

TRAIL ANALYSIS WORKBOOK

By Pete Dewell

The purpose of this short workbook is to indicate problems in trails and to suggest **some** solutions, with the reader considering those solutions and adding additional solutions.

1. Muddy and wet trails. Consider the configuration of the trail and the following solutions:

- Add a water bar, trail dip or outslope ditch.
- Is there a side ditch and is it higher than the trail? Deepen side ditch.
- Construct turnpike to raise trail.
- Build a puncheon bridge or crossing.
- Rock fill the area, to bring it above water level.
- Add side ditches or enhance outslope drainage.
- Remove berms.
- Crown trail, adding side ditches.
- Are ditches plugged or filled with debris and duff?
- Is there a water crossing, needing a ford?

Others?

2. Trail slough.

- Is the back slope at least 45%? Fix back slope angle.
- Remove organic matter and duff above the top of the back slope, at least 1 foot.
- Remove loose soil and debris from backslope.
- If back slope cannot be decreased, build rock or crib retaining wall to control slough.

Others?

3. Excess trail grade – over 15% (15 feet over 100 feet). Try for not over 10% grade. Consider the use of the trail – stock, hikers, bikers.

- Build steps (crib ladder, crib steps, rock steps)
- Check dams or steps, especially if water is eroding the trail.
- Add switchbacks, to control grade.
- Cut down flat trail areas, above or below the steep grade, and redistribute soil from these areas to the steep area, reducing grade.

Others?

4. Trail migration – excess width. Consider moving user to back slope side of the trail.

- Add ferns, bushes and barrier to the outslope side of the trail.
- Remove barriers (such as ferns, bushes or protruding trees or logs) from the back slope side of the trail.
- Return the trail to its original location and remove rocks and roots in the trail, to make it more user friendly.
- Reroute the trail.
- Reinforce the out slope side of the trail, with rock or crib armoring, below the trail grade.

Others?

5. Switchbacks and problems encountered.

- Corner cutting – create barriers with rocks, logs or debris.
- Water over the upper part of the switchback and onto the turning platform – inslope upper part of switchback and create a ditch exiting before the turning platform.
- Inadequate turning platform – create a rock wall around the turning platform and reform, level or raise it.

Others?

6. Culverts. Here the problem is usually a plugged culvert pipe.

- Water over the trail at the culvert: Consider the depth of the catch basin, whether the culvert is plugged or whether the entrance to the culvert pipe is free of impediments.
- Consider whether there is inadequate backslope angle, which allows slough to enter the catch basin and the culvert pipe.
- Check for rocks in the culvert pipe.
- Check all ditches, which convey water to the culvert.
- Is there adequate culvert pipe size?
- Are the cap rocks and rocks, which protect the culvert, absent or failing?

Others?

7. Rock walls and crib walls. Here the problem is usually trail degradation above these walls.

- Rebuild the rock or crib wall.
- Add large rock at the top of the wall, to prevent out slope degradation.
- Have rocks fallen out of the wall or are cribs decaying?

Others?

8. Bridges and puncheon.

- Are there protruding spikes or rebar, which were used to join and build the bridge? If so, pound them down.
- Is there debris accumulating at the entries to the bridge? If so, is the grade too steep, allowing water and debris to flow onto the bridge? Alter grade or divert water to the sides.
- Is debris accumulating between the decking spaces or under the bull rails? Remove this debris on a regular basis to prevent rotting.
- Check the sills for rotting and the stringers for settlement. Replace rotten sills and stringers, or if the sills have settled, consider placing another sill, leveling or adding a second sill to the top of the existing one.
- Excess water force around the sills or, if applicable, any piles. Add rock barriers around the sills and piles, to divert them and protect them from excess water current, particularly from spring runoffs.
- Where there is excess water force, consider disbursing the water evenly over the entire bridge length, to unify the flow.

Others?

See *Tread and Retread the Trails, A Short Manual for Trail Building and Maintenance*, (3rd Edition) for further information. You can reach Pete Dewell at pete.dewell@outlook.com.