Pennsylvania Department of Conservation and Natural Resources

Guidelines for Marking Recreational Trails

June, 2007

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Introduction

DCNR recreation policy requires the Bureau of Forestry and Bureau of State Parks to explore ways to better coordinate their recreation functions, particularly in those areas where adjoining facilities in State Parks and State Forests experience high levels of visitation. Similarly, this policy also requires the Bureaus of Forestry and Parks to discover ways to better coordinate their recreation management functions between individual State Forests, and to provide a consistent policy in all State Parks.

Guiding Principles

It is important to the integrity of the Department that trail users find consistency among trail systems while visiting and crossing between various State Parks and State Forests. Maintenance and development of shared trail systems should be coordinated between appropriate parks and forests.

The main **non-motorized** trail use policy difference between the Bureau of Forestry and the Bureau of State Parks is that Forestry's trails are *open to all non-motorized user groups unless posted closed*, while Parks trails are *open only to the posted individual uses*. Either method of posting is acceptable. Generally, it is held that positive signage may be better received by users, while negative signage may be necessary where enforcement or environmental issues necessitate posting closure. Given this policy difference, a collaborative effort toward uniformity will alleviate confusion for the forest/park visitor and help to ensure a high-quality outdoor experience. Remember the following **Guiding Principles** when marking trails:

- A State Forest or State Park developing or maintaining a trail system should coordinate these activities with neighboring State Forest and State Parks
- Signage, blazing, etc. should be clear and consistent statewide
- Specific trail use, whether permitting or omitting user groups, must be clearly marked at trailheads
- Where trails cross State Parks to Forestry, or Forestry to Forestry, seamless use transitions must be coordinated

State forest/park trails will be categorized according to their motorized or non-motorized uses. Motorized vehicles must be registered with the DCNR Snowmobile and ATV Registration Section or with the Pennsylvania Department of Transportation (all other motorized vehicles).

Examples of **motorized** recreational uses include driving **automobiles, motorbikes, ATVs, four wheel drive vehicles, and snowmobiles.** Examples of **non-motorized recreational** uses include **hiking, horseback riding, snowshoeing, bicycling, and cross-country skiing.**

Waivers to the following Guidelines must be requested in writing through the appropriate bureau central office staff (BOF Recreation Section or BSP Planning Section).

General Guidelines

When developing a trail-marking system in a forest district or state park, consider the following five categories of signs:

- **Regulatory Signs** **Used when ACTION is required.**

  — Stop signs, 12"x 12" standard
  — Speed limit signs, usually black-on-white background (speed limit signs other than black-on-white are enforceable)
  — Slash-on-circle with icon

- **Warning Signs** **Used when giving a WARNING or CAUTION ahead.**

  — Almost all are black-on-yellow background
  — "Gate ahead", "stop ahead" or "hazard delineator" signs
  — Avoid using a "caution" sign only…explain the "caution"

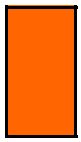
Use This:

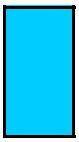
Not This:

- **Reassurance Signs** **Used to REASSURE trail users that they are going down the right path.**

  — Rectangular trail markers
  — Reflective borders on uneven diamonds for motorized trail signs

Non-motorized:





Motorized:

- **Identifier Signs** **International or standard symbols used at trailheads & intersections to identify TYPES OF TRAIL USE permitted or prohibited as well as DIFFICULTY RATING (**see attachment: Trail Difficulty Rating System definitions**).**

- **Information Signs** **Used to indicate DIRECTION, DISTANCE, OR LOCATION (intersection # corresponding to a trail map).**

— Rectangular white-on-brown background
— 4X4 routed wood, or Carsonite posts with white on brown background

Motorized Trail Marking Guidelines

- All **motorized trails** should be marked with reassurance markers that are uneven colored diamonds with white borders. Motorized trails are the only trails to use uneven diamonds.

- **Snowmobile trail** reassurance markers are orange, uneven 5"x 7" diamonds with reflective borders:

- ATV trail reassurance markers are bright green, uneven 5"x 7" diamonds with white borders.

Individual **ATV trail segments** should be marked at start points or intersections with a trail difficulty rating symbol (see attachment: The National Trail Difficulty Rating System)**.**

- **"Hazard Delineator"** signs should be used to designate restricted, narrow passages and should be black diagonal stripes on yellow squares or vertical rectangles.

