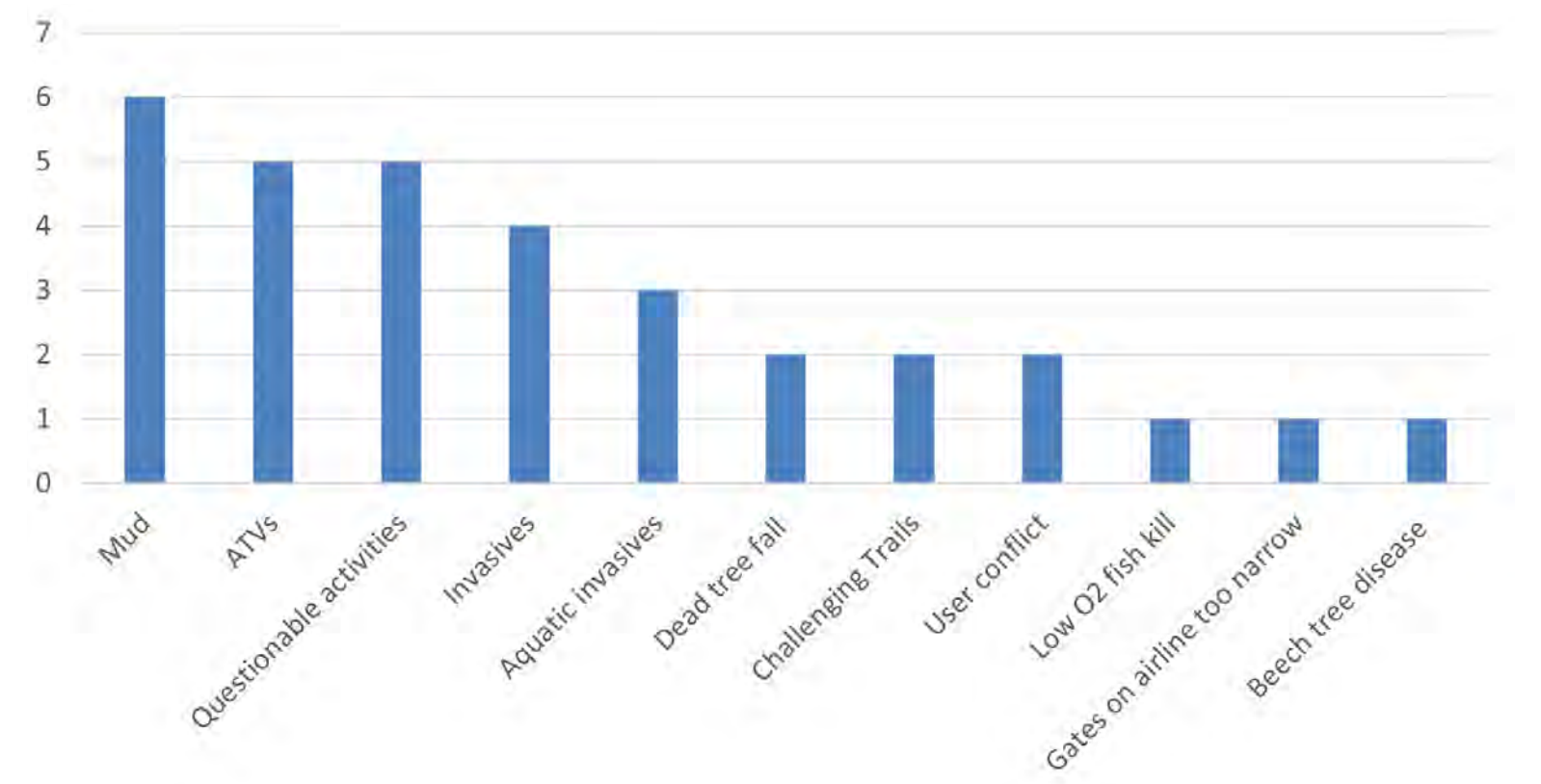
Answers	Response Count	Response Percent
Red Trail	6	27%
Yellow	6	27%
White Trail	5	23%
Unmarked singletrack	3	14%
Mint Brook	1	5%
Powerline	1	5%
	22	100%

What are some of the unique natural or historical resources that can be found at Mono Pond?



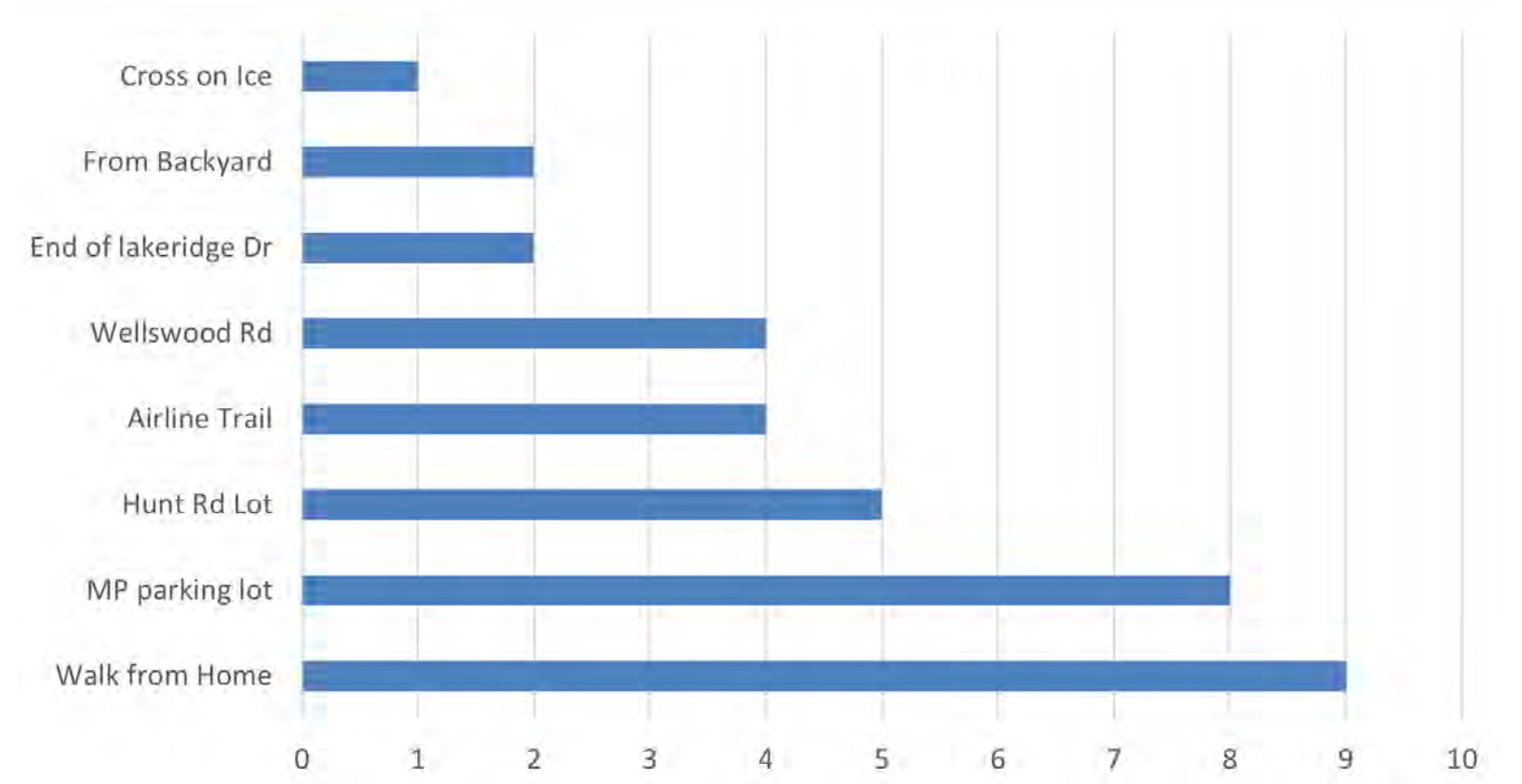
Answers	Response Count	Response Percent
Historical structures	12	25%
Wildlife	10	21%
Floral biodiversity	8	17%
Beautiful	7	15%
Hydrology	6	13%
Education Value	5	10%
	48	100%

Have you experienced any issue at Mono Pond?
What are they and where are they located?



