

Design a good road: Road Design Resources

Link to top ten Dust Control techniques:

(http://www.dec.state.ak.us/air/anpms/Dust/Topten_dustctrl.htm)

Road design and construction can have big effects on air quality and rural dust.

For that reason, we include some road resources for those working to improve air quality.

Highway departments and roads committees will find the Alaska Department of Transportation (<http://www.dot.alaska.gov/index.shtml>) to be their primary contact.

Good road construction and maintenance makes dust control activities work better and last longer.

Fewer treatments with water or dust palliatives may be needed. Sometimes, good design can prevent dust problems entirely.

What's a good road?

It depends on the needs of the community and the available resources. A good road lasts a long time, without forming potholes or washboarding. A good road can safely be maintained with available equipment and materials. A poor road will erode away, making travel difficult.

A few key points for dust control:

Some dust palliatives need special preparation of the road surface ahead of time.

Some dust palliatives will be destroyed by road grading, so grade the road ahead of time.

Keep good records for the future. Record the materials used, their costs, and where they came from.

The long term performance of a road dust suppressant depends on the road shedding water and providing a smooth driving surface. Water puddles will form on a road without good drainage. Water floats fine particles up from the roadbed. Traffic spreads dust across the road surface. Standing water next to a road may saturate, or soak, the roadbed, resulting in potholes. When fine particles are washed away the larger particles are left unanchored. Then, larger particles are pushed to the side of the road resulting in loss of material. Eventually the road will need expensive road resurfacing.

The **Institute of Transportation Studies*** lists ten tips for maintaining roads in good condition.

Ten Essentials of a Good Road

- 1. KEEP WATER AWAY FROM THE ROAD.**
- 2. BUILD ON A FIRM FOUNDATION.**
- 3. USE THE BEST SOILS AVAILABLE.**
- 4. COMPACT SOILS WELL.**
- 5. DESIGN FOR WINTER MAINTENANCE.**
- 6. BUILD FOR TRAFFIC LOADS AND TRAFFIC VOLUMES.**

7. PAVE (or APPLY PALLIATIVES to) ONLY ROADS THAT ARE READY.

8. BUILD FROM THE BOTTOM UP.

9. PROTECT YOUR INVESTMENT. Make sure your roads can maintained with the available materials and money.

10. KEEP GOOD RECORDS.

*<http://www.techtransfer.berkeley.edu/index.php> UC Berkeley, **Tech Transfer Newsletter** Summer 2008

Resources for designing and maintaining good roads:

Classes and training:

Alaska Tribal Technical Assistance Program. <http://www.uaf.edu/attap/>

Courses include *Basics of a Good Gravel Road*, and classes in *Dust Management* and *Road Inventories*.

Tribal Technical Assistance Program at Colorado State (<http://ttap.colostate.edu>) and specifically for unpaved roads: <http://ttap.colostate.edu/document-center-category.aspx?id=25> Other regions have comparable programs.

Manuals from Transportation Organizations and Governmental Agencies:

Gravel Roads Maintenance and Design Manual. Ken Skorseth, Ali A. Selim. 2000. Federal Highway Administration, U.S. Department of Transportation, Washington, D.C. 104 pp. (also known as the South Dakota gravel roads manual) . (available in PDF format at <http://www.epa.gov/owow/nps/gravelroads/>).

Environmentally Sensitive Maintenance For Dirt and Gravel Roads. 2007. Compiled by John A. Anderson, Alan L. Gesford. Pennsylvania Department of Transportation. (from Pennsylvania State Conservation Commission & the Penn State Center for Study of Dirt & Gravel Roads). <http://www.epa.gov/owow/NPS/sensitive/sensitive.html>

Maintenance of Dirt and Gravel Roads, Chapter 5.8 in Compendium of Environmental Stewardship Practices in Construction and Maintenance, The Center for Environmental Excellence by the American Association of State Highway and Transportation Officials (AASHTO). http://environment.transportation.org/environmental_issues/construct_maint_prac/compendium/manual/5_8.aspx

Canadian InfraGuide, Best Practice Reports, Transportation: Roads and Sidewalks. 2005

http://gmf.fcm.ca/files/InfraGuide/Roads_and_Sidewalks/dust_control_unpaved_rd.pdf

Gravel Roads: Maintenance and Design Manual, Section 4 Dust Control and Stabilization

The purpose of the manual is to provide clear and helpful information for doing a better job of maintaining gravel roads. The manual is designed for the benefit of elected officials, managers, and grader operators who are responsible for designing and maintaining gravel roads.

http://water.epa.gov/polwaste/nps/upload/2003_07_24_NPS_gravelroads_sec4.pdf or

http://water.epa.gov/polwaste/nps/gravelroads_index.cfm

Best Practices: 5.8. Maintenance of Dirt and Gravel Roads contains a more extensive list of resources and links. It is published by the Center for Environmental Excellence by the American Association of

State Highway and Transportation Officials (AASHTO).

http://environment.transportation.org/environmental_issues/construct_maint_prac/compendium/manual/5_8.aspx