- All **warning signs on motorized trails** (such as "stop ahead") should be 12"x 12" black-on-yellow backgrounds.

- **Significant turns** (> 60 degrees) on motorized trails (ATV, snowmobile) should be indicated by black arrows on yellow 12”x 12” rectangular backgrounds. Reflective borders are recommended, especially on snowmobile trails. Chevrons are recommended for broader, sweeping curves.

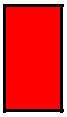

Non-Motorized Trails Guidelines

- International symbol signs should be used to indicate permitted or prohibited trail use. Always use minimal signage to avoid sign pollution. Dimensions of signs should be 4”x 4”, 6”x 6”, or 6”x 8” unless stated otherwise.

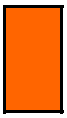


- State Forest and Parks shared-use trails will be marked at trail and road intersections, with a brown 6” even triangle containing three permitted use symbols. Shared-use trailheads will display a brown 12” even triangle with the three permitted use symbols:

- **Shared-use trails** open to horseback, mountain bike and foot travel, are to be marked with vertical red 2”x 6” reassurance blazes. Red should not be used on any other trail.



- The **State Forest Hiking Trails** (presently 18) are to be marked with **vertical orange 2”x 6”** reassurance blazes. Orange rectangles should only be used on **State Forest Hiking Trails**.



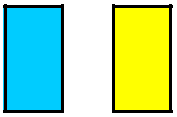
Accepted exceptions to the previous rule are as follows:

1. The **Tuscarora Trail,** part of the Potomac Heritage National Scenic Trail, is marked with blue blazes.
2. The **Appalachian Trail**, a National Scenic Trail, is marked with white blazes.
3. The **Laurel Highlands Trail**, a National Scenic Trail, is marked with yellow rectangular blazes.
4. The **Loyalsock Trail,** a State Forest Hiking Trail, is marked with red and yellow blazes.
5. The **Baker Trail**, a State Forest Hiking Trail, is marked with blue blazes.

- **Cross-country ski trails*** should be posted at the trailhead with the international symbol of a white skier on a brown background. Trail reassurance markers will be blue 2" x 6" rectangles.

- **Cross-Country Ski Trails** should be marked at the trailhead with the appropriate Trail Difficulty Rating symbol. It is **not necessary to use Trail Difficulty Rating symbols at all hiking trail-heads**, however, they may be appropriate for day hiking loops, etc. (see attachment: The National Trail Difficulty Rating System).

- Designated **local hiking trails*** (posted CLOSED to all other uses) can be marked with blue or yellow 2"X 6" reassurance blazes along the trail. Trailheads and other major intersections can be marked with the international symbol of a hiker on a brown square background.



*** Use additional signage or an alternate marking scheme when blue trail blazes inter-mingle with timber operations using blue paint.**

Non-Motorized Trail Marking Techniques and Theory

Some of the following material is adapted from Chapter 10 in "Trail Design, Construction, and Maintenance", published by the Appalachian Trail Conservancy.

Paint Blazes

The intent of this document is to develop, over time, a consistency in trail marking techniques throughout the Commonwealth's publicly owned lands. Therefore, painted blazes along any given trail should eventually conform to a standard color, shape, and size, namely **painted rectangles six inches in height and two inches in width**. When painted neatly with sharp corners and clean edges, blazes remain visible to hikers at a distance and distinguish themselves from natural occurring marks.

On hiking trails, ***place the blazes on trees at approximate eye height***. Remember, the trail should be marked for the benefit of hikers traveling either way, so place blazes facing in both directions. If you can't find a suitable tree next to the trail, paint blazes on ledges or trail side rocks. Check with appropriate staff before marking objects other than trees. Other options for blazing are available, such as wooden or Carsonite posts (discussed later in this document).

