FACT 1 SHEET

Trail Design—7 Easy Steps

Source: University of Minnesota Extension Service

Construct trails in a manner that will enhance the user's outdoor experience while protecting the property's environmental health. Trail design and construction require planning. The following steps will help you complete a successful trail-building project.

Step 1. Decide the trail's purpose
Step 2. Inventory the property
Step 3. Design the trail
Step 4. Scout the trail corridor
Step 5. Clear the trail
Step 6. Construct the trail tread
Step 7. Mark the trail

STEP 1. DECIDE THE TRAIL'S PURPOSE
The extent to which trail uses can be mixed depends on your objectives, the number of users, and the type of activity. Some activities, such as snowmobiling and cross-country skiing, require separate trails. Other activities are compatible on the same trail or occur in different seasons. To decide the trail's purpose, identify desired recreational uses and a general project area. Base decisions on the property's physical resources and your long-term ownership goals.

STEP 2. INVENTORY THE PROPERTY
Examine the project area for natural and constructed features that will enhance or detract from the trail user's experience. They can be used to identify key places that the trail should connect (e.g., vistas, hunting and fishing areas, meadows, forest management projects) and fragile areas that should be avoided or that will require extra care (e.g., steep slopes, gullies, waterways, wetlands, erodible soils, rock outcrops, historic places). Also note the location of existing roads and trails that might be incorporated into the trail design. Gather this information on a topographic map of the property drawn approximately to scale.

STEP 3. DESIGN THE TRAIL
Develop design specifications for your trail based on its intended use. Determine the trail pattern (loop or linear) and approximate length, maximum grade and curve radius, and minimum overhead clearance and width standards. Carefully examine the area for routes between points of interest. Identify potential trail-use hazards or construction problems, including lakes and streams, motorized roadway intersections, and soils that are erodible or poorly drained.

Locate trail entrances carefully to encourage use but reduce vandalism. Minimize the number of trail access points. Use a single entry/exit point to reduce user confusion and increase your control of trail access. If the entrance and exit cannot be at the same point, locate the exit within sight of the entrance. However, screen the exit from the trail to ensure that users do not take shortcuts prior to reaching it.

STEP 4. SCOUT THE TRAIL CORRIDOR
Walk the proposed trail corridor in both directions using a compass and map. Identify potential problems (e.g., steep slopes, water and motorized road crossings, wet soils, rock outcrops) and develop solutions. (See Handling Trail Obstacles.) In late spring, when the leaves are off the trees and the ground is free of snow, examine trail drainage and vegetative screening between trails. A trail that follows natural contours, gently curving and bending around obstacles, and that disturbs the site as little as possible, is aesthetically pleasing and more enjoyable to travel. It may be necessary to adjust the route several times. Once the final location has been determined, mark the route with brightly colored plastic flagging tape tied to trees and shrubs.

STEP 5. CLEAR THE TRAIL
Begin construction by removing trees, brush, and rocks from the tread. Establish a trail clearance width and height according to the intended use. (See Fact Sheet __: Recommended Trail Standards) Site characteristics and trail length will determine what tools are needed. Cut shrubs and small trees flush with the ground to prevent tripping and to reduce stump sprouting. Avoid cutting healthy trees larger than 7 inches stem diameter. Remove large rocks and fallen logs from the trail, unless they are to be kept as obstacles to prevent motorized use. Scatter branches and other debris off the trail or pile it for wildlife cover.

STEP 6. CONSTRUCT THE TRAIL TREAD
For most trails, the ideal surface is natural soil free of stones, stumps, and protruding roots. Natural trails often become easily distinguishable and comfortable to walk after a month of regular traffic. Always avoid unnecessary disruptions of the ground surface. Gravel or other fill materials may be used to elevate the trail in wet areas. A 3- to 6-inch layer of woodchips, shredded bark, or sawdust can increase hiking comfort and reduce soil compaction. However, they tend to decay quickly in a shaded environment and must be replaced at least every two years. Woodchips also can interfere with water drainage and may wash off slopes that exceed a 5 percent grade.

Use hard surfaces only for heavily used trails, wheelchair-accessible trails, and touring bicycle trails. Commonly used surfaces include soil cement (a mixture of cement and sandy soil), granular stone (crushed limestone or sandstone), asphalt, and concrete.

STEP 7. MARK THE TRAIL
Once constructed, a trail should be marked so that its route is clear in any season of the year. Trail markers may be paint blazes, plastic or metal markers fastened to trees, wooden posts with directional arrows, rock cairns, or reflective tape for night use. As a rule, trail users should not travel more than 600 feet without being able to see a trail marker or sign. On poorly cleared trails, users should be able to sight from one trail marker to the next. If a trail has two-way traffic, travel it in one direction placing markers at appropriate locations, then travel it in the opposite direction and place additional markers as needed.

Entrance signs should identify trail names, trail marker colors, distances or travel times between major trail junctions, potential hazards, places of interest, and the types of trail uses permitted.

For further information, please see additional resources in the Toolbox.

FACT 2 SHEET

Recommended Trail Standards -Hiking

Source: University of Minnesota Extension Service

Trail Layout
Trail patterns vary depending on the expectations of the trail user. Day users tend to favor a loop or a series of loops. Design trails to cover a variety of vegetation, land forms, and sights. Frequently occurring curves and grade changes will add interest. Short spur trails may be used to access waterways and summits.

Length
Hikers travel at 1 to 3 miles per hour depending on the terrain and their ability. Hiking trails should be long enough to afford a meaningful recreational experience and short enough to suit a hiker's ability. Internal connector trails and cutoffs can be used to offer different trail lengths.

