

Appendix C: Trail Standards and Guidelines for New York State Parks

A primary goal for all State Park Trails Systems is to develop sustainable trails that have minimal impacts on the environment, require little maintenance, and meet the needs of the users. Standards and guidelines are provided here for design, development, and maintenance techniques that help ensure a sustainable trail system, including guidelines for signage, accessibility, trail monitoring, and trail closure.

Trailheads, Kiosks, Signage

All trailhead and kiosk signage and trail markers will be developed in conjunction with the Sign Design Guidelines for the NY State Park System (*currently being drafted*). A kiosk or similar structure providing information about the park and the trail system will be located at each trailhead. All trails will be named and marked with colored blazes located on trees or other structures at a height that will reduce the level of vandalism but that is still readily visible.

Design

Trail guidelines provide guidance in design, construction and maintenance. Trails should be developed using appropriate design standards based on desired uses. Considerations should be made for either a single or multiple treadway, tread width and surface, corridor and vertical clearance, sight distance, grades, and turning radius to provide an appropriate trail experience for expected users and levels of use.

Trail development and maintenance will be guided by design standards as provided in the table below for various types of uses. These standards should be used as a starting point and modified, as necessary, to address the natural characteristics of the resource and specific needs.

Trail development standards

Trail Type	Vertical Clearance	Corridor Clearance	Treadway Width	Surfacing Materials	Trail Length	Sight Distance	Slope	Turning Radius	Users/Mile
Biking Class1 (Path)	8-10 feet	5-6 ft. (1 lane) 8-10 ft. (2 lane)	2-3 ft. (1 lane) 6-8 ft. (2 lane)	Smooth pavement, asphalt, concrete, crushed stone, clay or stabilized earth.	Min. – 5 mi. loop (1.5-2 hour) 15-25 mi. of linear or loop trails (day trip)	Min. of 50 ft. up to 100 ft. on downhill curves or road crossings	0-5% Max: 5-10% sustained 15% shorter than 50 yd. Outslope of 2-4%	8-14 feet depending upon speed.	40
Mountain Biking	8-10 feet	1.5 – 6 ft. (1 lane)	Novice-36 in. Intermediate-24-30 in. Expert-12-18 in.	Firm natural surface including soil, rocks, wood; hardened surface for wet areas.	Min. – 5 mi. loop (1.5-2 hour) 15-25 mi. of linear or loop trails (day trip)	Min. of 100 ft. up to 150 ft. on downhill curves or road crossings	Over all grade not to exceed 10%. Climbing turns not to exceed 7-12%. Out slope of 3-5%	Novice/ Intermediate - min of 8 ft Expert – 6 ft min.	10
Cross-country Skiing	8-10 ft. above snow depth. (10-12 ft in summer)	8 ft (1 lane) 10-12 ft. (2 lane)	4-6 ft. (1lane) 7-8 ft. (2lane) 8-10 ft. (up hill)	Snow with underlying bare soil, rocks or wood chips. Outsloped underlying material. Can be groomed or ungroomed.	0.5-3 mi. loops up to 4-8 mi. (2-4 hour trip)	Down hill runs, stream or road crossings 50 ft. Otherwise not critical	0-5% Max – 10% sustained 15-25% shorter than 50 yd. 25-40% shorter than 50 yd., experts only Outslope – 0-2%	Avoid sharp turns. Never locate a turn at the base of a downhill run. Min. - 50 ft. Preferred – 100 ft.	5-30
Hiking (Developed Interpretive, group or connector)	8-10 ft	4 –8 ft	4-6 ft	Bare soil, rocks, stone dust, or wood chips. May have hardened surface (concrete, asphalt or boardwalks) in high use areas.	0.25 – 5 mi. (1/2 day) 5-15 mi. (full day)	Not critical barrier on reverse curves may be used	0-5% Max – 15% sustained 40%+ shorter than 50 yd. Outslope – 4% max	N/A	0-30
Hiking (Primitive Back-packing)	8-10 ft.	4-6 ft.	18 –30 in.	Bare soil, rocks, gravel, wood; hardened surface for wet areas.	Min – 5 mi. 15 – 25 mi.	Not critical	1-5% Max - 15% sustained 40-50% shorter than 50 yd.	N/A	1-5

