Road Maintenance and Repair: Ten Points to Ponder

Steve Bowers, OSU Extension Forester

The following are 10 points to ponder in terms of road maintenance and repair. They are not necessarily placed in order of importance, but merely are a collaboration of thoughts for your consideration. These are anecdotal in nature and were taken over the course of a few days as I was performing my annual, late summer road inspection regime. Anyone desiring the full-meal-deal can contact the OSU forestry extension office nearest you and order the recently revised Managing Woodland Roads: A Field Guide.

Don’t be too parsimonious when spreading that rock, especially on an existing rocked surface. Rock needs to be spread a depth sufficient to allow the “fines” to adequately mix with “open” material. Spreading too thin a layer will result in the inability of the rock to adequately bind together. The roadway cannot “set-up” and the results will be a loose, non-compacted running surface. The issue will be exacerbated with the coming precipitation which can wash-out the fines and the larger aggregate will not compact sufficiently, resulting in poor traction, which leads to wash-boarding, potholes and eventual degradation of the roadway. Rock should be spread a minimum of four inches in depth.

Keep passes to a minimum when grading or back-blading freshly spread rock. Under normal conditions, it is necessary to smooth the road surface after applying rock. Few landowners own a grader and will utilize a farm tractor with a read blade, a skidder or a dozer to smooth the surface. Too many passes will result in displacing the fines towards the bottom of the fresh rock and “pulling” the larger material towards the top: just the opposite of what is required to properly compact a roadway. Isolating the fines from the coarse material, particularly when the smaller material is underneath, makes it extremely difficult to establish a firm, smooth running surface.

You get what you pay for (pardon the ending preposition). The number of rock quarries in western Oregon has increased the past few years. Many woodland owners have an option in terms of a source for their rock, so shop around and get the best available rock at the best possible price. There are quarries who, attempting to increase business, will offer a “deal” on oftentimes low quality rock (usually crushed rock that contains excessive overburden). The lesson here is to remember that rock of a lower quality cannot be substituted in additional volumes and equate to higher quality rock in smaller volumes. The additional volume of lower quality material (sometimes the quality is so low that no volume is sufficient) will exceed the cost of a lesser volume of higher quality material (and remember the additional trucking costs).

If a particular road segment constantly requires additional rock due to excessive moisture, utilize the same size, or a smaller gradient, that currently exists. Placing larger rock over a smaller gradient can create the same issues and is essentially the same concept as discussed in back-blading. If a larger gradient is utilized, it will have to be of sufficient depth to adequately compact. If larger material is placed over a smaller size rock, it should be spread at a minimum of 6 inches followed by a layer of small material. Because the smaller gradient is being spread over fresh, non-compacted rock, you can slightly reduce the four inch minimum depth suggested for a running surface.
Track spreading can result in significant cost savings. Placing a device in the center of a gravel truck (some vehicles are equipped with a “diaper” or belt on the exterior of the box that can be easily attached/unattached) that allows for rock to flow only in the tracks of the road. This type of application allows rock to be spread approximately twice the distance as the regular method. Woodland roads with a definite geometric surface (inroad, crowned or outslope) can be compromised by the excessive application of track spreading (too much rock in the tracks traps water on the road surface), but many of the rock roads on small woodlands are a “no-shape” surface (there is no distinct, or a combination of, geometric shapes) and occasional track spreading is an efficient and cost effective method for maintaining a viable running surface.

When traveling uphill, if possible, use 4-wheel drive when traveling on a “fresh” rocked surface or older roadway that contains loose, non-compacted rock. Every time you spin your tires on a rocked surface, it becomes more difficult to negotiate that roadway without additional traction issues. If you don’t own a 4-wheel drive vehicle, negotiate the road using the lowest engine rpms possible applying just enough power to traverse the slope(s).

When traveling downhill, use engine compression, not brakes, to moderate your speed. Although braking is occasionally necessary, using engine compression to maintain your downhill speed oftentimes results in less disruption of the road surface than using your brakes. There is a far greater chance of brakes causing your tires to lock-up, displacing rock and diminishing traction in future road use. As with uphill travel, maintain the lowest engine rpms as possible. If braking becomes necessary, “feather” the brake pedal to reduce speed, using light, intermittent pressure rather than a constant “riding” of the brakes. The later increases brake wear as well as the possibility for sliding on the road surface. Oftentimes, more road damage occurs when traveling downhill versus uphill.

Do not underestimate to efficacy of benign neglect. For example, just because “the book” suggests you place a ditch relief culvert at a particular location, and one does not exist currently, it may not be necessary to expend the time and money. Maybe there is a portion of a crowned or in-slope road that is not ditched and the roadway suffers no erosion or environmental issues during the wet season: why change things? There are plenty of things to do on your woodlands so don’t go looking for trouble. If it’s not broke, don’t fix it.

If abandoning a dirt road during the wet season (which you should) then its waterbars: deep and often! Different soils react differently to the deleterious effects of running water, but you should assume the worst. When constructing a waterbar, cut the roadway at an angle to diminish the force of the running water and cut into the road surface; do not just push/pile loose soil as a berm. Compact the displaced soil by walking the skidder, tractor or dozer back and forth thus reducing the potential for erosion. This may require additional excavation for the structure, but that is a good thing. If deep is good, deeper is better. A good indicator regarding sufficient depth of a dirt waterbar is knowing you would drag the bottom of your vehicle if attempting to cross it. A hand shovel is entirely inadequate.

If constructing or upgrading a road segment for an off-season harvesting operation, do not underestimate the effects of an 80,000 log truck. “The book” says a foot of rock is required to adequately support truck traffic during a wet weather operation. This is an example where “the
book," may have got it wrong. It will require at least that much, plus maintenance and repair in terms of track spreading and trouble spots. It cannot be overstated: do not underestimate the wear-and-tear of heavy truck traffic on your woodland road during the wet season.

For more information see the Revised and Updated Woodland Roads Publications listed in this issue.