Frequency

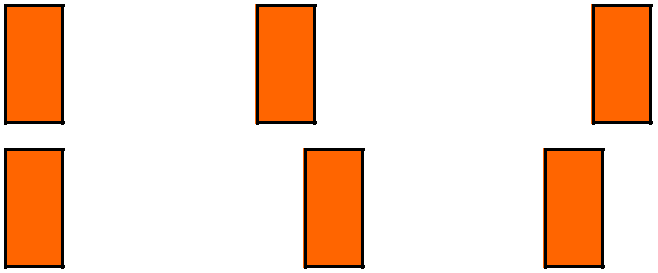
Blazing needs to be continuous, even along roads or unmistakable parts of the footway. Immediately beyond any junction, paint a blaze even if there is a direction sign. Place a second "safety blaze" 50 to 100 feet beyond. Where State Parks and State Forests meet, check that blazes extend into the next section. Eliminate all gaps in marking, and avoid suddenly varying the spacing of blazes (in similar terrain) in a way that confuses hikers.

Normally, you should change blazing frequency naturally with changes in trail terrain, forest cover, or the clarity of the footpath. *When the trail is conspicuous*, place one blaze for every five minutes of hiking time, or about six per mile in each direction (800 to 1000 feet apart). Where you run into hard-to-follow sections, often in transitions between field, forest, balds, and other environments, blaze more frequently.

Be careful not to over blaze. Too many single and double blazes can mar the primitive character of the trail. This is a special concern in wild and natural areas, where blazing should remain minimal, or six per mile. *Elsewhere, you should place blazes so that no more than one is visible in either direction*. In other words, except near trail junctions, keep blazes at least 150 feet apart. You may degrade the primitive trail experience by blazing too often.

Double Blazes

Remember, a double blaze means "caution" or "heads up". Place a double blaze 25 to 50 feet before abrupt turns and highway or trail junctions. Remove painted arrows, or slanted blazes, and replace them with standard double blazes. Double blazes should be placed one over the other, and about one to two inches apart. Where the double blazes are alerting a trail user to a turn, the top blaze, tree size permitting, can be offset in the direction that the trail will turn.



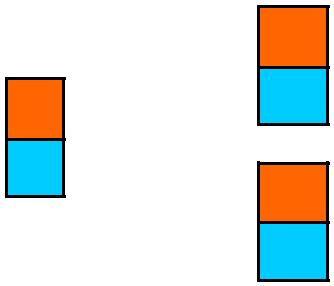
Caution! **Left Turn** **Right Turn**

As with the single blaze, you should place the blazes sparingly. They are unnecessary at most turns in the trail, and they become unsightly and meaningless with frequent use. Only use double blazes where absolutely necessary for the safety of trail users. On switchbacks, for example, use only single blazes, but paint them near the switchback corner, one above the corner and one below. If needed, you can pile brush, logs, or rocks at the corner to define the footpath and guide hikers around the turn.

Even in the rare instances where you may feel the route remains ambiguous, even with blazes, avoid the urge to paint an arrow to direct the trail user. The extra, nonstandard paint may hurt the trail's primitive character, detract from the trail users' sense of exploration, or set a precedent for painted arrows. Try to use small directional signs, posts, or cairns, instead.

When Two Differently Marked Trails Share the Same Path

Sometimes two or more trails briefly share the same path or corridor. When blazing in these areas, avoid confusing over-blazing and consider combining different blaze colors into one blaze:



Keeping Blazing Primitive

Blaze Less-

- Along well-defined footpath
- Along highly constructed trail in dense vegetation (mountain laurel or rhododendron)
- Along sharp ridgelines

Blaze More-

- At turns, both on and off roads
- Along obscure footpath
- In open forests
- In open areas (balds, boulder fields, alpine zones)

Placement

Paint blazes on trees that will easily be seen by trail users. **Look down the trail to find a tree that will catch hikers' attention in all seasons.** If the tree is far enough away, and within one to three feet of the right side of the footpath, you've found your next blaze tree. Try to make sure that leafy summer growth or branches weighted with snow or rain will not later hide the blaze. Clear any interfering growth with lopping shears or hand pruners, if permitted by the state park or forest district manager.

Bear in mind a couple of other pointers: When you are choosing a blaze tree, remember that one well-placed blaze is better than several that are poorly placed or partly hidden. Most importantly, avoid defacing trees and rocks that form distinctive and pleasing elements of the scenery.

