

# The Fundamentals of Trail Building and Maintenance

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# Tools of the Trade



# Rogue Hoe



Used to scrape or cut away the organic soil, revealing the mineral soil underneath. It is also a useful tool in maintenance applications, such as debarbing trail tread.

# Pick Mattock



A useful tool for cutting backslope on a bench cut once the duff (organic soil) has been removed. This tool comes in handy especially when it is rocky terrain.

# Pulaski



If you are in a densely forested area, and the roots are everywhere, this tool will be your best friend. It can tackle almost any sized root a tree can throw at it.

# McLeod



Useful in just about any situation, but especially when moving large amounts of cut duff, or raking out heavy mineral soils.

# Other Useful Tools

1. Rock Bar
2. Spade
3. Wheelbarrow
4. Finish Rake
5. Loppers
6. Leaf Rake

1. As the name implies, useful for moving large rocks.
2. When you need some extra dirt, a shovel is always handy.
3. When more than a shovel full is necessary.
4. When you want things to look perfect, it's time to get out the finish rake.
5. Great for getting leftover roots once the tread is built, or for taking out any branches that may be within the trail corridor.
6. To make your new trail look like it's always been there, give it a once over with the leaf rake.

# Tools You Might Have at Home

1. Pruning shears
2. Loppers
3. Pick axe
4. Axe
5. Spade
6. Flat shovel
7. Hand saw
8. Hard tine metal rake
9. Leaf rake
10. Chainsaw
11. Battery operated drills
12. Battery operated circular saw.



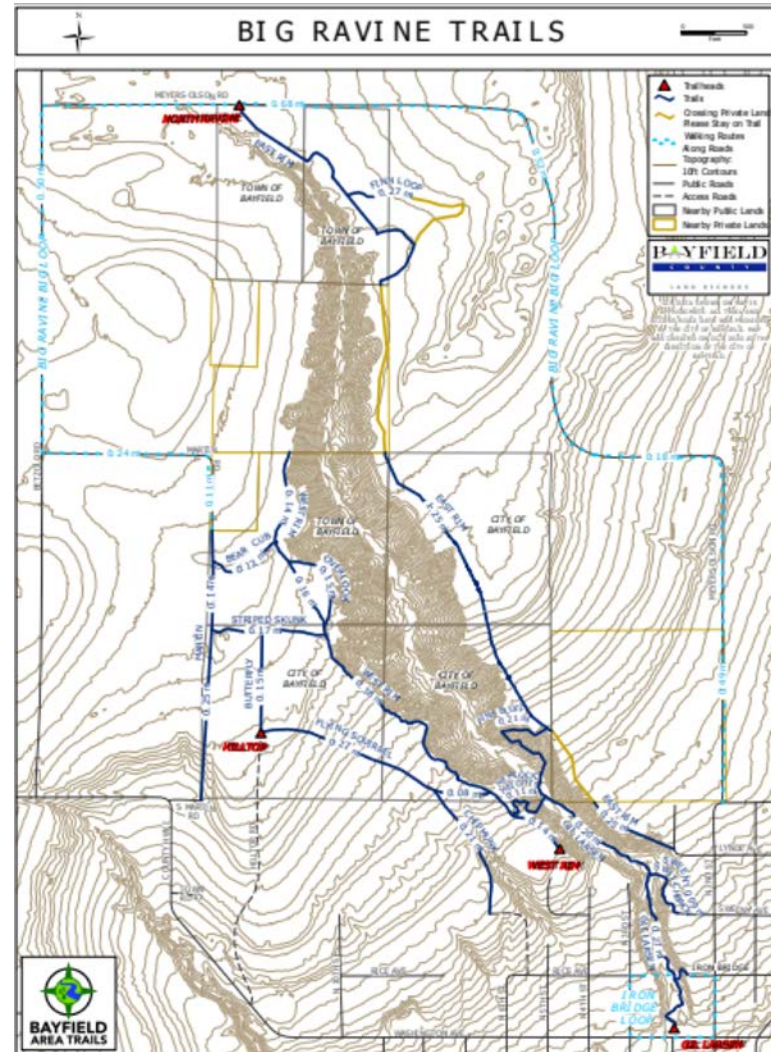
# The Basics of Building and Maintaining Trail



