BLACK SHEEP
MOUNTAIN BIKE CLUB

Trail Building Guide

Building Sustainable Mountain Bike Trails

Version 1 - AUG 2019

Erosion Management

Natural Erosion

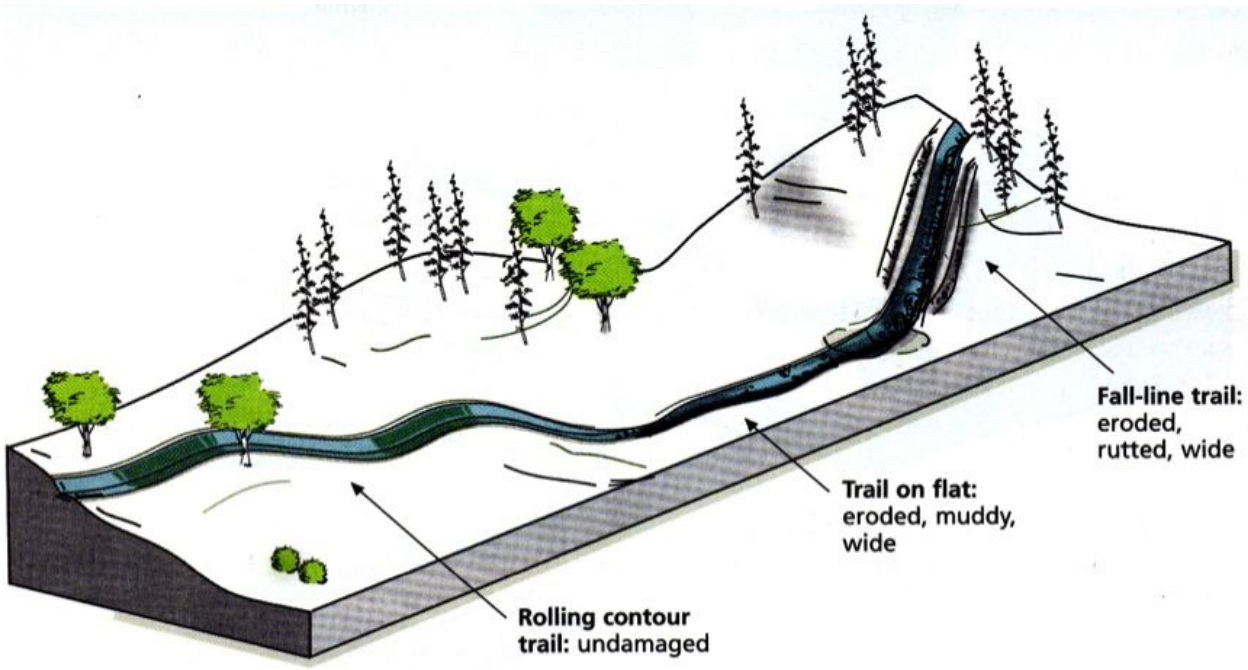
- Excess water on the trail tread, or excess dry conditions
- Loose material/ no soil compaction
- Too much organic material in the trail tread

On the left an example of improper drainage leading to small ruts which lead to very deep ruts (Image, on the right) if not fixed.

User Erosion

To the left, damage is caused by people walking around a muddy spot on the trail. On the right, you can see the start of trail widening from users cutting corners, this will eventually the two paths merging and increasing trail erosion

Constructing Sustainable Trail



Bench Cut Trail (the gold standard)

