

# **A Recreation Plan for the State Parks and State Forests in the Pennsylvania Wilds**

## **Appendix 11 Sample Trail Standards**

**Prepared for the Pennsylvania Department of Conservation  
and Natural Resources**

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## NY Trail Standards from 2003 SCORP

Trail Type	Vertical Clearance	Corridor Clearance	Treadway Width	Surfacing Materials	Trail Length	Sight Distance	Slope	Turning Radius	Users /Mile
Biking Class 1 (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 hrs.) 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: 2-4%	8-14 ft. depending upon speed.	40
Mountain Biking	8-10 feet	1.5-6 ft. (1 Lane)	Novice: 36 in. Intermediate: 30 in. Expert: 12-18 in.	Firm natural surface with some obstacles such as roots, grade dips or rocks	Min: 5 mi. loop (1.5-2 hrs.) 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% Outslope: 3-5%	Novice/Intermediate: 8 ft. min. Expert: 6 ft. min.	10
Cross-Country Skiing	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. Can be groomed or un groomed	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 yds. 25-40% shorter than 50 yds. (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 feet.	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, barriers on reverse curves may be used.	0-5% Max: 15% Sustained: 40%+ shorter than 50 yds. Outslope: 4% max.	N/A	0-30
Hiking (primitive, back packing)	8-10 feet.	4-6 ft.	18-30 in	Bare soil, rocks, gravel, wood hardened surface for wet areas.	Min: 5 mi. 5-15 mi. (full day) 15-25+ (multi-day)	Not critical	1-5% Max: 15% Sustained: 40-50% shorter than 50 yds.	N/A	1-5
Horse	10-12 feet.	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 hrs.) 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 yds. Outslope: 4% max.	Not critical but avoid sharp turns on steep slopes or using switchbacks (30 in. 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 mi. 4-8 miles (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 feet above snow depth (10-12 ft. in summer)	1A: 14-16 ft. 1B: 14-16 ft. C: 8-12 ft. D: 8 ft min.	1A: 12 ft. 1B: 8-12 ft. C: 4-8 ft. D: 4 ft. min.	Groomed snow Groomed snow Groomed snow Ungroomed snow	5-50 mi.	Min 50 ft. 100 + ft.	10-15% Max: 25% sustained 40% shorter than 50 yds.	Min: 50 ft. 100 ft.	15

Source: <http://www.nysparks.com/agency/scorp/archive/SCORP03-05.pdf>

**FIGURE 1. NORTH COUNTRY NATIONAL SCENIC TRAIL  
TRAIL CONSTRUCTION DESIGN STANDARDS**

Standards (desired)	ROS Class			
	Urban	Rural and Roaded Natural	Semiprimitive	Primitive
<u>Tread Width</u> Hiking Segments Accessible Segments	48" 60"	24" 36"	18" 28"	*
<u>Clearing Width</u> (each side of tread)	24"	12" (WIDNR-24")	12"	*
<u>Clearing Height</u> (min.)	10'	8' (WIDNR-10')	8'	*
<u>Slope(max.sustained)</u> Hiking Segments Accessible Segments	10% 5%	10% 8%	15% 12%	*
<u>Slope (max.)</u> Hiking Segments Accessible Segments	15% for 100' 8% for 30'	20% for 100' 10% for 50'	30% for 100' 10% for 50'	*
<u>Cross Slope (max)</u>	3%	5%	8%	*
<u>Other Accessible Segment Standards</u> Passing Spot Int.-max Rest Area Interval-max	N/A 1200'	600' 1200'	1200' 1/2 mile	N/A N/A
<u>Surfaces</u>	Asphalt. Concrete. Stabilized- aggregate. Screening(1). Wood Chip. Sod.	Native. Wood Chip(2). Stabilized- aggregate. Screening(1).	Native	Native
<u>Accessible Surfaces</u>	Asphalt. Concrete. Stabilized- aggregate.	Asphalt. Stabilized- aggregate.	Native. Stabilized- aggregate.	Native

\*In Primitive ROS (wilderness), human impacts and changes to the scenery are meant to be less obtrusive—when entering a wilderness area, one accepts greater personal risk. Trails in primitive areas lay "light-on-the-land." Because of this, no hard standards have been established. Generally, the tread is more faint, the grade varies depending on the terrain, etc. However, it is still important to consider trail design standards which protect the environment. Because trails in wilderness areas may receive less frequent maintenance, designing a trail that requires little maintenance is of utmost importance.

- (1) Limestone screenings include the fines.
- (2) Not in wet areas—adds to the problem.