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Trail Type	Vertical Clearance	Corridor Clearance	Treadway Width	Surfacing Materials	Trail Length	Sight Distance	Slope	Turning Radius	Users/Mile
Horse	10-12 ft.	5-6 ft. (1 lane)	18-30 in. (1 lane)	Soils having a large percentage of rocks, clay and or organic matter. Void of rocks football sized or larger. Little treadway development required if soils are appropriate. In problem areas, water control measures may be installed. Brush and saplings should be cut flush or below ground level. Remove dead or leaning trees.	Min – 5 mi. (1-1.5 hour) 15-25 mi. of looped trails (full day)	Not critical unless 2 way traffic. 50-100 ft. 100-200 ft. at motorized road crossings.	0-10% Max – 10% sustained 20% shorter than 50 yd. Outslope 4% max.	Not critical but avoid sharp turns on steep slopes or using switchbacks (30 in. wide if they are necessary).	5-15
Snowshoe	8-10 feet above snow depth (10-12 ft. in summer)	8 ft. (1 Lane) 10-12 ft. (2 Lane)	4-6 ft. (1 Lane) 7-8 ft. (2 Lane) 8-10 ft. up and down hill	Snow with underlying bare soil, rocks or wood chips. Outsloped underlying material. No grooming is needed.	0.3 mi. loops 4-8 mi. (2-4 hr. trips)	N/A	0-5% Max. - 10% sustained 15-25% shorter than 50 yds. for experienced snowshoers	N/A	5-30
Snowmobile	8-12 ft. above snow depth	14- 16 ft. 14-16 ft. 8-12 ft. 8 ft. min.	1A – 12 ft. 1B – 8-12 ft. C – 4-8 ft. D – 4ft. min.	Groomed snow Groomed snow Groomed snow Ungroomed snow	50 – 80 mi.	Min – 50 ft. 100+ ft.	10 – 15% Max - 25% sustained 40% shorter than 50 yd.	Min. 50 ft. 100 ft.	15

Accessibility

New trails and existing trails connected to an accessible trail or designated trailhead that require maintenance/repair should be designed or modified to improve accessibility for persons with disabilities and for those who may have limitations to their mobility. Trail conditions, including topography, geology and ecology and expected experience will modify the number of trails that can be fully accessible. Proposed accessibility guidelines for trails on developed federal lands have been advanced by the Architectural and Transportation Barriers Compliance Board (Access Board).

The proposed accessibility guidelines are for newly constructed and altered trails connected to accessible trails or designated trailheads. There are some departures from the technical provisions that are permitted. The following is an abbreviated listing of the proposed trail guidelines without the exceptions:

- Surface – The trail surface shall be firm and stable.
- Clear Tread Width – The clear tread width of the trail shall be 36 inches minimum.
- Openings – Openings in trail surface shall be of a size that does not permit passage of a ½ inch diameter sphere. Elongated openings shall be placed so that the long dimension is perpendicular or diagonal to the dominant direction of travel.
- Protruding Objects – Protruding objects on trails shall have 80 inches minimum clear head room.
- Tread Obstacles – Where tread obstacles exist, they shall not exceed 2 inches high maximum.
- Passing Space – Where the clear tread width of the trail is less than 60 inches, passing spaces shall be provided at intervals of 1000 feet maximum. Passing spaces shall be either 60 inches minimum by 60 inches minimum space, or an intersection of two walking surfaces which provide a T-shaped space provided that the arms and stem of the T-shaped extend at least 48 inches beyond the intersection.
- Slopes – Slopes shall comply with the following:
 - Cross Slopes – The cross slope shall not exceed 1:20 maximum.
 - Running Slope – Running slope of trail segments shall comply with one or more of the provisions of this section. No more than 30 percent of the total trail length shall exceed a running slope of 1:12.
 - Running slope shall be 1:20 or less for any distance.
 - Running slope shall be 1:12 maximum for 200 feet maximum. Resting intervals shall be provided at distances no greater than 200 feet apart.
 - Running slope shall be 1:10 maximum for 30 feet maximum. Resting intervals shall be provided at distances no greater than 30 feet apart.
 - Running slope shall be 1:8 maximum for 10 feet maximum. Resting intervals shall be provided at distances no greater than 10 feet apart.
- Resting Intervals – Resting intervals shall be 60 inches minimum in length, shall have a width at least as wide as the widest portion of the trail segment leading to the resting interval, and have a slope not exceeding 1:20 in any direction.
- Edge Protection – Where edge protection is provided along a trail, the edge protection shall have a height of 3 inches minimum.
- Signs – Newly constructed and altered trails and trail segments that are accessible shall be designated with a symbol at the trail head and all designated access points. Signs identifying

accessible trail segments shall include the total distance of the accessible segment and the location of the first point of departure from the technical provisions.

In all cases, it is recommended that basic information about trail characteristics be displayed at the trailhead. This allows the trail user the opportunity to determine if the trail is appropriate for their abilities. This information should be available for all trails regardless of whether they meet the accessible guidelines.