Day Use:	1/4 to 5 miles (1/2 day)
	5 to 15 miles (full Day)
Backpacking:	25 or more miles

Clearing Width
Vary clearing widths to avoid the tunnel effect and promote a variety of trail environments such as woodland flowers, meadow openings, and woodland edges. Trails generally should narrow on steep slopes to a minimum width of 3 feet.

Light Use:	4 to 6 feet (one-way traffic)
Heavy Use:	7 to 10 feet (two-way traffic)

Clearing Height
Eight feet. Additional clearance may be needed to compensate for extended backpacks and branches drooping with heavy rain or snow.

Tread Width

Light Use:	2 to 3 feet (one-way traffic)
Heavy Use:	4 to 6 feet (two-way traffic)

Trail Surface

Light Use:	natural with gravel or other means for wet areas
Heavy Use:	Natural if possible; woodchips or gravel

Turning Radius
Turning radius is not critical; however, gentle curves are aesthetically pleasing and easier to maintain. Shortcut trails often will develop prior to sharp-angled turns. Straight sections usually should not exceed 100 feet.

Percent Grade
Grades exceeding 10 percent are difficult for hikers to sustain and, without additional protection, erosion problems often will develop. Steps, switchbacks, or waterbars may be needed on slopes over 25 percent. Occasional grade changes and dips should be incorporated into the trail layout to promote user interest and facilitate natural drainage.

Desired: 0 to 5%
Maximum: 15% (sustained)
40% (shorter than 50 yards)
Outslope: 4% (maximum)

Sight Distance
Sight distances are not especially critical on hiking trails. However, motorized road crossings must be carefully located and designed to ensure that trail users and vehicle drivers have good sight distances in all directions.

Water Crossings
Structures for crossing water depend on the flow and length of the crossing and expectations of the hiker - almost all methods will accommodate foot traffic.

Bridges: Must be located above ordinary high water mark or cabled at one end to prevent washout.
Width: 2 to 4 feet (light use)
5 to 6 feet (heavy use)
8 feet or more (maintenance vehicles)
Weight capacity: Variable depending on maintenance equipment, bridge length, and alternative trail uses
Fords: Slow moving water less than 24 inches in depth may be forded. Rocks and stepping stones may be used to assist hikers.

Compatible Uses (with additional trail design standards)
Winter: snowshoeing. Cross-country skiing or snowmobiling
Summer: horseback riding (low use) or accessibility trails for persons with disabilities.

Facilities
Parking area, picnic area, resting areas, overlooks, campsites, water, information board, signs

FACT 3 SHEET

Funding Resources for Greenways and Trails

Source: Parks and Trails New York: www.ptny.org

New York State Foundations: A Comprehensive Directory
The best source for foundations in New York State, published by the Foundation Center. Includes all foundations in the state that disbursed $1 or more in the most recent year. The Directory is expensive so try to find it at the public library, a local university or college library, or a large non-profit organization in your area. The Foundation Center website, www.fdncenter.org is helpful for researching larger foundations.

Grants Action News
For timely information on available state and federal grants, plus information on grant writing workshops and seminars, subscribe to this monthly newsletter produced by the NYS Assembly. Call the Grants Action News hotline at 1-800-356-8486 for a free subscription. Information contained in the Grants Action News is also available by looking under announcements on the Assembly web page: www.assembly.state.ny.us

Catalog of State and Federal Programs Aiding New York's Local Governments
On the Assembly web page is the Catalog of State and Federal Programs Aiding New York's Local Governments: www.assembly.state.ny.us/Reports/Local.

Environmental Grantmakers Association
Check out the website: www.ega.org The Environmental Grantmakers Association also produces a directory.

Municipalities/Counties
Although most cities, towns and counties don't have large land acquisition funds, they have the possibility of receiving certain types of state and federal funds. Also, they can pass local bond referenda to acquire land for recreation.

Community Development Block Grants (CDBG)
The Community Development Block Grant (CDBG) program of the U.S. Department of Housing and Urban Development (HUD) directly funds cities and towns for projects with community-wide benefits. Trails can qualify for CDBG money, especially trails with economic, cultural and historic aspects. Information on CDBG grants is usually available through local government offices such as the mayor's office or the local planning or community development office.

Land and Water Conservation Fund (LWCF)
LWCF is a federal matching funds program, which, in the past, has been a major source of acquisition, development and improvement funds for close-to-home recreation facilities, including trails. Stateside funds dried up after 1995 but the LWCF is slated to get a new infusion of money. Keep abreast of the situation through your Congressional representative or through NYS Office of Parks, Recreation and Historic Preservation: http://nysparks.state.ny.us.

Miscellaneous Sources of Labor, Equipment, Assistance

- Prisons/Alternative sentencing programs
- Local youth groups: Boy Scouts (particularly Eagle Scouts), Girl Scouts, 4-H
- Local service organizations: Lions, Kiwanis, Rotary, Garden Clubs, religious institutions
- Local businesses and professionals
- Local universities, colleges, high schools
- Local land trusts
- Healthy Heart Program of the NYS Department of Health - Can be valuable partners in developing and promoting community trails. For information on the program nearest you, call (518) 474-6683.
- National Park Service Rivers, Trails and Conservation Assistance Program - technical and planning assistance to communities for trail, river and greenway projects. In New York, call (845) 229-9115
- National Guard - For info in New York, contact the GuardHELP Program, Coordinator for the NYS Division of Military and Naval Affairs, (518) 786-4643.
- Youth Conservation Corps - For info on Americorps programs in New York, contact NYS Corps Collaboration, 1 Steuben Place, Albany, NY 12207, (518) 432-8757
- Rails-to-Trails Conservancy, Washington, DC, national advocacy organization working to convert abandoned rail beds into multi-use trails; (800) 888-7747, www.railtrails.org.