Surface Preparation

Apply paint to as smooth and dry a surface as possible, preferably during fair weather above 50° Fahrenheit. On trees with thick, rough bark, such as oak and ash, smooth the surface by scraping with firm strokes of a hardwood floor scraper, also known as a paint and varnish scraper. Never cut through the bark and into the cambium; such a wound will cause the tree to bleed, the blaze to run, and injury to the tree.

On other trees, smooth the bark by simply rubbing with a wad of steel wool, a nylon dish pad, or a canvas-gloved hand to remove dirt, lichen, and loose bark. Only scrape if absolutely necessary. If you scrape conifers, such as white pine or balsam fir, they will bleed. White birch and black cherry will fray. Beech and red maple already have smooth bark that you can paint without scraping.

On rocks, minimally clear lichens, moss and other debris with a stiff wire brush. The surface must be clean and dry or the paint will not adhere.

Painting Technique

Before you head out on the trail, take a moment to consider which of several blazing techniques to use. Some people prefer using a stencil. They apply the paint with a brush or spray can. Sometimes, they trace the blazes outline through the stencil with a felt-tip marker and then fill in the rectangle with a paint brush. Others use a two-by six stamp, made from a sponge, and simply press the blaze to a tree (spare sponges may be needed). Still others simply use a straightedge. But most people blaze free-hand, gauging the size of each blaze with a cardboard template.

The object, in any case, is to master a technique that you can perform neatly and consistently, leaving standard size blazes. **Always avoid blemishing trees or rocks with pudgy blotches or swollen, oversized rectangles. Be careful to avoid dripping paint on trees, rocks, and leaves.**

You'll save yourself a lot of trouble if you avoid blazing light-colored trees, such as white birch, light gray

birch, or young poplar. Where you must blaze such a tree, paint the blaze as usual, and then frame it with a narrow line of natural-colored dark paint, to make the blaze stand out.

To ensure your blazes are durable, always stir the paint vigorously for ten minutes at the start of the day. Whip all pigment on the bottom of the can into suspension. Along the trail, remix the paint regularly.

Even when you prepare the paint and the surface properly, you'll have to repaint blazes on a regular schedule. Tree growth splits blazes, dirt dims them, animals scratch them, and trees themselves fall. In most circumstances, a blaze will last only three to five years, depending on the surface, type of paint, and weather. For example, on black cherry trees, paint usually drops off in a year or two.

Plan to renew blazes every two years. For blazes that are still in good condition, repaint after scraping the surface lightly to remove paint flakes and dust. For faded, widened, or split blazes, repaint after scraping the surface as if for a new blaze. Paint over any part of the old blaze still showing with neutralizing paint as close to the color of the surrounding surface as possible. Use brown paint in conifer forests, light grayish-green in hardwoods.

Blaze Obliteration

Sometimes you'll have to eliminate blazes because they are sloppy, too frequent, and/or in the wrong places. Or more often, because they may threaten to lead hikers down an old trail following a trail relocation. In the later situation, you should obliterate all former blazes, end to end.

To obliterate blazes, scrape off as much of the old paint as possible, using care not to damage the tree. Lightly cover any remaining paint with neutralizing paint. Use mixes of brown, green and gray to match the background. On rocks, apply the paint carefully, and sparingly; otherwise, it may merely make a conspicuous mark of another color. Spray paint makes good neutralizer because it can be layered and feathered to obscure the old blaze.

Equipment and Supplies

Use a scraper with a 1 1/2 inch blade and a six-inch handle. Buy high-quality paint, gloss exterior house paint, or boundary-marking ink. Latex paints are easy to apply, thin with water, dry quickly, and are less harmful to the environment. Oils are thicker, dry slower, and require thinner for clean-up. If you choose oils, buy the brand with the most pigment (white) compared to vehicle (oil): 65 percent pigment is most durable. Boundary ink, which comes thick and dries quickly, can be specially ordered.

Use a plastic squeeze bottle to apply just enough paint to the brush for each blaze. The bottles, old catsup and mayonnaise containers work well, keep the paint fresh and cut down on spills and drips. Carry only a small can of neutralizing paint, sufficient for a day of blazing. To match different tree species, bring several colors to mix in the field.

Bring several one-inch brushes for the white paint and one two-inch brush for the neutralizing paint. Note that nylon bristles work poorly in oil-based paint. Two small cans with plastic tops work well as receptacles for the brushes. Cut a hole in the plastic top for the brush handle for a secure method of carrying paint.