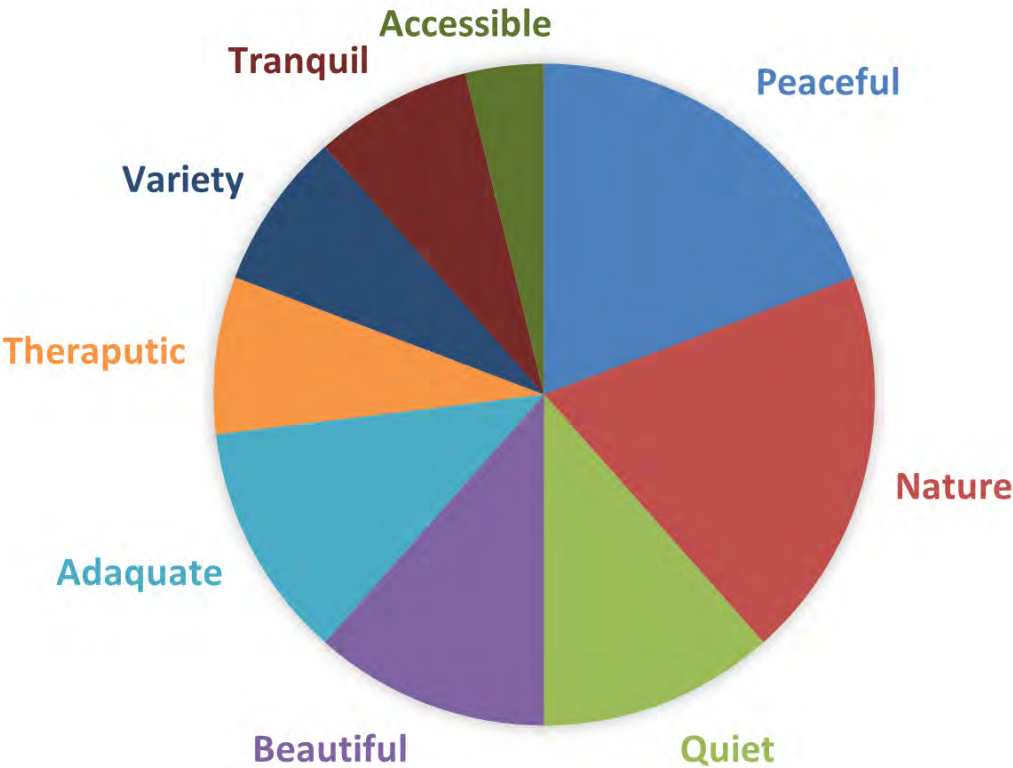
Answers	Response Count	Response Percent
Mud	6	19%
ATVs	5	16%
Questionable activities	5	16%
Invasives	4	13%
Aquatic invasives	3	9%
Dead tree fall	2	6%
Challenging Trails	2	6%
User conflict	2	6%
Low O2 fish kill	1	3%
		3%
Gates on airline too narrow	1	
Beech tree disease	1	3%
	32	100%

How do you currently access Mono Pond and the existing trails?



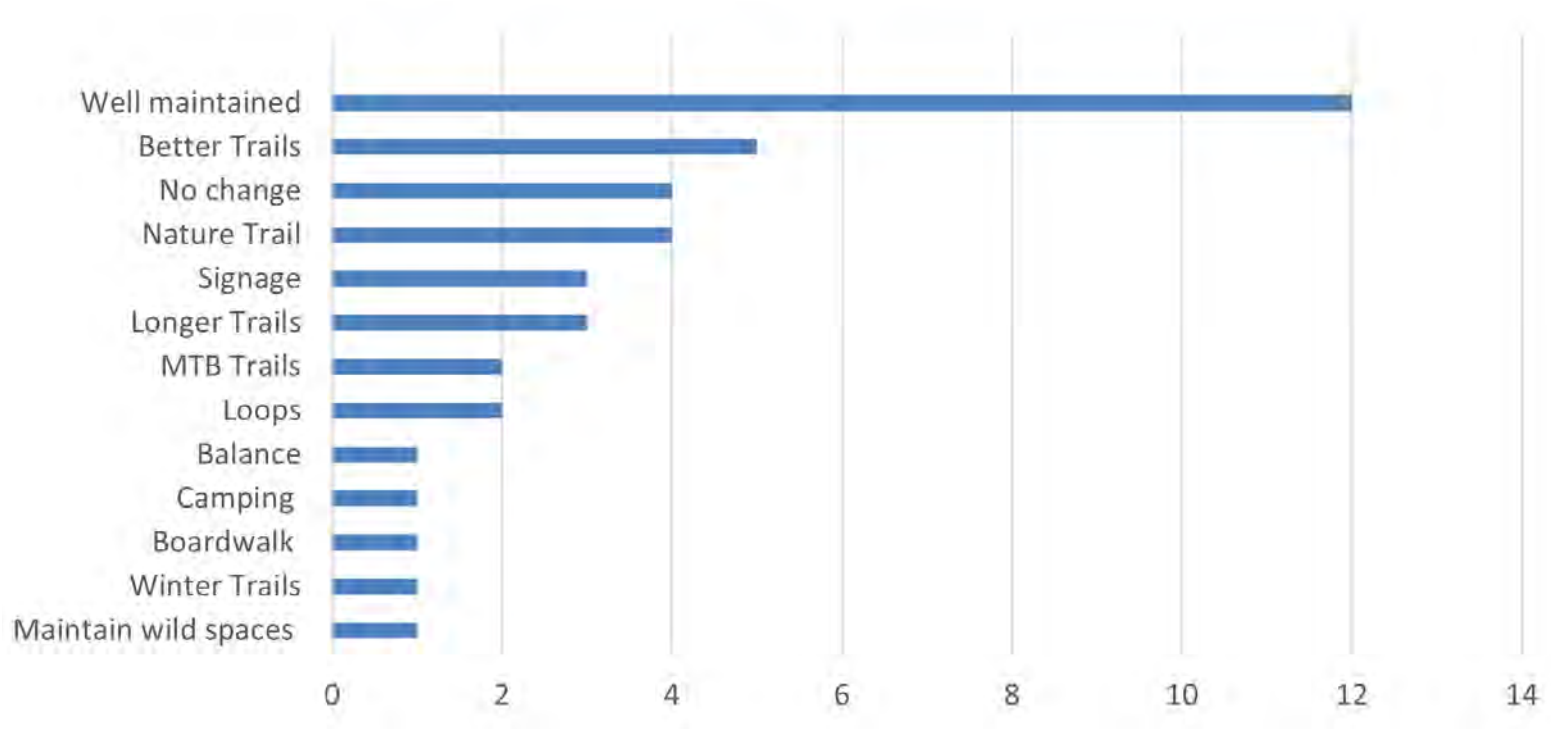
Answers	Response Count	Response Percent
Walk from Home	9	26%
MP parking lot	8	23%
Hunt Rd Lot	5	14%
Airline Trail	4	11%
Wellswood Rd	4	11%
		6%
End of lakeridge Dr	2	
From Backyard	2	6%
Cross on Ice	1	3%
	35	100%

What word or phrase best describes your existing experience at Mono Pond?



