

tal appreciation and protection. Trails attract tourists and benefit the local economy, increase property values, and strengthen the social fabric of communities.

By some estimates, Michigan has more than 12,000 miles of trails developed and maintained by an extensive collaboration among government, non-profits, individuals, volunteers, and foundations. However, community planners still frequently identify a need for more non-motorized recreational trails. In 2013, the State of Michigan developed a comprehensive trail plan to improve upon the existing trail system and to ensure the continued benefits of trails. Governor Snyder recently stated his goal was to make Michigan the nation's "trail state."

Consistent with the popularity of trails, Little Traverse

Conservancy (LTC) has made establishing trails on nature preserves a high priority in an effort to provide recreational and educational opportunities. Close to 100 miles of trails can be found on about 60 preserves. LTC's Stewardship Department, in collaboration with hundreds of volunteers, spend considerable time and money creating and maintaining these trails and working to ensure they are compatible with protecting conservation values of preserves.

**References and Technical Assistance**

A reference that LTC staff have found useful is: International Mountain Biking Association. 2004. *Trail Solutions: IMBA's Guide to Building Sweet Singletrack*. Boulder, CO. 272 p. Although oriented toward mountain biking, the principles apply to all types on non motorized trail construction. It is available from IMBA for \$40 (www.imba.com).

**Other books**

Birchard, William Jr. and Proudman, Robert D. 2000. *Appalachian Trail Design, Construction, and Maintenance 2nd ed.* Applachian Trail Conference, Harpers Ferry, WV 237p.

Birkby, Robert C. 1996. *Lightly on the Land: The SCA Trail Building And Maintenance Manual, 2nd Edition* 272 p.

**On-line references**

*Vermont Trails and Greenways Manual, 2005* Vermont Trails and Greenways Council 72 p. ([http://www.crossvermont.org/images/page\\_sundry/vttrailmanual.pdf](http://www.crossvermont.org/images/page_sundry/vttrailmanual.pdf))

*Trail Construction and Maintenance Notebook, 2007* edition, USDA 178 p. ([http://www.fhwa.dot.gov/environment/recreational\\_trails/publications/fs\\_publications/](http://www.fhwa.dot.gov/environment/recreational_trails/publications/fs_publications/))

*Trail Design for Small Properties.* 2006 University of Minnesota 29 p. (<http://conservancy.umn.edu/bitstream/48335/1/08425.pdf>)

American Trails, a national, nonprofit organization working on behalf of all trail interests, including hiking, bicycling, mountain biking, horseback riding, water trails, snowshoeing, cross country skiing, trail motorcycling, ATVs, snowmobiling and four wheeling. [www.americantrails.org](http://www.americantrails.org)



A section of boardwalk at the Susan Creek Nature Preserve

**Conservation Easements by County**  
as of March 2014

County	# Easements	Acres
Charlevoix	70	3122
Cheboygan	56	9235
Chippewa & Luce	18	3538
Emmet	110	4338
Mackinaw	17	509
<b>TOTAL</b>	<b>271</b>	<b>20,742</b>

LTC Stewardship Staff coordinates volunteer-based trail building events at a number of preserves every year. If you'd like to get some experience building sustainable hiking trails, please contact LTC's volunteer coordinator Cacia Lesh at 231.344.1002 or [cacia@landtrust.org](mailto:cacia@landtrust.org).



# Conservation Easement

## Landowner Newsletter

*A newsletter for owners of land protected with a conservation easement.*



*Trails on Conservation Easements*

Most conservation easements include the right to create, use, and maintain trails with some stipulations (e.g. naturally surfaced, limited width and extent). Given the widespread interest in trails and their presence on conservation easements, the topic of this year's newsletter is about trail design, construction, and maintenance.

**What Does Your Conservation Easement Allow?**

Most conservation easements address trails in the "permitted use" section more-or-less similar to the following: "The Owner retains the right to maintain existing footpaths and construct new footpaths on the Property for non motorized use. Any such footpath shall not exceed four (4) feet in width and shall be naturally-surfaced."