	<i><b>Easiest</b></i>	<i><b>More Difficult</b></i>	<i><b>Most Difficult</b></i>
1. Alignment			
Minimum Curve Radius	10 ft.	8 ft.	6 ft.
Turns per ¼ mile	2	6	11
2. Grade			
Maximum Grade Sustained	8 %	12 %	15 %
Short	15 %	30 %	50 %
Maximum Length	200 ft.	300 ft.	500 ft.
3. Clearing			
Minimum Clear Width			
Downslope	2 ft.	2 ft.	2 ft.
Upslope	3 ft.	3 ft.	3 ft.
Each side level	2 ft.	2 ft.	2 ft.
Minimum Clear Height	9 ft.	8 ft.	8 ft.
4. Tread Width			
Minimum	8 ft.	4 ft.	4 ft.
Maximum	8 ft.	8 ft.	6 ft.
5. Tread Surface	Relatively smooth surface throughout, no rocks or roots protruding more than 3". Sweeping curves. No holes wider than 24" or deeper than 6". Avoid sand and loose materials.	Sections of relatively rough surface, no rocks or roots protruding more than 3". Climbing turns. No holes wider than 36" or deeper than 6". Sand and loose material is okay.	Relatively rough with short sections very rough, no rocks or roots protruding more than 6". Climbing turns and switchbacks. Some sections with holes wider than 36" and/or deeper than 6". Long sections sand and loose material desirable.
6. Obstacles	Water 6" deep up to 10 ft. long. No water bars or logs.	Water 10" deep up to 25 ft. long. A few logs up to 8".	Water 10" deep up to 25 ft. long. 1 to 5 logs up to 8" per mile. Rock ledges up to 12" desirable on occasion.
7. Side Slope			
Maximum Slope	20 %	30 %	40 %
Maximum Length	300 ft.	500 ft.	More than 500 ft.
8. Isolation			
Riders per mile	More than 10	4 to 10	4
Length of Trip	3 miles	10 miles	15 miles

**ATV Trail Rating System**

**Table 3.2**



	<b><i>Easiest</i></b>	<b><i>More Difficult</i></b>	<b><i>Most Difficult</i></b>
1. Alignment Minimum Curve Radius Turns per ¼ mile	8 ft. 2	6 ft. 6	4 ft. 11
2. Grade Maximum Grade Sustained Short Maximum Length	8 % 15 % 200 ft.	12 % 30 % 300 ft.	15 % 50 % 500 ft.
3. Clearing Minimum Clear Width Downslope Upslope Each side level Minimum Clear Height	2 ft. 3 ft. 1.5 ft. 8 ft.	1.5 ft. 3 ft. 1.5 ft. 8 ft.	1.5 ft. 2.5 ft. 1.5 ft. 8 ft.
4. Tread Width Minimum Maximum	4 ft. 8 ft.	3 ft. 8 ft.	1.5 ft. 3 ft.
5. Tread Surface	Relatively smooth surface throughout, no rocks or roots protruding more than 3". Sweeping curves. No holes wider than 24" or deeper than 6". Avoid sand and loose materials.	Sections of relatively rough surface, no rocks or roots protruding more than 3". Climbing turns. No holes wider than 36" or deeper than 6". Sand and loose material is okay.	Relatively rough with short sections very rough, no rocks or roots protruding more than 6". Climbing turns and switchbacks. Some sections with holes wider than 36" and/or deeper than 6". Long sections sand and loose material desirable.
6. Obstacles	Water 6" deep up to 10 ft. long. No water bars or logs.	Water 10" deep up to 25 ft. long. 1 to 5 logs up to 6" per mile.	Water 10" deep up to 25 ft. long. 1 to 5 logs up to 16" per mile. Rock ledges up to 16" desirable on occasion.
7. Side Slope Maximum Slope Maximum Length	20 % 300 ft.	30 % 500 ft.	40 % More than 500 ft.
8. Isolation Riders per mile Length of Trip	More than 10 3 miles	4 to 10 10 miles	4 15 miles

**Off-Highway Motorcycle Trail Rating System**  
**Table 3.3**

	<b><i>Easiest</i></b>	<b><i>More Difficult</i></b>	<b><i>Most Difficult</i></b>
1. Alignment			
Minimum Curve Radius	25 ft.	15 ft.	15 ft.
Turns per ¼ mile	2	6	11
2. Grade			
Maximum Grade Sustained	5 %	8 %	15 %
Short	10 %	15 %	25 %
Maximum Length	200 ft.	300 ft.	500 ft.
3. Clearing			
Minimum Clear Width			
Downslope	2 ft.	2 ft.	2 ft.
Upslope	3 ft.	3 ft.	3 ft.
Each side level	2 ft.	2 ft.	2 ft.
Minimum Clear Height	11 ft.	10 ft.	10 ft.
4. Tread Width			
Minimum	8 ft.	8 ft.	5 ft.
Maximum	16 ft.	12 ft.	8 ft.
5. Tread Surface	Minimum 4" of snow.	Minimum 4" of snow.	Minimum 4" of snow.
6. Obstacles	None.	None.	None.
7. Side Slope			
Maximum Slope	20 %	30 %	40 %
Maximum Length	300 ft.	500 ft.	More than 500 ft.
8. Isolation			
Riders per mile	More than 10	4 to 10	4
Length of Trip	15 miles	25 miles	40 miles

**Snowmobile Trail Rating System**

**Table 3.4**