Misc. Motorized and Non-Motorized Trail Markers/Signs

Wooden and Carsonite Posts

Brown painted wooden 4x4 posts routed with white lettering, or brown fiberglass “Carsonite” posts with pop-riveted plastic signs or appropriate stickers are often a good alternative to traditional trail signs installed on wooden posts. On motorized trails, they may be placed at confusing intersections and offer

directional or junction identification information. Numbered intersection posts can correspond to numbered intersections on a trail map, etc.

Traditional Wooden Distance or Directional Signs

Appropriately placed traditional routed wooden signs that give directional or distance information are a welcome and appreciated addition to backcountry trail systems. Places named on these signs should be well known landmarks and junctions that can be found on maps or corresponding trail guides. Avoid using vague or "local" place names on distance or directional signage. Small signs pointing to drinking water, vistas, campsites, etc. are also appropriate on backcountry trails.

Suggested Paint Colors

The following list refers to the paint colors described in this document. This list provides uniformity when selecting paint colors to use while **blazing** trails. Each color includes the Pantone Color ID Number so that consistency is maintained when purchasing paint from various manufacturers. **High quality enamel paint is recommended**.

This paint color is...	... Red	PMS 485 2X	
	... Orange	PMS 165 2X	
	... Yellow	PMS 102	
	... Blue	PMS 300	
	... White		
	... Brown	PMS 161	

The National Trail Difficulty Rating System

The **National Trail Difficulty Rating System** is based on technical challenge, not physical exertion. The measurable criteria to determine these rating are: tread width, tread surface, trail grade, and natural obstacles. Other conditions can affect difficulty: exposure (steep drops offs) and remoteness. Trails should be rated in relation to other trails in the region.

Typically, a majority of trails should be designed at the More Difficult level because this represents a majority of the trail users. Since it is often an objective to attract more uninitiated recreationists, the next highest proportion of trails should be at the Easiest level. Expert level recreationists represent the smallest constituency.

- Easiest – 30%
- More Difficult – 50%
- Most Difficult – 20%

Easiest - This classification is used to identify the easiest trails that are suitable for beginning trail users and those who don't have the skill or desire to use more challenging trails. These trails have a low level of risk for the user and consequently offer less variety than those of greater difficulty. These routes are appropriate for novice through advanced users. They generally follow obvious, well-marked trails and roads. Grades are gentle, and few obstacles will be encountered. This requires little skill and entails little physical challenge. Tread is smooth, level, and wide, with generous clearing of trees, limbs, and other vegetation above and to each side of the trail to permit easy passage. Elevation gain or loss is minimal. Streams are most often crossed with bridges.

More Difficult - Trails in this rating category are designed to meet the expectations of the majority of trail users. They require skills beyond that of a novice and at times will challenge the average trail user. These routes are appropriate for intermediate through advanced users. Terrain may be steeper, trails narrower, and some obstacles may be encountered. This requires a minimal skill level and provides a minimal physical challenge. Tread surface contains roots and embedded rocks. Clearing of trees, limbs, and other vegetation above and to each side of the trail may result in occasional contact by the users. Elevation gain or loss is moderate. Streams are most often crossed by fording.

Most Difficult - These trails are designed for trail users with advanced skill, who are seeking a higher risk level. These routes are recommended for advanced to expert users only. The terrain is steep, and routes are not well marked. Trail users should have considerable skill in their chosen activity, as well as knowledge of navigation and survival before attempting these trails. This requires a high degree of skill and provides a definite physical challenge. Tread is seldom graded except on steep side slopes for safety and prevention of soil erosion. Minimal clearing of trees, limbs, and other vegetation results in hampering the progress of the user. Elevation gain or loss is usually severe. Streams are crossed by fording and are sometimes difficult.

