Trail Maintenance Standards

Maintaining the Trail Travel Corridor

In order to provide safe and enjoyable hiking experiences year round, all trails should be free of obstructions and brushed out to a height and width of 8 feet. To accomplish this, vegetation and other elements of the urban forests (e.g.: down trees, rocks, debris piles) should be removed from all trail areas if they encroach into the trail travelway.

With hand pruners, saw, lopper, or weed whip, cut out the vegetation (or other trail obstruction) within 4 feet of the center of the trail. Vegetation should always be cut flush with the ground (take out the whole plant) or at the point where a branch connects to its mother branch or trunk. Removing the whole plant, or at least an entire limb, is best because "stubs" (the exposed cuts on plant limbs) poses a danger to future trail users, and often sprouts new "branchlets" out into the trail corridor. Most importantly, removal of entire plants or limbs means that as trail maintainers, we do not have to re-cut the same plant year after year.

Summary: Trails should be brushed to 8 feet high and 8 feet wide. All material removed should be safely scattered off trail, down slope, and away from trail structures.

Note: Vegetation which is not growing over the trail tread *and* is under 18 inches high, does not need to be removed. Also, if a trail is located of a relatively steep slope, vegetation on the uphill side of a trial should be brushed back an additional foot while the vegetation on the downhill slope can remain flush to the trail tread. This encourages hikers to use the more stable uphill portion of the trail tread.

Maintaining the Trail Back-slope

Trails, which are located on sloping terrain (as opposed to trails in relatively flat areas), should not have a back-slope in excess of 45 degrees. Steep back-slopes force hikers away from the more durable inside (uphill) edge of the trail, and force them to use the outer edge (or shoulder) of the trail where tread material erodes quickly.

With a Hoe, Polaski, or Pick Madox, loosen all material needing to be excavated from the back-slope and remove it with a shovel. In most cases, vegetation and other forest debris will have to be removed before excavation can begin.

Summary: The back-slope of all trails should be maintained at an angle less than 45 degrees. All material removed while maintaining the proper back-slope should be safely scattered well off trail, down slope, and away from trail structures.

Maintaining the Trail Tread

All trails should have a tread at least 4 feet wide, free of any tripping or stumbling hazards (such as exposed roots, rocks, and logs), and consist of hard packed mineral soil, gravel, or crushed rock. Trail tread should be uniformly smooth and slightly out-sloped (about 5 degrees), or crowned. Out-sloping the trail means grading the trail tread so it is lower nearest the outer (and

down hill) edge of the trail and highest at the trail's inner (or uphill) edge. A crowned trail means the trail tread is highest in the trail's center, and gently slopes downward towards the

outer edges of the trail. Trail tread, which is crowned or out-sloped, encourages surface water to drain off trail (sideways) rather than down the trail. Water, which is allowed to run down the trail causes erosion and will increase the amount of maintenance a trail, will need over time. Lastly, all plant life growing on the trail tread (including moss, grass, flowers, weeds, etc) should be removed, and standing water or muddy areas should be eliminated.

With a Hoe, Polaski, or Pick Madox, remove all roots, rocks, logs, or other tripping/stumbling hazards from the trail tread. Tread hazards should be chopped or dig out to a depth of 6 inches and the resulting hole filled with mineral soil, gravel, or crushed rock. Always tamp the worked area with a McLoad or tamper to compact the new material consistent with the overall tread.

To create a trail tread that drains well (as described above), use a Polaski, pick madox, hoe, or shovel to move material from one area of the tread to another to create a proper trail out-slope or crown. Compact all material with a McLoad or tamper.

To eliminate mud puddles or areas of standing water, use a shovel or McLoad to remove all muddy soil and moisture from the trail tread. Once all moisture and mud is removed, fill in the resulting depression with mineral soil, gravel, or Crushed rock, and re-establish the trail's out-slope or crown. Tamp down all tread material with a McLoad or Tamper.

In areas where the trail has expanded so the tread is more than 4 feet wide, move nearby forest materials (such as plants, leaves, sticks, old logs, and large rocks) into the trail so the tread is brought back to the appropriate size. (Note that any items put within reach of the trail must be firmly in place and resistant to rocking or tipping.) If the trail in question is on a slope, always cover the downhill portion of the tread so as to retain the upper 4 feet of tread.

Summary: Trail tread should always be 4 feet wide, smooth, hazard free, free of standing water and mud, properly sloped for effective surface water runoff, and consist of hard packed mineral soil, gravel, or crushed rock.

Maintaining Drainage Structures

Water bars, drain ditches, and culverts should always be clean, clear, and properly sloped to eliminate tread erosion, on trail standing water, and the creation of mud puddles. All drainage structures made of wood, plastic, or similar materials should be firmly in place, resistant to prying, and free of rot or other damage.

Drain Ditches: Use a Polaski, Pick Madox, McLoad, Hoe, or Shovel to maintain drainage ditches to a depth and width of one foot. Most importantly, eliminate ditch walls, which are greater than 50 degrees. The walls of all drain ditches should be angled less than 50 degrees to reduce and eliminate dirt or other forest debris from sloughing off the walls and into the ditch. Any nearby logs, rocks, or sticks should be moved well away from the ditch to allow the trail maintainer easy access, and any plant life growing in the ditch should be removed.

Water Bars: Use Polaski, Pick Madox, McLoad, Hoe, or Shovel to remove all debris and excess dirt from the uphill edge of Water Bar. A slight depression should be maintained along the upper edge of the water bar to facilitate collection and diversion of surface water from the trail. Maintain the water bar's leadoff ditch at its downhill end consistent with a standard drain ditch (as described above). The trail tread on the downhill or "downtread" edge of the waterbar should

be flush with (or slightly higher than) the top of the water bar, while the upper edge, or "up-tread" part of the water-bar (the one nearest where the water flows) should be slightly lower and packed with gravel so as to prevent water from under cutting the water-bar.

Culverts: Use a shovel blade, shovel handle, or a post hole digger to scrape out any material from inside the culvert. Culverts should be completely free of debris and plant life at all times. Catch basins of culverts should be dug out to at least 4 inches lower than the bottom of the culvert. Deep catch basins allow sediments in the runoff to settle out and ensure that water traveling through the culvert is fast flowing and clear. Like drainage ditches, catch basins should have sloped walls no grater that 50 degrees and should be free of plant life, debris, sticks, etc… The down-slope opening of the culvert should also be free of obstructions and should be maintained as a drainage ditch. If possible, the down-slope opening of the culvert should be two inches higher than the bottom of the drain ditch to prevent water from backing up into the culvert.

Summary: culverts, water bars, and drainage ditches should be maintained to allow maximum trail drainage and prevent water from flowing onto the trail. If materials are damaged, rotten, or easily kicked out of place, the structure should be replaced.