The following is a recommended list of additional information that should be displayed at the trailhead:

- Trail symbol
- Running slope (average and maximum)
- Clear tread width (minimum)
- Surface type
- Trail length
- Trail elevation (at trailhead)
- Maximum elevation attained

Maintenance

Maintenance of the trails will be conducted by park staff as well as in partnership with various trail user or Friends groups. Trail maintenance standards will utilize acceptable practices and methods in the maintenance of trails to the particular uses of the trails. Maintenance activities include:

- Maintaining drainage structures
- Water management such as: development of knicks, rolling grade dips, minor rock rearrangement to divert water off of a trail.
- Surface treatment
- Clearing and grubbing to maintain height and width clearances
- Maintaining bridges and other structures
- Maintaining signage

These activities should be coordinated with the park manager. Activities that go beyond normal maintenance will require the approval of the park manager. Park staff will maintain the parking lots and support facilities.

The following manuals may be used as resource guides for trail maintenance:

- *Trail Planning, Design, & Development Guidelines*. State of Minnesota, Department of Natural Resources, 2007. Trails and Waterways Division. <http://www.dnr.state.mn.us/index.html>
- *Trail Maintenance Manual, 7th Edition Revised*. 2007. New York-New Jersey Trail Conference, Inc. <http://www.nynjtc.org/volunteers/vresource.html>.
- *Trail Construction and Maintenance Notebook*. 2007 Edition. Forest Service, US Department of Agriculture. <http://www.fhwa.dot.gov/environment/fspubs/07232806/index.htm>.
- *Lightly on the Land: The SCA Trail-Building and Maintenance Manual*. 2006. Robert C. Birkby, The Student Conservation Association. <http://www.thesca.org/>
- *Trail Solutions: IMBA's Guide to Building Sweet Singletrack*. 2004. International Mountain Bicycling Association. <http://www.imba.com/index.html>

- Equestrian Design Guidebook for Trails, Trailheads and Campgrounds. December 2007. US Department of Agriculture, Forest Service - Missoula Technology and Development Center. <http://www.fhwa.dot.gov/environment/Fspubs/07232816/index.htm>

Closure

Sometimes it is necessary to close or reroute a trail due to poor initial design, overuse, illegal use, or other natural factors having caused some type of degradation. Reclamation strategies include closure, stabilization, recontouring, revegetation, and monitoring. Each site should be evaluated individually for its potential to be rehabilitated. Trail restoration needs to be carefully planned, and the consequences of each strategy should be evaluated. Restoration can be as simple as blocking a closed section of trail and passively allowing the vegetation to recover, or include more complex projects, such as removing any trace of the tread, actively planting native vegetation, and constructing check dams to help stop erosion. Careful monitoring of a restored section of trail is then needed to ensure that little evidence remains of the old trail.

All plantings will be with native, non-invasive species. Vegetation should be allowed to grow on the abandoned trail where it intersects with a designated trail. Brush, rocks and other natural material should be placed on the abandoned trail for a distance so the linear characteristic of the trail can not be readily identifiable. These abandoned trails should not be identified on trail maps.

The OPRHP Guidelines for Closing Trails provides the detailed process to be taken to close trails in state parks.

Evaluation, Assessment and Monitoring

The following guidelines will be utilized in the review and approval process for new trails or the re-alignment of existing trails and implementation of a monitoring system.

New Trails and Re-alignment of Existing Trails

There is a specific procedure for the reroute and development of trails and the annual maintenance of trails. Chart 1 outlines procedures to follow for the reroute of existing trails and the development of new trails. The scope and associated impacts of the proposed project will determine the extent of the review process. Larger proposals that may have an impact on environmental or cultural resources will require the review of the Agency's Resource Management Group (RMG). A SEQR determination will be made to determine if an Environmental Assessment would be required.

Annual maintenance encompasses routine functions, such as minor drainage control, trimming, and treadway maintenance. In most cases, this is reviewed and approved by park staff (Chart 2).

For some trails, State Parks partners with trail organization(s) for development and/or maintenance. It is important that clear lines of communication are maintained among all involved parties. This will ensure that the work that is performed has gone through the review process and is under the direction of the park manager.

