

Sustainability: Northeast Trail Makeover

Copyright © Erik Schlimmer

From the February 2013 edition of Darn Tough's Adventure Blog

According to the Student Conservation Association in their *Lightly on the Land*, trails have been around a long, long time. "Trails are among the earliest marks left by humans on the face of the Earth." Trails were around when woolly mammoths were around, and trails will be around when you are not. And though trail construction techniques have advanced, no trail builder can reinvent the wheel. However, today's trails are not about traveling from point A to point B. They're about exercising, experiencing, and enjoying. What Northeasterners want are high-quality sustainable trails, and it's high time we give it to them (in the West and South they already have nice trails – it's us Northeasterners who are left out). To be enjoyable and sustainable, trails must adhere to four rules.

1. Average trail grade should not exceed ten percent
2. Trail grade should not exceed half the slope
3. The trail should drain naturally – no water bars
4. The trail should include an outslope

Do these four and you get these four.

1. Trails will not erode – they'll be sustainable
2. Maintenance costs will be minimal
3. Users will see trails as destinations
4. Trails will provide users physical and psychological satisfaction

Now, here's how to do it.

1. Average trail grade should not exceed ten percent

Nearly all Northeast mountain trails run straight up and down, which has runoff channel into the trail and then gain momentum. The faster runoff moves, and the more runoff you have, the faster trails erode. With a mellow grade, water merely crawls down mountains. To lay out your grade, don't guess its steepness. Instead, use a high-quality clinometer, a handheld device that measures grade and slope. Suunto makes a nice one for \$150. Take care of it. Don't let anyone borrow it. A basic formula employed to measure grade otherwise is this: vertical rise ÷ linear run = grade. To give you a feel for what ten percent is, the steepest railroad grades in the U.S. are two percent. Most beginner mountain bikers can ascend a ten percent grade without trouble.

2. Trail grade should not exceed half the slope

Trail users think "grade" and "slope" are synonymous, but they're not. Grade is the linear angle of the trail (how steep the trail is). Slope is the angle of the hill the trail is built into (how steep the side hill is). This means that if you build on a four percent slope, your grade mustn't exceed two percent. If you build on a sixteen percent slope, your grade mustn't exceed eight percent. And if you build on a thirty percent slope, your grade can be up to fifteen percent. Oh, I got you on that last one. Remember that grade should not exceed ten percent, no matter slope angle.

3. The trail should drain naturally – no water bars

Water bars are ineffective. What water bars really collect and then move off the trail is not water but the trail itself. Proof of this is that water bars need to be cleaned out annually because they are packed with mineral soil, which used to be the trail itself. Sustainable trail builders prefer the "RGD," the rolling grade dip. An RGD, if going uphill, is where the trail climbs a little, then descends a little less than that climb, then climbs a little more than that descent, and so forth. This divides the trail into miniature watersheds where water cannot collect nor rush down the trail. RGDs work with the land, not against it.

4. The trail should include an outslope

By now we have our mellow grade (which doesn't exceed half the slope it's built into) and our RGDs. That's the cake. Now for the icing, which is a ten percent outslope. An outslope is the outward tilting of the trail tread towards the downhill side of the trail. A good outslope serves as

a backup to the rolling grade dip. Just like how you should not guess the grade, you should not guess the outslope. The SmartTool digital level is a great device, retailing for \$150. It measures in degrees and percentages and is durable and easy to use. Once you use this tool for a few days, you'll get the feel of a ten percent outslope. A basic rule is that if you walk on your new trail and your ankles are working hard to keep you upright, your outslope is too aggressive. Conversely, your trail should not look nor feel flat.

While Northeast trail crews are feverishly cleaning out water bars and wondering why their jobs are so hard, sustainable-design trail crews are sitting back with their feet up, enjoying trails that need little maintenance. Experts are conscious of this waste and non-waste of time, the International Mountain Bike Association writing, "Land managers don't have the time, money, or manpower to constantly rebuild each trail under their jurisdiction..." The time has come to build sustainable Northeast trails that offer great experiences to users while saving time, effort, and money. Now that we know how to do this, the real question is, Why don't we still?