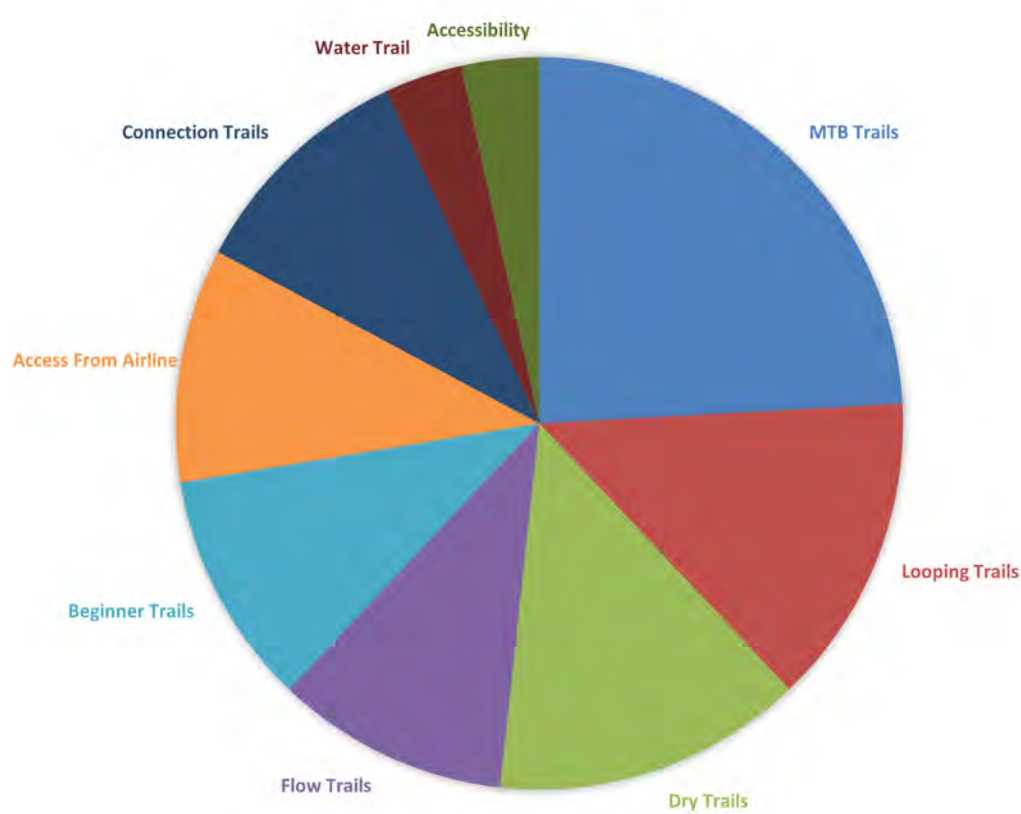
Answers	Response Count	Response Percent
Peaceful	5	19%
Nature	5	19%
Quiet	3	12%
Beautiful	3	12%
Adaquate	3	12%
		8%
Theraputic	2	
Variety	2	8%
Tranquil	2	8%
Accessible	1	4%
	26	100%

What word or phrase best describes your desired future experience at Mono Pond?



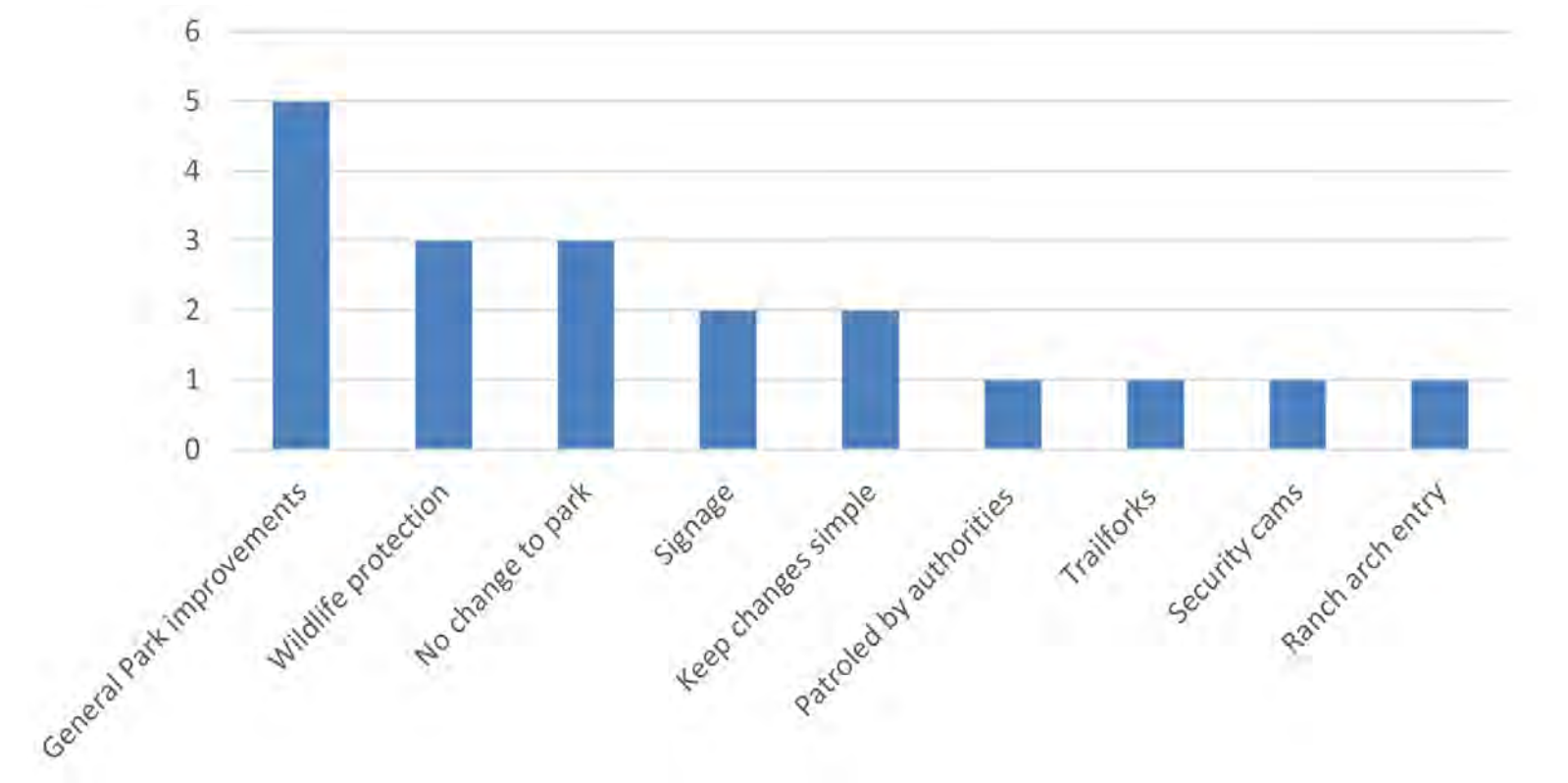
Answers	Response Count	Response Percent
Well maintained	12	30%
Better Trails	5	13%
Nature Trail	4	10%
No change	4	10%
Longer Trails	3	8%
Signage	3	8%
Loops	2	5%
MTB Trails	2	5%
Maintain wild spaces	1	3%
		3%
Winter Trails	1	
Boardwalk	1	3%
Camping	1	3%
Balance	1	3%
	40	100%

What types of trail experiences or skill levels are missing or desired at Mono Pond?



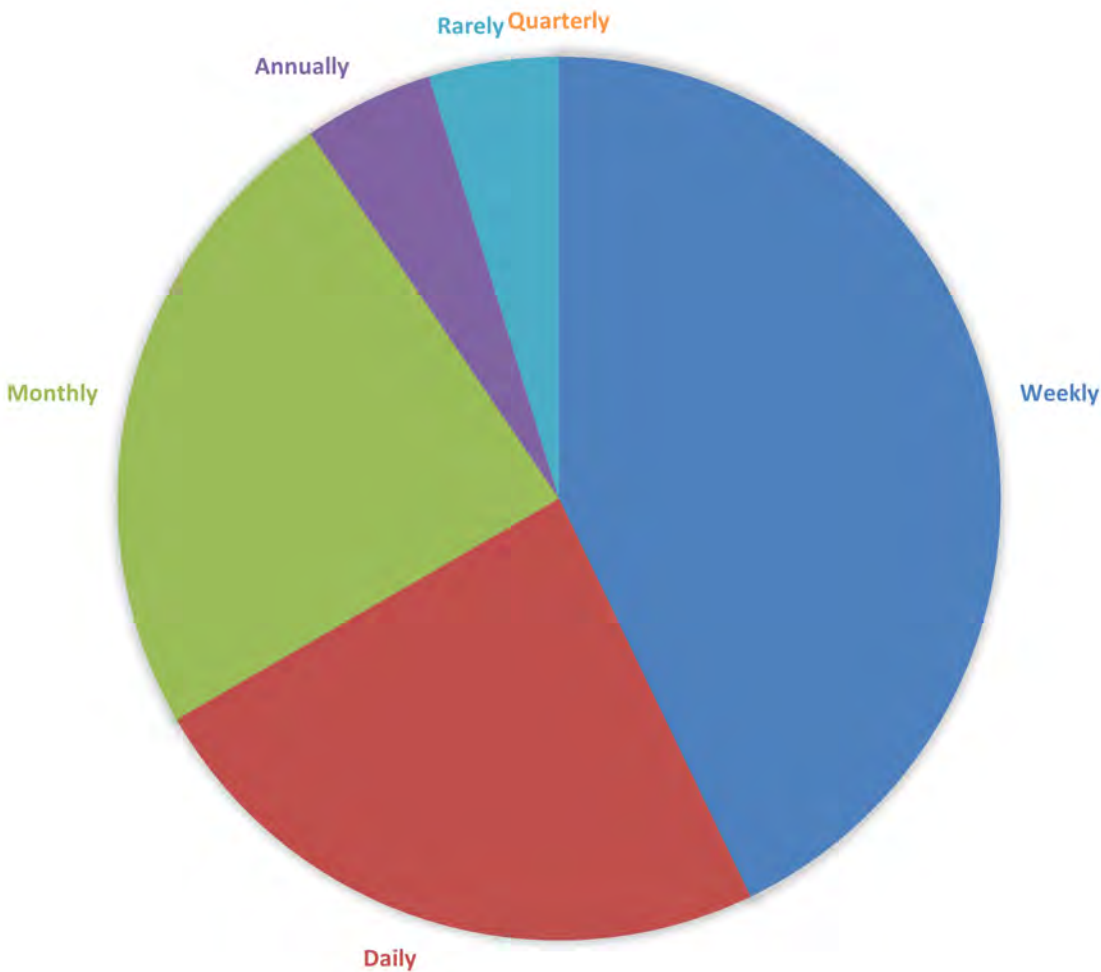
Answers	Response Count	Response Percent
MTB Trails	7	24%
Looping Trails	4	14%
Dry Trails	4	14%
Flow Trails	3	10%
		10%
Beginner Trails	3	
Access From Airline	3	10%
Connection Trails	3	10%
Water Trail	1	3%
Accessibility	1	3%
	29	100%