Chart 1: Procedures for Reroute/Relocation for New Trail Project

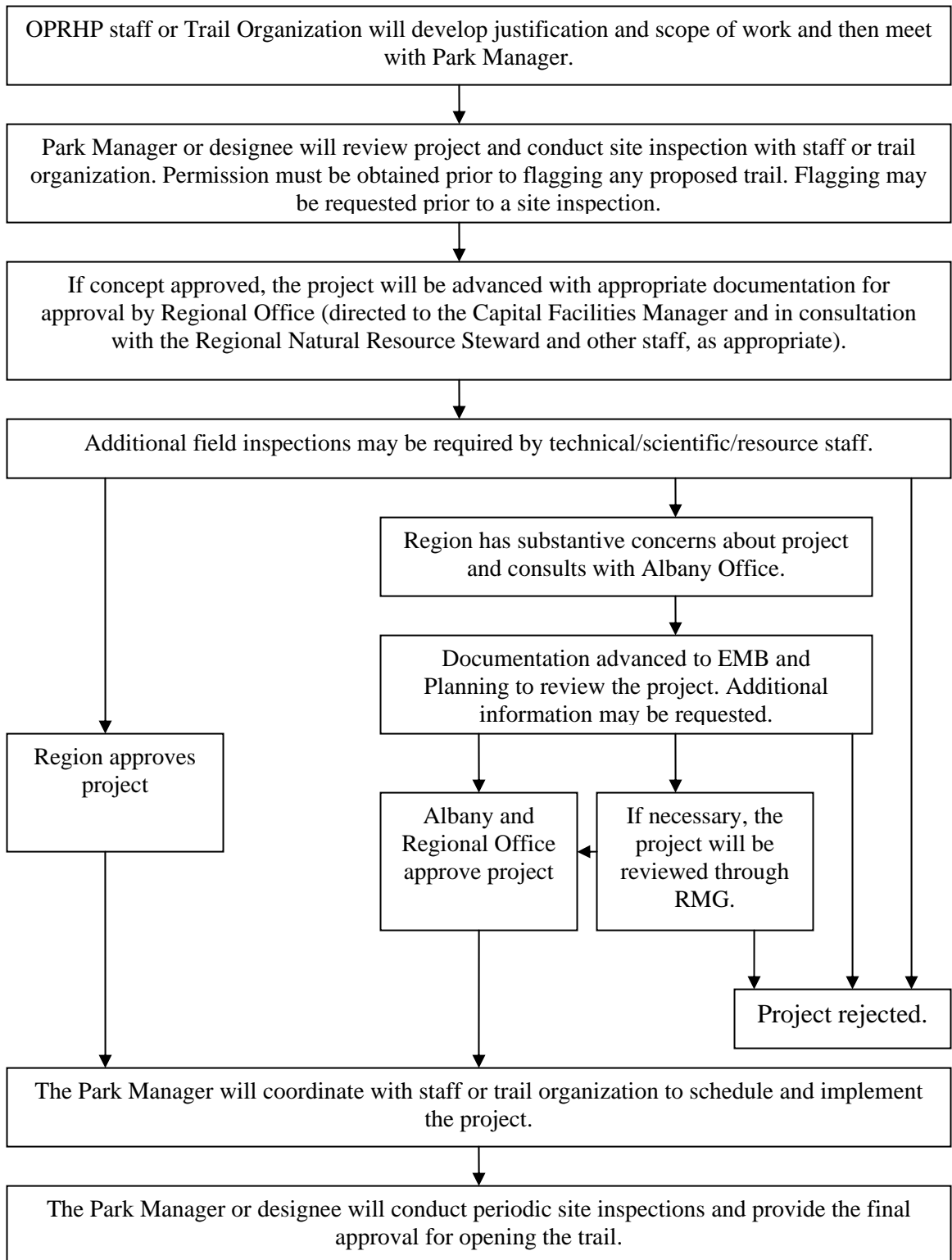
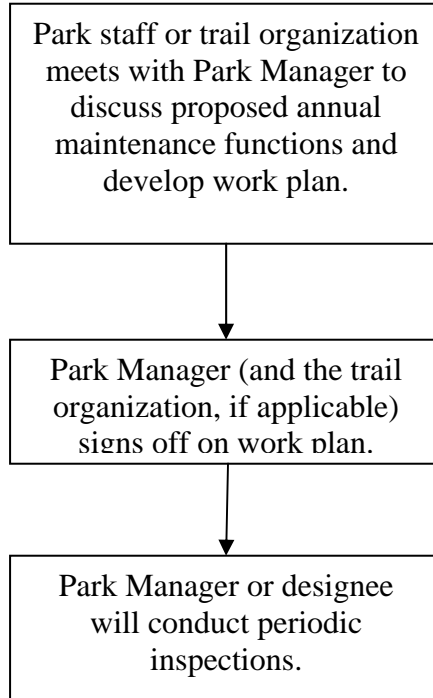


Chart 2: Approval for Trail Maintenance



Monitoring Program

A monitoring program will include an annual inspection of all of the trails and periodic inspections of the trails throughout the year. The Managing Visitor Use model or a similar program will be utilized to monitor trail conditions.