# Trail Design

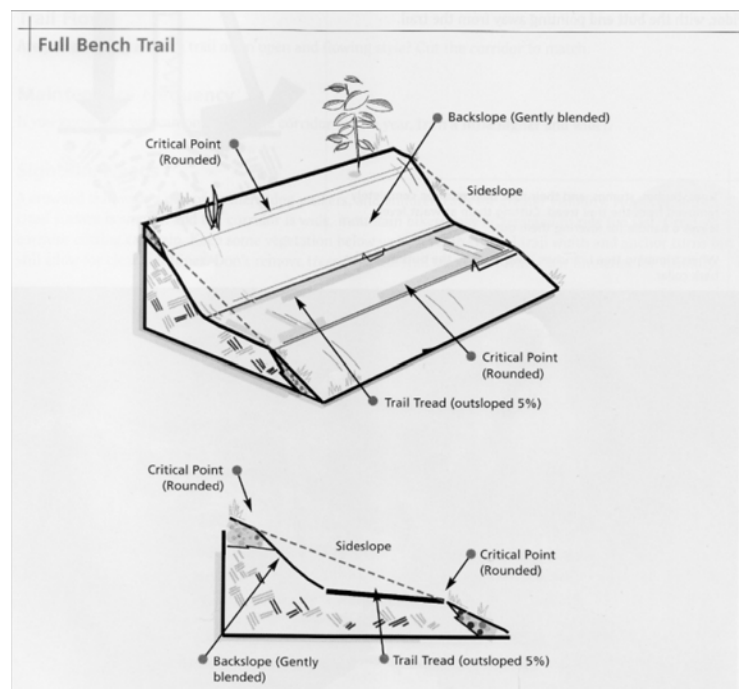
1. Water is the enemy
  - a. Water will do more damage to a trail than any other type of erosion
2. Use the landscape to help manage the flow of water
3. Where that is not possible, consider alternative means of construction
  - a. Boardwalk
  - b. Steps
  - c. Retaining walls

# New Trails in the Big Ravine Preserve



# Building New Trail

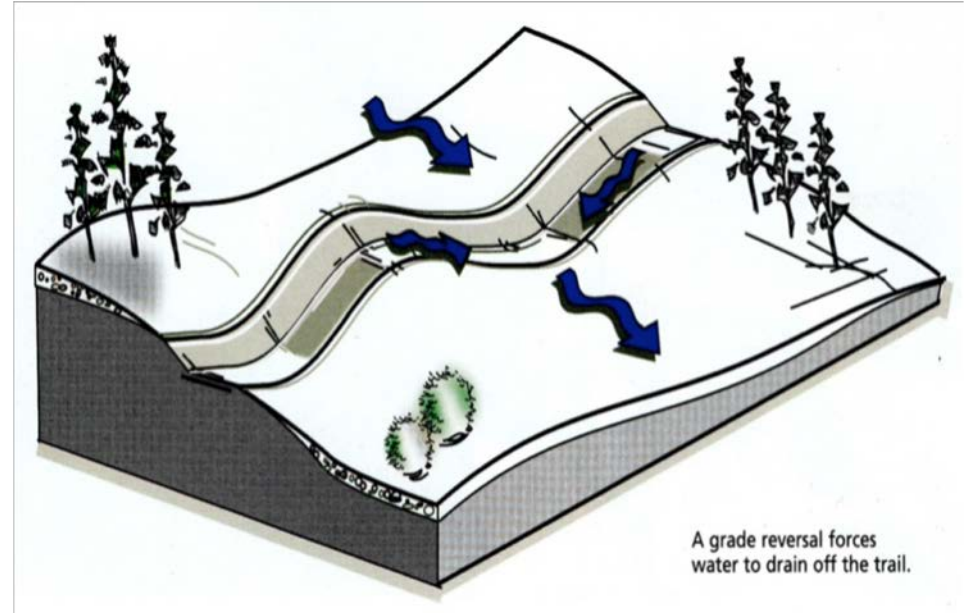
1. Rake leaves from proposed trail route
2. Cut duff (organic soil) from tread width; about 24"-36"
3. Cut the backslope and scrape mineral soil down to full tread width.
4. Disperse the duff and excess mineral soil away from cut tread.
5. Cut roots and pick out any rocks from tread
6. Finish rake the tread to create an outslope of 3-5%.
7. Compact loose soil on tread and backslope and finish cutting small roots
8. Use leaf rake to rake leaves and loose material to blend in new trail.