Are there any additional comments that you would like to share about Mono Pond?



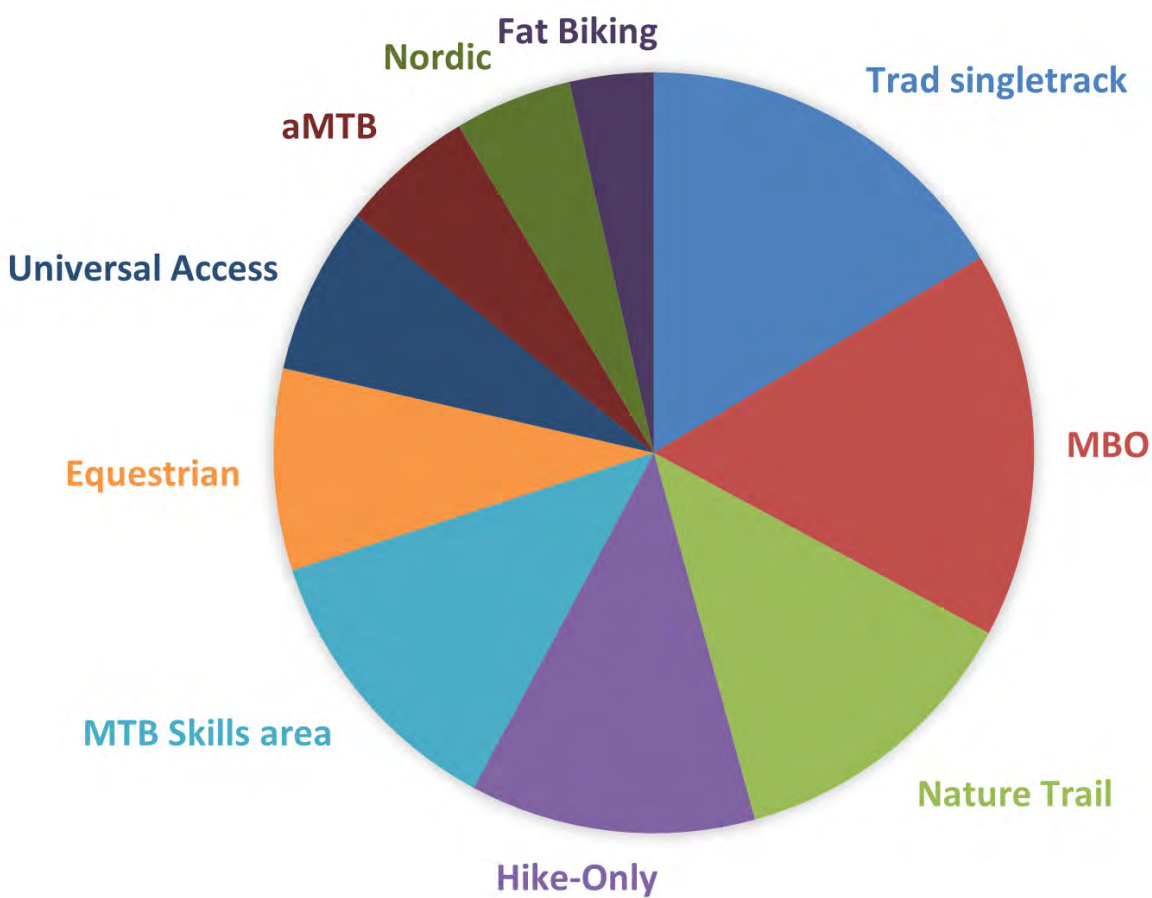
Answers	Response Count	Response Percent
General Park improvements	5	26%
Wildlife protection	3	16%
No change to park	3	16%
Signage	2	11%
Keep changes simple	2	11%
Patroled by authorities	1	5%
Trailforks	1	5%
Security cams	1	5%
Ranch arch entry	1	5%
	19	100%

How often do you engage in trails-based outdoor recreation at Mono Pond?



Answers	Response Count	Response Percent
Weekly	9	43%
Daily	5	24%
Monthly	5	24%
Annually	1	5%
Rarely	1	5%
Quarterly	0	0%
	21	100%

What type of trail experience would you like to see at Mono Pond?



Answers	Gotta Have It	Nice to Include	Don't Need It	Response Total
Traditional singletrack	23 (85%)	3 (11%)	1 (4%)	27
Mountain Bike-Optimized	23 (77%)	2 (7%)	5 (17%)	30
Nature Trail	18 (64%)	10 (36%)	0 (0%)	28
Hike-Only	17 (65%)	6 (23%)	3 (12%)	26
MTB Skills area	17 (61%)	5 (18%)	6 (21%)	28
Equestrian	12 (48%)	6 (24%)	7 (28%)	25
Universal Access	10 (45%)	12 (55%)	0 (0%)	22
aMTB	8 (36%)	14 (64%)	0 (0%)	22
Nordic	7 (30%)	14 (61%)	2 (9%)	23
Fat Biking	5 (20%)	15 (60%)	5 (20%)	25