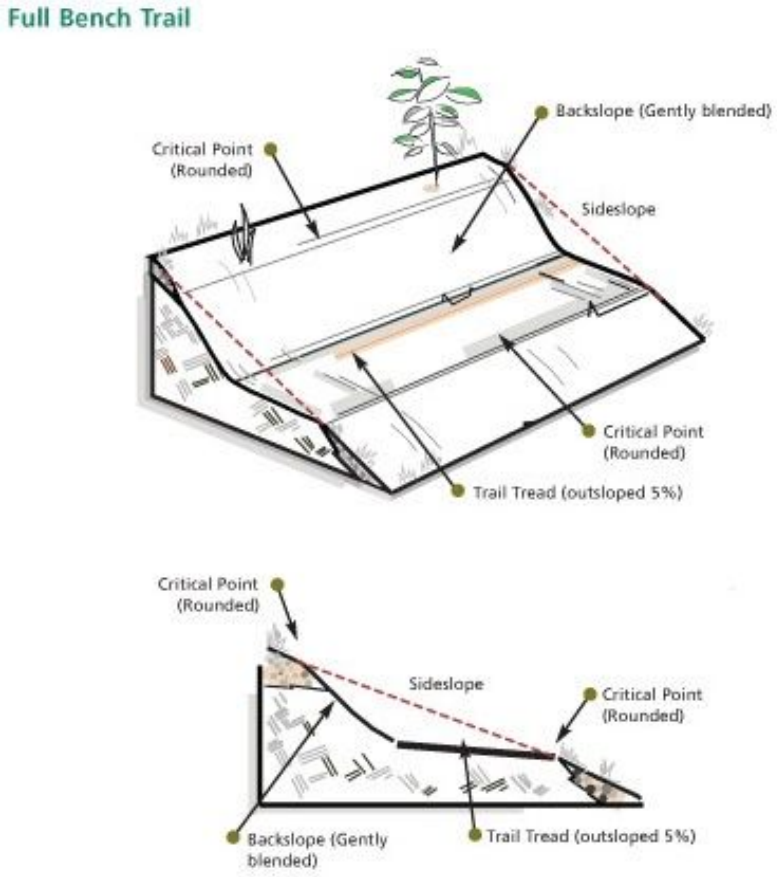
- Built on side slope
- Trail tread is constructed into the slope
- Accounts for 5% out-sloping, for drainage & back sloping for soil erosion

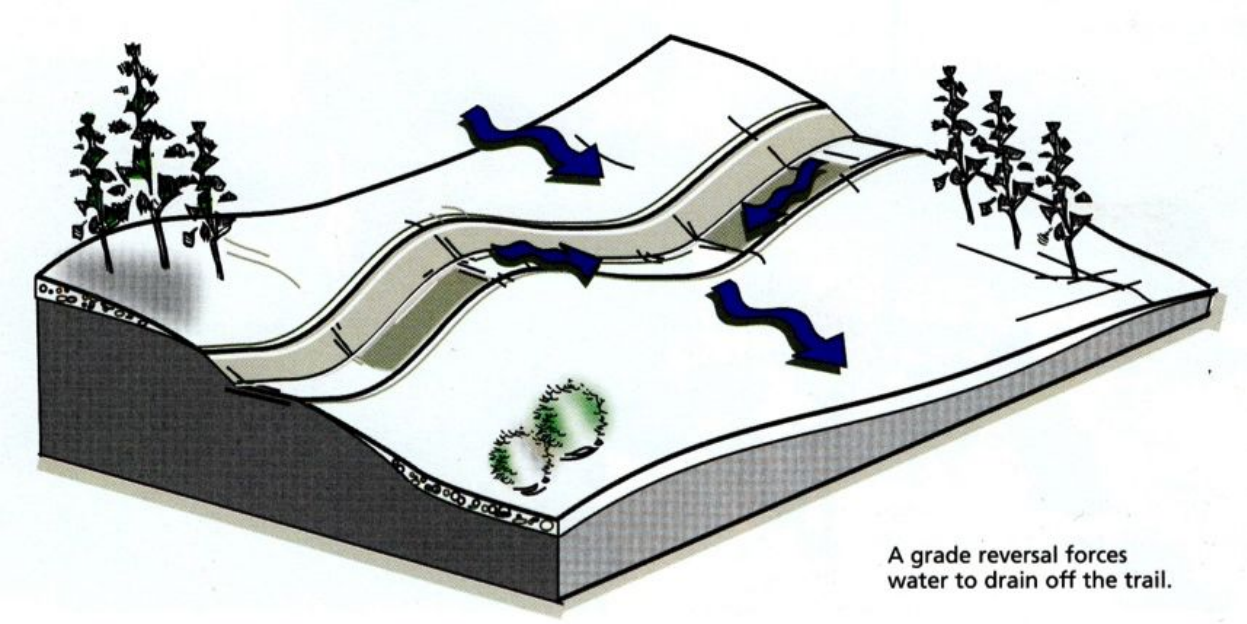
Raised Trail Bed

- Added material used to raise the trail above the forest floor
- Crowned to ensure drainage or added nic or sump hole to control water

Hard-surfaces

- Harder surfaces can help you "bend" the rules (*i.e. if you build on pure rock then erosion is not an issue.*)





Grade Reversals

- Adding a roll to uphill/ downhill sections ensures water does not flow down the tread causing erosion.

