

Managing Unpaved Roads

Unpaved roads are a familiar sight in rural communities. According to the New York State Department of Transportation, over 792 miles of roads in our nine-county region are unpaved. Almost all of these roads are daily transportation routes for rural residents, and their preservation is important to the quality of life in rural communities.

Dirt and gravel roads, like paved roadways, require regular maintenance to keep them passable and safe. Erosion is perhaps the most challenging problem, deteriorating the road surface, clogging drainage swales, and allowing runoff pollution to reach waterways, which can negatively affect water quality. Other factors impacting the ability of an unpaved roadway to survive and serve the needs of the public over a long and useful life include traffic loads, condition of subgrade soils, quality of construction materials and practices, and maintenance.

Responsibility for managing the unpaved roads that average residents use for transportation falls mainly to local governments. Virtually all of the unpaved roads in our region are maintained by counties, towns, and villages. The management of unpaved roads has not received nearly as much attention as that of paved roads.

Best Management Practices

The U.S. Environmental Protection Agency, the American Association of State Highway Transportation Officials, and the State of Massachusetts have endorsed best management practices (BMPs) for unpaved

roads. The goal of these efforts is to help road managers identify and remedy potential problems before they become real and costly problems.

Good planning is the critical first step to decreasing existing runoff, eliminating unnecessary increases in runoff, and reducing erosion and sedimentation problems. A thoughtfully-planned repair project, restoration project, and, especially, a regularly-scheduled maintenance and inspection program can help minimize material and labor costs.



The properly completed road project improves safety, durability, and runoff quality (Source: U.S. EPA *Recommended Practice Manual: A Guideline for Maintenance and Service of Unpaved Roads*).

What follows is a summary of nonstructural best management practices for unpaved roads that can be implemented by most highway departments. It is recommended that nonstructural BMPs precede the use of more expensive structural practices for unpaved road management.

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The Complete Roadway

Washouts, re-graveling, ice build-up, and road closings are all too common with unpaved roads. The key to avoiding these and other problems associated with surface deterioration is to make sure runoff immediately leaves the road surface. This will lengthen not only the life of the road surface, but also the frequency and cost of maintenance, as well as the amount of runoff entering the water supply.

Recommended practices include:

- Preserve and maintain a proper road crown for good drainage. Free water cannot be allowed to stand in ruts or potholes or it will soak into the surface.
- Keep the road surface tight with regular grading.
- Maintain natural buffers and drainage. Stable and well-vegetated drainage areas should be preserved. The natural buffer between the road and waterway or wetland helps reduce the velocity of runoff and removes some of its sediments.
- Ensure that ditches and swales are properly lined to prevent erosion. Ditches work by controlling, slowing, and filtering road runoff through vegetation or rock lining.
- Perform regular maintenance to keep ditches clear and stable.
- Avoid slopes steeper than 2H:1V unless stabilization methods are employed. A stable ditch or swale will not become an erosion problem.
- Inspect culverts on a regular basis. Properly sized and installed culverts can reduce erosion by controlling the volume and velocity of discharges.
- Protect inlets and outlets by marking their location, stabilizing entry and exit zones, and maintaining ditch linings to prevent erosion.

- Water should outlet to areas with moderate slopes and vegetative buffers before entering surface waters. This type of outlet, often referred to as daylighting, allows most sediments and other pollutants to be removed before runoff enters surface waters.

- Install diversions at all pipes, culverts, and swales where water velocity may cause erosion.
- Design and size outlet protection for anticipated water velocities.

- Maintain as much natural vegetation as possible. Vegetation absorbs water, reducing the amount of storm water the road drainage system must handle. Extra care should be taken to protect large trees during roadwork because their roots hold soil in place.

Well-maintained dirt and gravel roads can serve certain levels of traffic very satisfactorily. They have lower construction costs and require less equipment and fewer skilled operators than paved roads.

Resources

American Association of State Highway Transportation Officials. *Maintenance of Dirt and Gravel Roads*. http://environment.transportation.org/environmental_issues/construct_maint_prac/compendium/manual/5_8.aspx

State of Massachusetts. *Unpaved Roads Best Management Practices Manual*. www.berkshireplanning.org/download/dirt_roads.pdf

U.S. Environmental Protection Agency. *Recommended Practices Manual: A Guideline for Maintenance and Service of Unpaved Roads*. <http://water.epa.gov/polwaste/nps/unpavedroads.cfm>

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