MONO POND STATE PARK

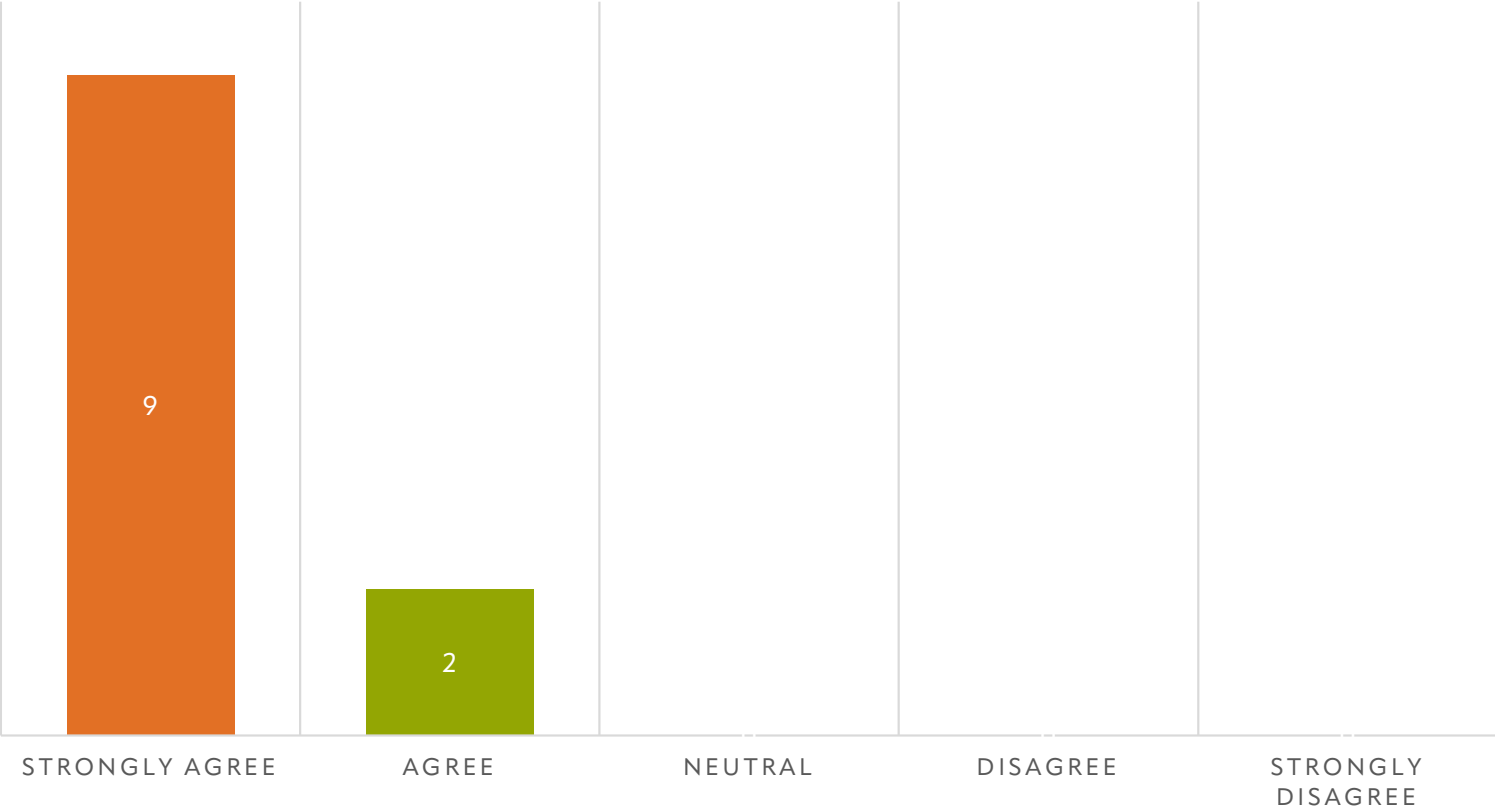
COMMUNITY ENGAGEMENT

Columbia, CT - December 2025



Overall, do the proposed trail concepts provided a good mix of trail types, and connectivity for the site?

Total Responses: 11*



Answers	Response Count	Response Percent
Strongly Agree	9	82%
Agree	2	18%
Neutral	0	0%
Disagree	0	0%
Strongly Disagree	0	0%
Response Total	11	100%

Which trails, trail types, or destination connections should be prioritized in the next phase of planning?

Comment 1	Zola Rd and Pine Street access to the corners of the park [Second this; Third this]
Comment 2	MTB trails
Comment 3	MTB trails
Comment 4	More advanced MTB trails
Comment 5	Snowshoe
Comment 6	Trail running
Comment 7	Canoe trail in pond
Comment 8	the [easiest] to [install] make progress?
Comment 9	Boat launch trail to rest of park
Comment 10	Boardwalk from eastern shore of pond to the western shore. With a viewing platform (view down the length of the pond to the island). This would provide another parking lot (Already made!) for access to trails

Is there additional trail experiences you would like to see included in the plan? If so, what is missing?

Comment 1	Is there an opportunity to add a skills park / progression park for
Comment 2	Skills / progression park
Comment 3	I would like to have places throughout the park for people to sit and reflect, get information about the habitat, and enjoy scenic views. I'd like to have viewing / fishing platforms at various locations along the shore.
Comment 4	water trail needed

Is there additional connectivity you'd like to see? If so, what is missing?

Comment 1	Yes! Need to connect Mono Pond + Mono Pond State Park at some point ✓
Comment 2	I think the Wellswood TH trail in 111-107 should have a loop
Comment 3	Loop trails for hikers in the 111/107 areas
Comment 4	Loop trails for hikers in bike area that doesn't — involve Airline Trail
Comment 5	Hiking to multi-use trail connection
Comment 6	Existing "Comm Trail" from IW Sign (turnaround area) to Lake Ridge farther up could provide access to Wellswood. Road below where it ends (where gate has been installed). Turnaround area could be a parking area. Trail would have to be made on [town land] that runs behind the houses on Bears Den.

Any other remarks or feedback?

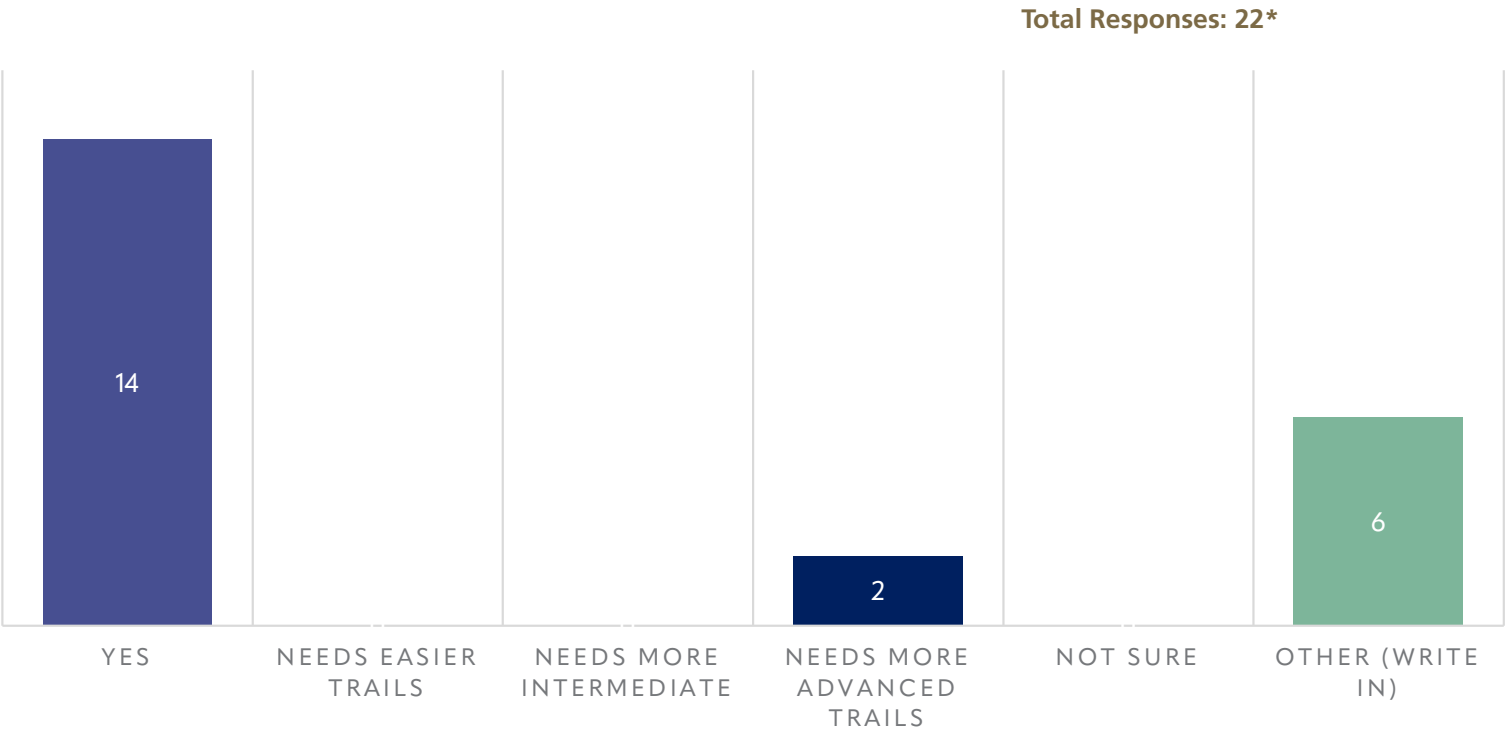
Comment 1	Nice connection points to the Airline Trail ✓
Comment 2	Additional clarity on parking?
Comment 3	Very dense concentration of trails and impact on wildlife
Comment 4	Access to 112/108 trails without requiring "hiking in"
Comment 5	More parking options for trail access
Comment 6	Having seen several bicyclists nearly get seriously injured by poor maintenance @ Airline Trail trailhead crossings [in Lebanon] (due to washouts, loose gravel, overgrown weeds) a clear protocol for maintenance is crucial. Need a central plan for property maintenance as well as unauthorized usage (motorcycles, ATVs, unleashed dogs). Most/ALL Airline Trail parking will need to be enlarged / increased; often there's nowhere to park!
Comment 7	Water Trail Needed

Additional Comments:

Other Feedback	
Comment 1	Speed bumps on Wellwood nearing TH to slow traffic
Comment 2	Would be nice to know more about other parking options
Comment 3	Enforcement of no motorized vehicles --> issue currently in these woods and airline trail
Comment 4	Wildlife impact from dense concentration of trails / noise level of lake parks
Comment 5	Do not allow motorized bikes!
Comment 6	Connect boat launch trail with rest of park
Comment 7	Limit boat motors to 5 hp! Or no motors on mono pond
Comment 7	Keep atvs out

Do the proposed trails provide the right balance of trail difficulty?