This wording is general, and may or may not permit all construction techniques described below. However, if your easement specifically allows trails, then it can be generally accepted that single-track trails of the type described in this article, including landscaping with hand tools and cutting vegetation away from the trail treadway and corridor, are allowed. Some easements specify that only existing trails can be maintained, or that a limited amount of trails can be constructed. In a few instances, trails and foot paths are specifically prohibited. In those cases, LTC is bound to uphold the restrictions as worded. Check with the Conservancy staff if you have any



questions or concerns.

In many cases, the easement is mute on the topic of paths and trails. If that is the case, simple, single-track, naturally-surfaced trails may still be allowed depending on an interpretation of the purposes and intent of the easement, the conservation values present, and a reasonable assurance that the desired trails will not impair or interfere with those values. In that case, please contact LTC staff for a written interpretation and approval before beginning any trail construction.

Also, note that specific wording about construction of structures may preclude such trail amenities as bridges, boardwalks, benches, or viewing platforms; wording about vegetation cutting may limit the extent to which trail corridor clearing can occur; and wording about erosion and land surface disturbance may make it especially important to build sustainable trails. When power equipment (e.g. bobcat, bulldozers) is used for trail construction, it is easy to get carried away and exceed easement restrictions. This rarely happens when using hand tools.

*Trail Planning and Design*

**1. Determine the trail's purpose.** The route and design of a trail may depend on its purpose. Different purposes commonly include hiking, dog walking, snowshoeing, running, cross country skiing, mountain biking, horseback riding, bird watching, and hunting. Determining likely trail users (e.g. individuals, groups, young, old, disabled) is also an important consideration.

**Please call us, if...**

...you would like to schedule a specific time and date for LTC staff to monitor your property.

...you are selling your easement-protected property. This will ensure the new owners understand the easement.

...you plan to exercise one of the rights retained in your conservation easement. Examples might include the renovation of an existing structure; construction of a new structure (including things like fences, gates, decks, campsites, or sheds); conducting forest management activities; land clearing; landscaping, or trail building.

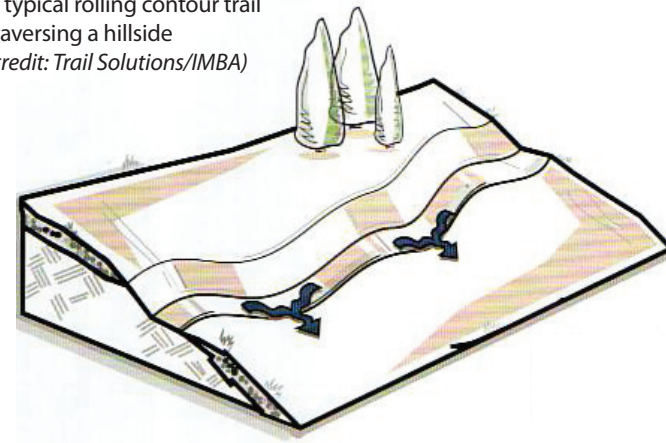
...for advice or information about your resource protection and management needs.

**2. Scout the property to collect and/or map information.** Assessing conditions and features such as wetlands, streams, topography, existing two tracks or trails, access points, habitat types, sensitive areas, interesting features, historic uses, boundary locations, etc. is important. It may be best to visit the property throughout the year to gather complete information. Identify places the trail must be located (beginning and end, where roads or streams need to be crossed), places you want it to go (scenic vistas, historic sites), as well as places to avoid (steep slopes, wet spots, and safety hazards). It's also good to anticipate regular maintenance needs. Trails through meadows often need mowing. Shrub thickets can require lots of trimming. Some soil types are more prone to tree wind-throw than others.