Mountain Bike Trails

Difficulty	Clearing Height	Clearing Width **	Treadway Width***	Treadway Slope *	Treadway Cross Slope	Turning Radius	Sight Distance	Surfacing Materials
Easiest	8-10 feet	4 feet +	2 feet +	Less than: 5% Maximum: 10% up to 100 feet	2-4%	6-8 feet	100 to 150 feet on downhill curves or road crossings	Firm and stable surface with some imported material. Sidehill trail is constructed. Firm natural surface with some obstacles such as roots, grade dips or rocks. No portages.
More Difficult	7-8 feet	3-4 feet	1-2 feet	Less than: 10% Maximum: 30% up to 300 feet	5%	3-6 feet	100 to 150 feet on downhill curves or road crossings	Mostly stable native surface with constructed sidehill trail. Obstacles, roots, rocks and steps up to 6 inches.
Most Difficult	6-7 feet	2-3 feet	1-1½ feet	Less than: 15% Maximum: 30+% up to 500 feet	5-10%	2-4 feet	100 to 150 feet on downhill curves or road crossings	Native surface with constructed sidehill trail may not be firm and stable. Obstacles, roots, rocks and steps from 6 to 12 inches are common. Some portages necessary.

* Upper limit of treadway slope and distance depends on soil type, amount of rock, vegetation type, and other conditions affecting trail surface stability.
** Curve alignment to avoid cutting large trees.
*** Increase tread width six inches on switchbacks or where side slopes exceed 60%.

Equestrian Trails

Difficulty	Clearing Height	Clearing Width*	Treadway Width**	Treadway Slope ***	Treadway Cross Slope	Turning Radius	Sight Distance	Surfacing Materials
Easiest	10 feet	8 feet	2 feet	Less than 5% Maximum: 15% up to 200 feet	0-2%	Not critical but avoid sharp turns on steep slopes or using switchbacks (30 inches if necessary)	**Sight Distance** Two-way traffic: 50-100 feet Motorized road crossings: 100-200 feet	Surfacing as needed for stability. Native surface with some imported material. Sidehill trail is constructed. Smooth tread with few obstacles.
More Difficult	8 feet	6-8 feet	2 feet	Less than 10% Maximum: 25% up to 300 feet	0-5%			Native surface with constructed sidehill trails. Occasional roots and rocks to 6 inches.
Most Difficult	8 feet	3-6 feet	18 inches	Less than 15% Maximum: 30% up to 500 feet	0-10%			Native with limited grading. Roots rocks and logs to 12 inches.

* Along a precipice or hazardous area, the trail clearing width should be at least to 5 feet to provide safety to riders and their animals.

** Increase tread width 1 foot on switchbacks.

*** Upper limit of treadway slope and distance depends on soil type, amount of rock, vegetation type, and other conditions affecting trail surface stability.

Hiking Trails

Trail Type	Clearing Height	Clearing Width**	Treadway Width***	Treadway Slope *	Treadway Cross Slope	Turning Radius	Sight Distance	Surfacing Materials
Easiest (interpretive)	8-10 feet.	4 feet	1.5-2+ feet	Less than 5% Maximum: 20% up to 100 feet	0-3%	NA	NA	Uniform, firm and stable surface. Smooth tread with no obstacles. Pavement may be appropriate in highly developed settings.
More Difficult	8 feet	3-4 feet	1-1.5 feet	Less than 12% Maximum: 30% up to 300 feet	0-5%	NA	NA	Native surface with some imported material. Sidehill trail is constructed. Generally clear of obstacles, steps to 10 inches..
Most Difficult	8 feet	3 feet	1-2 feet	Less than 18% Maximum: 30+% up to 500 feet	0-8%	NA	NA	Native surface with constructed sidehill trail. Obstacles, roots, rocks and steps to 24 inches.

* Upper limit of treadway slope and distance depends on soil type, amount of rock, vegetation type, and other conditions affecting trail surface stability.
** Curve alignment to avoid cutting large trees.
*** Increase tread width six inches on switchbacks or where side slopes exceed 60%.