Zone 1: Hiking Focused

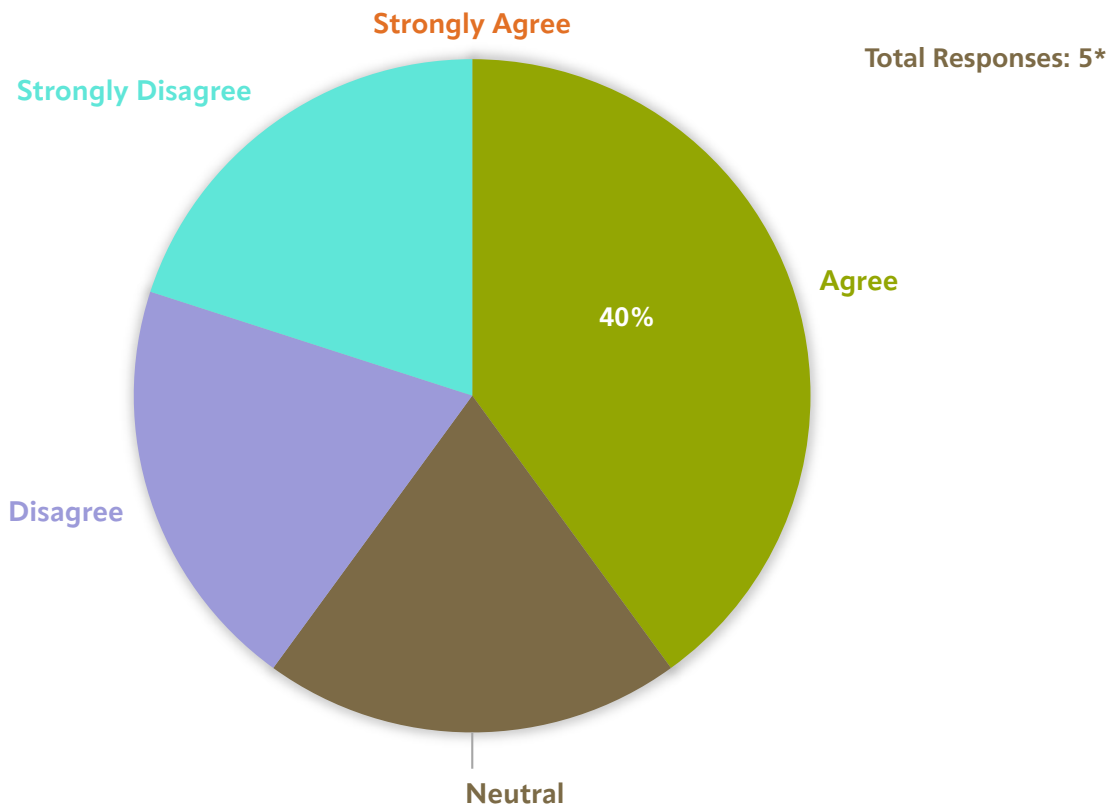


Answers	Response Count	Response Percent
Yes	14	64%
Needs Easier trails	0	0%
Needs more Intermediate	0	0%
Needs more advanced trails	2	9%
Not Sure	0	0%
Other (write in)	6	27%
Response Total	22	100%

Write in Comments:	
Comment 1	Connection from Red Trail to the rest of the
Comment 2	At the Community Trailhead - hope to add a gate. (No ATV's). Also add speedbumps to
Comment 3	Need access to Zone 2

Do the proposed trails concepts in the zone provide a good mix of trail types and connectivity for the site?

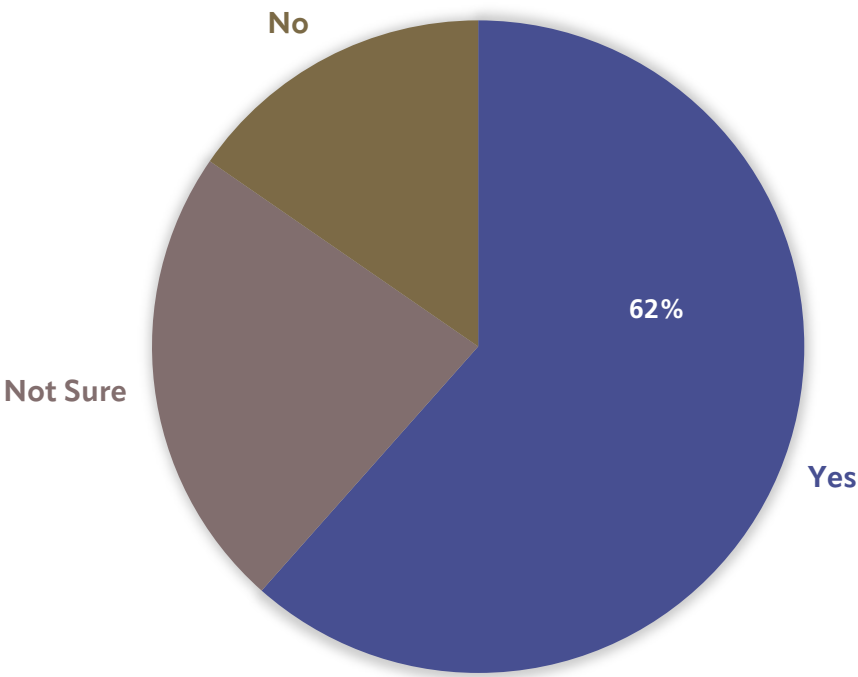
Zone 1: Hiking Focused



Answers	Response Count	Response Percent
Strongly Agree	0	0%
Agree	2	40%
Neutral	1	20%
Disagree	1	20%
Strongly Disagree	1	20%
Response Total	5	100%

Do the trails in this plan provide the right balance of accessibility and family friendly options?