# Building New Trail Con't

When building new trail it is important to construct it in a way that it helps remove water from the trail, and this can be done with what is called a “grade reversal”

As the name implies, it changes the grade of the trail, thus stopping the flow of water from continuing down the trail.



# Other Construction Techniques: Steps

**Interlocking Steps**



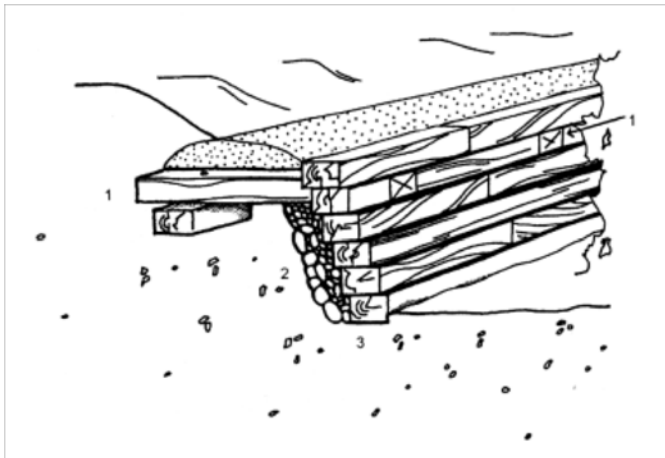
**Rock Steps**





# Other Construction Techniques: Retaining Wall

Wooden Retaining Wall



Rock Retaining Wall



# Basics of Trail Maintenance

1. Clearing the trail corridor from debris and obstacles.
  - a. Cutting downed trees
  - b. Leaf blowing
  - c. Cutting encroaching branches
  - d. String trimming/brushing trail corridor
2. Repairing erosion problems.
  - a. Deberming tread to maintain outslope and drainage
  - b. Repairing/creating new drainage
    - i. Knicks
    - ii. Grade Reversals
    - iii. Raised trail tread



# Volunteer Trails

1. Ravine Creek Extension
  - a. Modifying drainage
  - b. Boardwalk
  - c. Building new trail
  - d. Rock stairs and armoring
  - e. Stepstone creek crossings
2. Rice Avenue Connector
  - a. Interlocking steps
  - b. New trail
3. Sweeny Avenue Connector
  - a. Interlocking steps
  - b. Grade reversals
  - c. Retaining wall
4. Waterfall Route
  - a. Stepstone creek crossings
  - b. Rock stairs and armoring

Be proud of what you have done!

# Pine Bluff

Pine Bluff was completed last fall. With the help of volunteers it was finished faster than expected. Most of this trail consists of basic tread, but at the main switchback, a rock staircase with rock armoring was built. This spring, on the west side of the Big Ravine, the companion trail to Pine Bluff, Hemlock Heights, will be completed.

# Hemlock Heights

This is one of the more constructed trails in the Ravine. Building on many of the skills learned from last season, Hemlock Heights includes features from every trail built last year and then some:

- Cable steps
- Interlocking steps/crib steps
- Rock armoring
- Rock crib walls
- Wooden crib walls
- Basic tread

The fellowship built up around these trails is amazing and I am excited to continue to work with all of the volunteers that take time out of their lives to contribute to their community!