Cross country Ski Trails

Difficulty	Clearing Height	Clearing Width	Treadway Width	Treadway Slope	Treadway Cross Slope	Turning Radius	Sight Distance	Surfacing Materials
Easiest	10-12 feet.	18-24 inches outside of tread-way	One-way: 2-4 feet Two-way: 5-6 feet	Less than 8% Maximum: 15% up to 150 feet	0-4%	50-100 feet Gentle turns on downhill slopes. Avoid sharp turns. Never lo-cate a turn at the base of a down-hill run.	50 feet on down hill runs, stream and road cross-ings.	Consistently smooth treadway. No rocks, roots, dips, bumps or ob-structions. Can be groomed or un-groomed
More Difficult	10 feet	12-18 inches outside of tread-way	1½-4 feet	Less than 10% Maximum: 20% up to 150 feet	0-4%	50-100 feet Incorporate more turns in trail lay-out. Avoid sharp turns. Never lo-cate a turn at the base of a down-hill run.		Generally smooth treadway. Dips, bumps or ruts to 8 inches are un-common. Can be groomed or un-groomed
Most Difficult	8-10 feet	12 inches outside of treadway	1-2 feet Typically not de-signed for two-way travel	Less than 15% Maximum: 20% up to 200 feet	4-8%	50-100 feet Incorporate more turns in trail lay-out. Never locate a turn at the base of a downhill run.		Dips, bumps or ruts to 12 inches are common. Occasional surface obstacles. No grooming

ATV Trails

Difficulty	Clearing Height	Clearing Width	Treadway Width	Treadway Slope	Treadway Cross Slope	Turning Radius	Sight Distance	Tread Characteristics
Easiest	9 feet	3 feet outside of treadway	One-way: 4½-6 feet Two-way: 6-8 feet	Less than 8% Max: 15% up to 200 feet	0-20% 300ft	Min: 10 feet 2 turns per quarter mile	100+ ft.	Relatively smooth surface throughout, no rocks or roots protruding more than 3". Sweeping curves. No holes wider than 24 inches or deeper than 6 inches. Avoid loose sand and materials. Water 6 inches deep up to 10 feet long. No water bars or logs.
More Difficult	8 feet	3 feet outside of treadway	One-way: 4-5 feet Two-way: 6-8 feet	Less than: 12% Max: 20% up to 300 feet	30% 500ft	Min: 8 feet 6 turns per quarter mile	50 + ft.	Sections of relatively rough surface, no rocks or roots protruding more than 3 inches. Climbing turns. No holes wider than 36 inches or deeper than 6 inches. Sand and loose material is okay. Water 10 inches deep up to 25 feet long. A few logs up to 8 feet.
Most Difficult	8 feet	3 feet outside of treadway	One-way: 4-6 feet Not typically designed for 2 way travel	Less than: 15% Max: 25% up to 500 feet	40% 500ft+	Min: 6 feet 11 turns per quarter mile	20 + ft.	Relatively rough with short sections very rough, no rocks or roots protruding more than 6 inches. Climbing turns and switchbacks. Some sections with holes wider than 36 inches and/or deeper than 6 inches. Long sections sand and loose material desirable. Water 10 inches deep up to 2 feet long. 1 to 5 logs up to 8 inches per mile. Rock ledges up to 12 inches desirable on occasion.

Shared Use Trails

Difficulty	Clearing Height	Clearing Width*	Treadway Width**	Treadway Slope***	Treadway Cross Slope	Turning Radius	Sight Distance	Surfacing Materials
Easiest	10-12 feet.	1.5 to 2 feet outside of treadway	One-way: 2-4 feet Two-way: 5-6 feet	Less than 5% Maximum: 15% up to 200 feet	0-4%	6-12 feet	Two-way traffic: 50-100 feet Motorized road crossings: 100-200 feet	Native surface with some imported material. Sidehill trail is constructed. Smooth tread with few obstacles.
More Difficult	10 feet	1-1.5 feet outside of treadway	1½-4 feet	Less than 10% Maximum: 25% up to 300 feet	0-4%	4 to 6 feet		Native surface with constructed sidehill trails. Occasional roots and rocks to 6 inches.
Most Difficult	8-10 feet	1 foot outside of treadway	1-2 feet Typically not designed for two-way travel	Less than 15% Maximum: 30% up to 500 feet	4-8%	3 to 4 feet		Native surface with constructed sidehill trail may not be firm and stable. Obstacles, roots, rocks and steps from 6 to 12 inches are common. Some portages necessary.

* Along a precipice or hazardous area, the trail clearing width should be at least to 5 feet to provide safety to riders and their animals.
** Increase tread width 1 foot on switchbacks.
*** Upper limit of treadway slope and distance depends on soil type, amount of rock, vegetation type, and other conditions affecting trail surface stability.