Zone 1: Hiking Focused

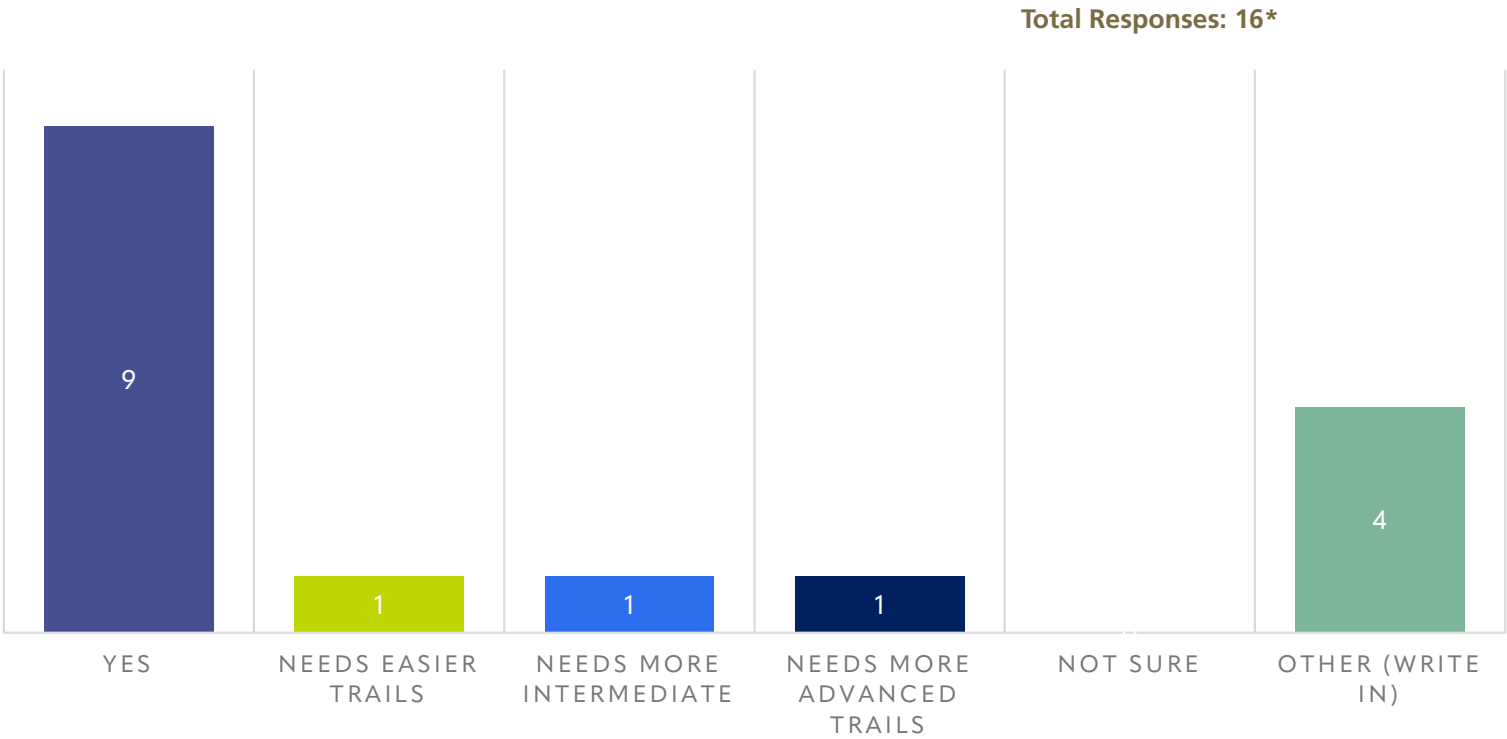


Total Responses: 13*

Answers	Response Count	Response Percent
Yes	8	62%
Not Sure	3	23%
No	2	15%
Response Total	13	100%

Do the proposed trails provide the right balance of trail difficulty?

Zone 2: MTB Focused

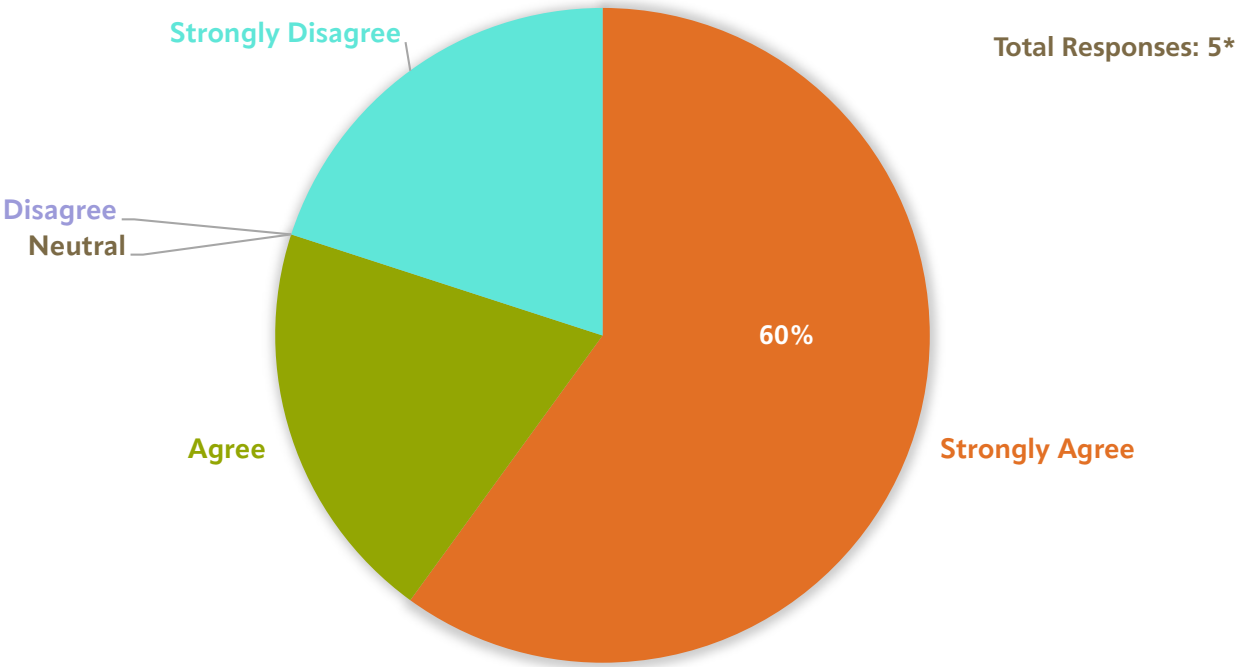


Answers	Response Count	Response Percent
Yes	9	56%
Needs Easier trails	1	6%
Needs more Intermediate	1	6%
Needs more advanced trails	1	6%
Not Sure	0	0%
Other (write in)	4	25%
Response Total	16	100%

Written comments (Other fill in Response)	
Comment 1	Water Trail Needed?

Do the proposed trails concepts in the zone provide a good mix of trail types and connectivity for the site?

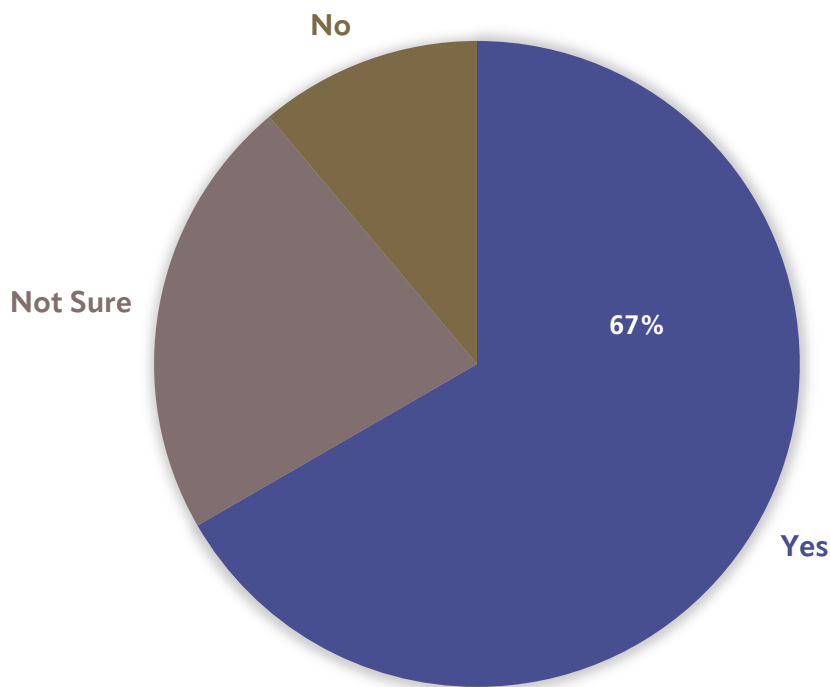
Zone 2: MTB Focused



Answers	Response Count	Response Percent
Strongly Agree	3	60%
Agree	1	20%
Neutral	0	0%
Disagree	0	0%
Strongly Disagree	1	20%
Response Total	5	100%

Do the trails in this plan provide the right balance of accessibility and family friendly options?