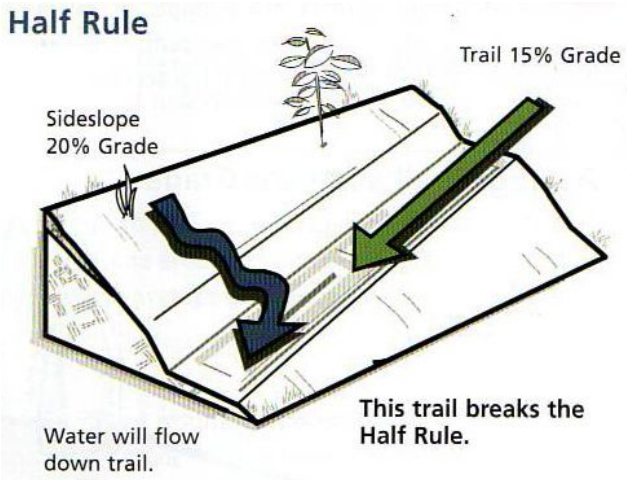
Slope of Trails

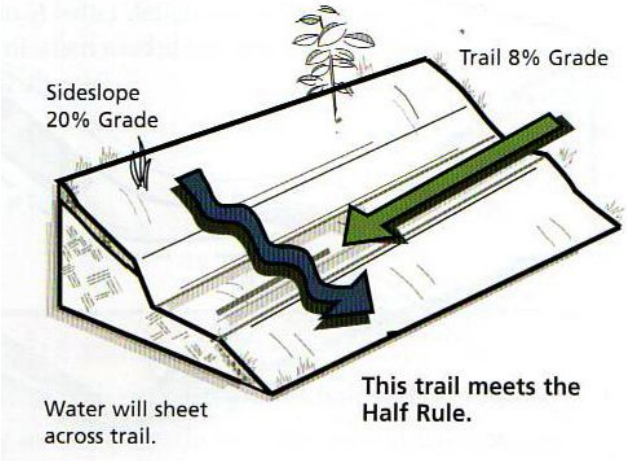
- Controls water by ensuring the average grade is no more than 15% for sustained section
- **Half Rule:** a trail should never be more than half as steep as the slope it traverses.

Tread flow

- The movement of the trail ensures the trail is more fun

Above, Benchcut Trail





Trail Features

Rock Armoring

- Used to hard-surface ecologically vulnerable areas and/or wet zones
- Added feature and texture to the trail

Berms

- Sloped corners to help riders hold speed

Rollers

- Added ‘movement’ to trails

Jumps

- Straight-air jumps, table tops, gap jumps, hidden features, etc.

Technical Trail Features (TTFs)

- Man-made features (wood, metal, rock, etc) added to enhance trail or add difficulty

Construction Techniques

Hand Built Trail

- Constructed using hand tools and physical labour
- Produces more nature trail

Machine Built

- Makes short work of the 'heavy lifting'
- Uses mini-excavators, bobcats, mechanized wheelbarrows, etc
- Produces a more polished trail with larger features (berms, rollers, jumps)

The Building Process

Scout the site & walk the forest

- Walk the area and determine appropriate land for building on and land to avoid.
- Look for side-slopes
- Determine soil composition

Flag the corridor

- Determine the tread slope (use a clinometer)
- Roughly flag the line on the trees with flagging tape

Don't forget you need landowner approval!

Clear the corridor

- Cut the trail corridor 3-4ft wide (depending on design) using chainsaws
- Cut all trees off at waist height to ensure easy stump removal
- Cut branches off to the trunk
- Clear ceiling height to minimum 8ft

Pin flag the line

- Establish the line and flow of the trail
- Place pin flags on the top edge of the trail
- Remember to avoid the root mat of large trees and other environmentally sensitive areas

Construct the tread

- Machine built or hand built techniques
- Remove the top organic layer & required portion of the root mat
- Rake of the soil content
- Construct required features (rollers, berms, hard-scaping, etc)
- Compact the tread

Finishing work

- Rehabilitate the trail edges and reclaim the forest
- Return anything that isn't the trail to a natural forest state

Trail Ratings

Access Trail (multi-use)

Fairly flat, wide and paved and/or gravel. Suitable for all users.

Green Circle – easy

Gentle climbs and easily avoidable obstacles such as rocks, roots and pot-holes.

Blue Square – intermediate

Challenging riding with steep slopes and/or obstacles, possibly on a narrow trail with poor
traction. Requires riding experience.

Black Diamond – hard

A mixture of long steep climbs, loose trail surfaces, numerous difficult obstacles to avoid or jump over, drop-offs and sharp corners. Some sections are definitely easier to walk.

Learn More

Great resources to learn more about trail building

Whistler Trail Standards

All of Blacksheep trails are built to these standard guidelines.
http://tiny.cc/whistlerstandards

IMBA Trail Solutions - Book

Great book on trail building and design put together by the International Mountain Bike Association

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