**3. Select a route incorporating principles of sustainable trail design.** LTC strives to create "sustainable trails" on its preserves. A sustainable trail is defined as one that supports intended current and future use with minimal impact to the natural resources (soil, water, vegetation, wildlife, etc.) and requires minimal long-term maintenance (IMBA). Trails on LTC preserves are generally naturally-surfaced and single-track (just wide enough for people to walk single file). The trail surface (treadway) is typically about 3 feet wide and the trail corridor is a broader zone 4-6 feet wide and 8 feet high. Basic design elements of sustainable trails include the following:

- Avoid the shortest, most direct route down a slope (including up/down gullies). This is the same path that water will flow, and can lead to erosion.
- Try to avoid totally flat areas—there is a potential for the path to become a collection basin for water.
- Route trails to gently traverse across the contours of slopes, often termed "rolling contour" trails.
- Incorporate frequent grade reversals (the rolling part of a rolling contour trail), which forces water to drain off at frequent intervals. (see arrows in figure above right)
- A trail's grade shouldn't exceed half the grade of the slope it traverses (termed the "half rule"), otherwise runoff from heavy rains could flow down the trail rather than across it.
- A trail's average grade from one end to the other, or throughout a distinct segment, should not exceed 10% (in other words, 10 feet of elevation gain over a distance of 100 feet) to help minimize erosion.
- The maximum trail grade over a short stretch (e.g. 50 feet) should be less than about 20%.
- The treadway surface should tilt slightly toward the outer edge (about 5%) to allow water to drain off.

A typical rolling contour trail traversing a hillside (credit: Trail Solutions/IMBA)



**4. Flag the trail route.** Based upon site features and incorporating the basic design principles, identify trail routes on-site and mark them with flagging or other temporary markings. Walk this route at least a few more times to be sure it's the best one, and even solicit feedback on the design from friends or family members.

**5. Clear and trim vegetation.** Remove seedlings, saplings, and shrubs growing within the treadway as well as twigs and branches extending into the trail corridor. Seedlings and small shrubs can often be uprooted by hand pulling. Large shrubs, saplings, or even mature trees will need to be cut. To prevent a tripping hazard, cut stumps close to the ground or better yet either dig them out or cut them below grade.

When removing tree limbs, cut them flush with the trunk whenever possible. This prevents sharp spikes next to the trail, is also better for tree health, and most attractive. Prune limbs over 2" diameter in several stages to prevent peeling bark off the tree. If a limb is too high or too large to cut at its base, try to cut it at a fork of the branch as close as possible to the trunk.

Sometimes limbs that are above the trail corridor in summer will get weighed down with snow and block a trail in the winter. This is especially true of conifer trees. When clearing a trail corridor, try to imagine three feet of snow on the ground and a load of snow on the branches. (Or better yet, go out to inspect the trail after a heavy snowfall.) Use a pole saw to trim high limbs in the trail corridor.

If a small tree is just outside the trail corridor, but has limbs that are growing, or will grow, into the corridor,

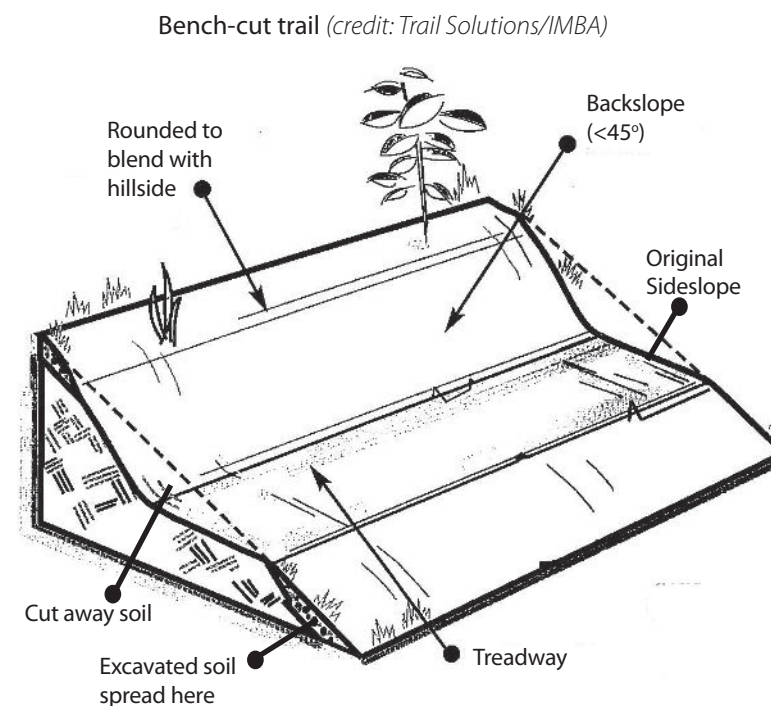
Chainsaw operation is dangerous. Please only use a chainsaw if you are experienced and follow all safety precautions (including wearing protective gear and never working alone). Chainsaw safety and maintenance information is readily available on the internet. One good online reference is on the website of chainsaw manufacturer Stihl. <http://stihldealer.net/video-library/>. Also available on DVD for \$5.00 plus shipping.