Zone 2: MTB Focused



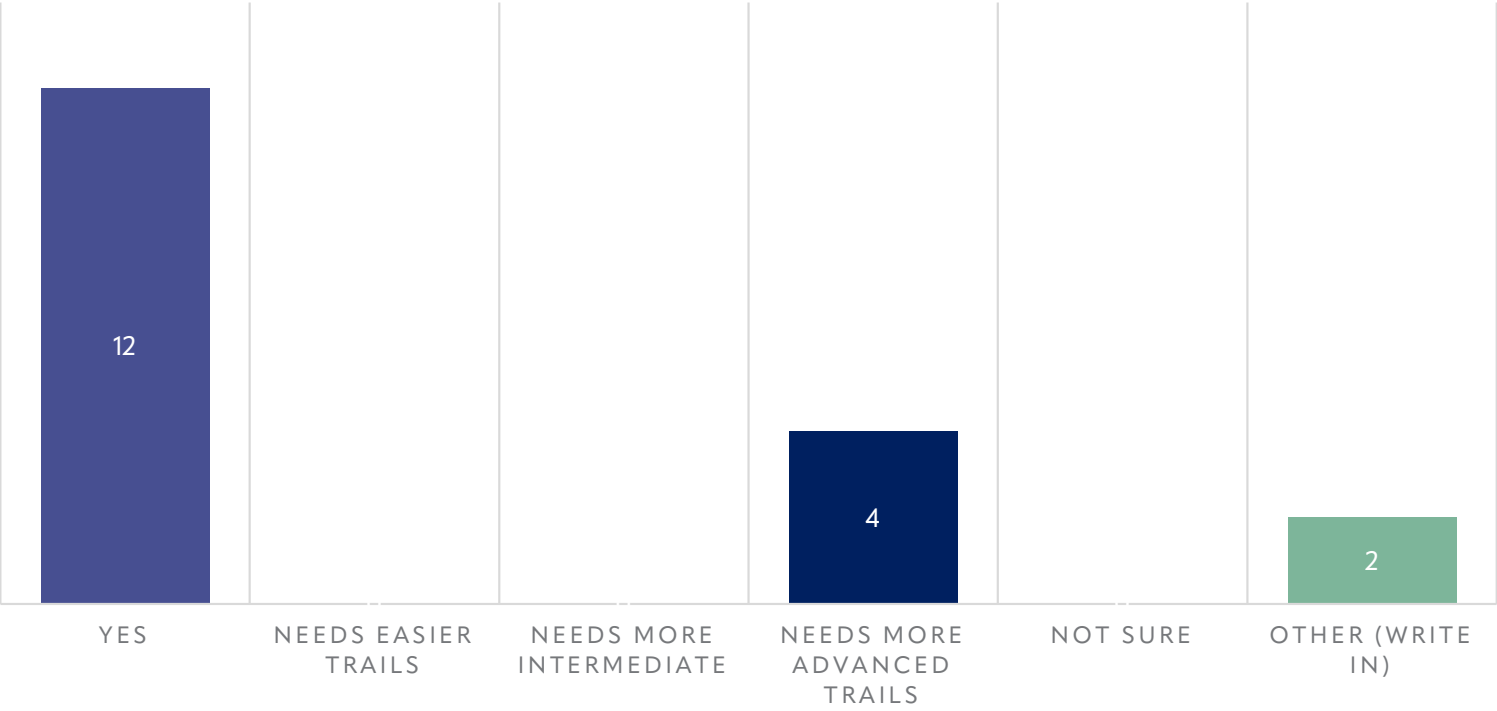
Total Responses: 9*

Answers	Response Count	Response Percent
Yes	6	67%
Not Sure	2	22%
No	1	11%
Response Total	9	100%

Do the proposed trails provide the right balance of trail difficulty?

Zone 3: Shared-Use Focused

Total Responses: 18*

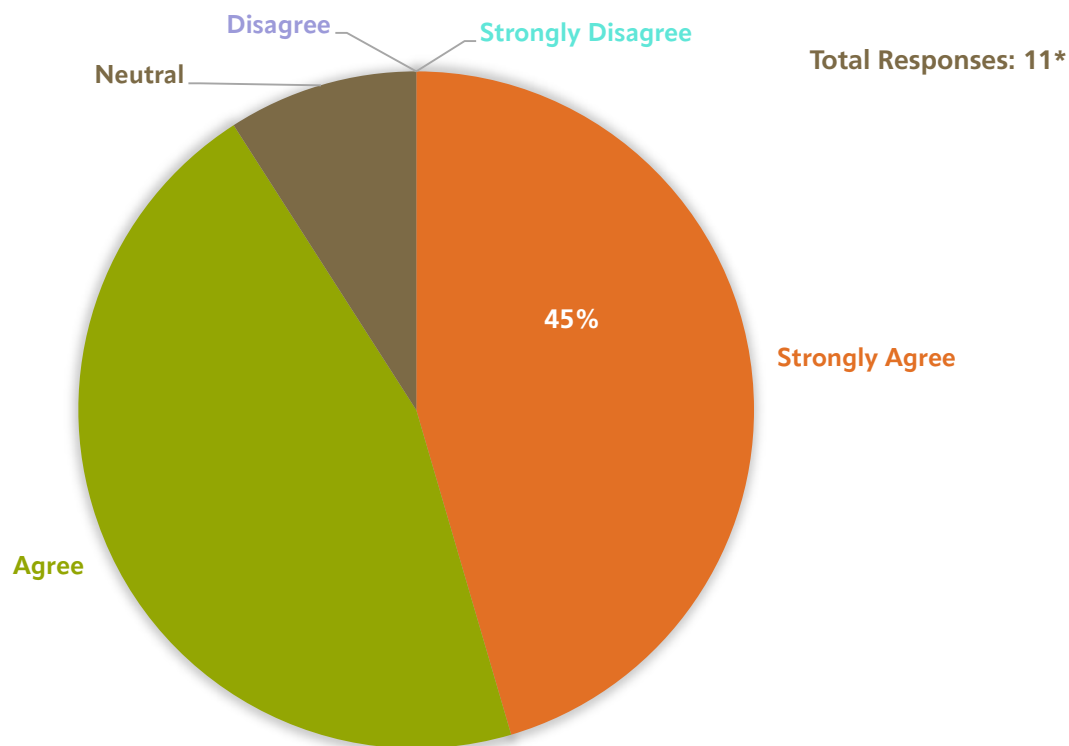


Answers	Response Count	Response Percent
Yes	12	67%
Needs Easier trails	0	0%
Needs more Intermediate	0	0%
Needs more advanced trails	4	22%
Not Sure	0	0%
Other (write in)	2	11%
Response Total	18	100%

Written comments (Other fill in Response)	
Comment 1	I like the 3 Access points from the AT Trail. I like the 3 Levels of downhill trail, great to see some green loops

Do the proposed trails concepts in the zone provide a good mix of trail types and connectivity for the site?

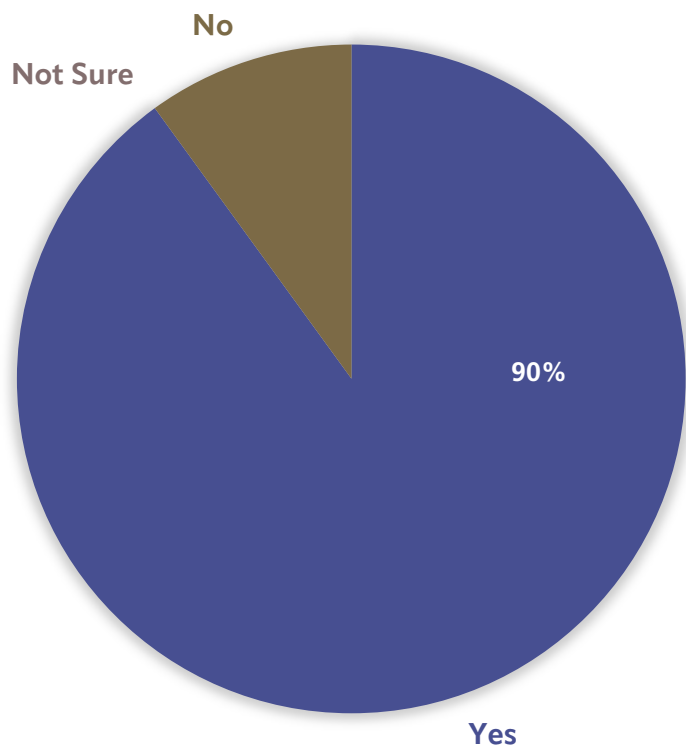
Zone 3: Shared-Use Focused



Answers	Response Count	Response Percent
Strongly Agree	5	45%
Agree	5	45%
Neutral	1	9%
Disagree	0	0%
Strongly Disagree	0	0%
Response Total	11	100%

Do the trails in this plan provide the right balance of accessibility and family friendly options?

Zone 3: Shared-Use Focused



Total Responses: 10*

Answers	Response Count	Response Percent
Yes	9	90%
Not Sure	0	0%
No	1	10%
Response Total	10	100%