consider removal of the entire tree rather than pruning the limbs. The small tree will be easy to remove now, will probably not be missed, and is a better alternative to eventually denuding the entire trailside—half of a tree which is unnatural and unsightly in appearance and unhealthy for the tree.

Branches, limbs, saplings, and debris should be moved from the trail corridor, and whenever possible stashed out of sight of trail users. Often a small clearing behind a tree or shrub will suffice to stash cut limbs. Placing the cut end of a limb of sapling away from the trail is more visually appealing.

Downed trees and large limbs may need to be cut with a chain saw. Cut them back to the width of the trail corridor, and roll cut segments of the trunk away on the downhill side if possible.

**6. Landscaping the trail** When the trail traverses a slope it is usually necessary to "bench-cut" the trail. This involves removing and repositioning the soil to the extent that an



appropriately wide and flat trail treadway is created. The basic steps are:

- Clear the surface beyond both sides of the desired treadway by raking away leaves, branches, organic matter, and even topsoil.
- Use a grubbing tool like a hoe, mattock, or Pulaski, dig the underlying soil away to expose a slightly outsloped treadway bench. Start digging at the outer edge and work into the hillside. The steeper the hill, the more extensive the cut needs to be.
- When the desired treadway is defined, cut still more soil away from the up-slope side of the treadway creating a "backslope" that is blended into the hillside at an angle no steeper than 45 degrees.
- Spread all excavated soils on the downslope side of the trail.
- Compact the treadway and complete any landscaping fine-tuning.
- Re-spread organic matter and topsoil over the disturbed soil areas (but not the treadway—a mineral soil surface is desirable there).

Even in more flat, level trail sections, landscaping is usually necessary to smooth out surface irregularities and remove obstructions.

**7. Building boardwalks and bridges.** Sometimes wetlands and streams are unavoidable, and boardwalks or bridges are needed. These can be especially expensive and time-consuming aspects of trail construction. They will usually also require a permit from the Michigan Department of Environmental Quality and sometimes from the US Army Corps of Engineers. The application form for a boardwalk or bridge permit and information about the permit process is available online at [www.michigan.gov/deq](http://www.michigan.gov/deq).

The standard boardwalk design used on LTC preserves is about 30" wide, and is constructed using three parallel 12' long 2" X 10" treated lumber planks screwed to 6" X 6" treated lumber cross-ties spaced at approximately 3' intervals. This type of boardwalk costs about \$6.75 per foot. Depending on the size of the stream, building bridges can be more complicated. It is best to design a bridge that spans the stream channel from bank to bank, has enough clearance to accommodate any likely flooding, and otherwise creates no noticeable change in the stream or bed.

### Trails Across Michigan - The Bigger Picture

Non-motorized trails are an inexpensive way to enable people of all ages to get outside and explore natural landscapes. Benefits of trails include promoting physical and mental health, a platform for education, and fostering environmen-

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