

Open-Top Culverts

Forest Management Practices Fact Sheet Managing Water Series #7

Introduction

Traffic surfaces such as forest roads and trails can contribute a lot of sediment and other pollutants to nearby wetlands, lakes, and streams. Open-top culverts are one option to help prevent such pollution.

Best Management Practices (BMPs) can prevent or minimize the impact of forestry activities on rivers, lakes, streams, groundwater, wetlands, and visual quality.

Open-top culverts can serve two functions. They divert water off a traffic surface and permit water to drain across it. They are most frequently built from logs or lumber. Concrete and steel may be used for permanent installations. Design recommendations for concrete and steel will not be discussed here.

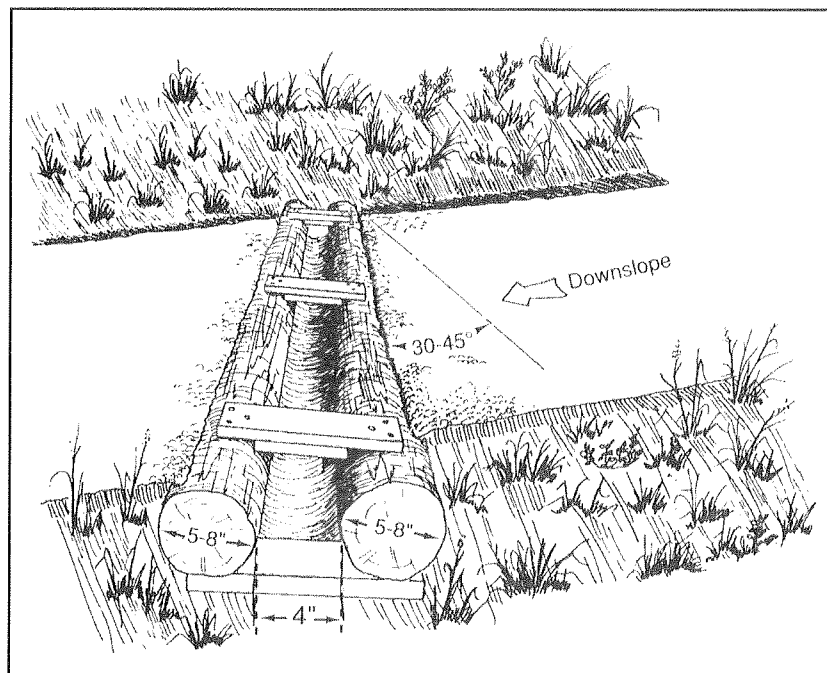
Where Used

Open-top culverts are most often used on temporary or low-traffic seasonal roads and trails because they require more maintenance than most other options. They should be removed when the road or trail is closed permanently.

Application

When building an open-top culvert:

- ▶ Make the culvert 6 inches deep and wide enough to be easily cleaned. The width of a shovel is convenient.



- ▶ Nail spacers between the side boards or logs to keep them in place and stabilize the structure.
- ▶ Remove roadside berms or other obstacles that might block water moving from the outlet. Water should flow into a stable, vegetated area away from the road and open water.
- ▶ Install the culvert at an angle as close to the direction of flow of the water as practical. This minimizes turbulence that can erode the soil around the inlet. Do not turn the water more than 45 degrees.
- ▶ Space open-top culverts according to your state's water quality BMP manual. Use water bar spacing when the main purpose is to divert water off a traffic surface. Follow broad-based dip and cross-drain culvert spacing if cross-drainage is the main goal.

Advantages

Open-top culverts are inexpensive. They can be built from logs and lumber and installed with hand tools on site. They permit easy movement of all vehicles.

Disadvantages

Open-top culverts need frequent maintenance to keep them in good working order.

Maintenance

Clean soil, slash, and other debris frequently from open-top culverts. Remove culverts when the site is closed to prevent plugging.

Related Fact Sheets in This Series

Project Planning: Locating Roads, Landings, Skid Trails, and Crossings (FS-6970); Managing Water on Roads, Skid Trails, and Landings (FS-6971); Earth-Berm Water Bars (FS-6972); Using Logging Debris or Logs to Build Water Bars (FS-6973); Conveyor Belt Water Bars (FS-6974); Broad-Based Dips (FS-6975); Shaping Roads and Trails (FS-6977); Roadside and Diversion Ditches (FS-6978); Cross-Drainage Culverts (FS-6979); Project Closure (FS-6980); Making and Using Measurement Tools—Basal Area (FS-6981); and Making and Using Measurement Tools—Slope (FS-6982).

Cooperators

University of Minnesota Extension Service, Minnesota Department of Natural Resources, Minnesota Logger Education Program, Michigan Department of Natural Resources, Michigan State University Extension, and Wisconsin Department of Natural Resources.



Copyright © 1998, Regents of the University of Minnesota. All rights reserved.

The University of Minnesota Extension Service is committed to the policy that all persons shall have equal access to its programs, facilities, and employment without regard to race, color, creed, religion, national origin, sex, age, marital status, disability, public assistance status, veteran status, or sexual orientation.



In accordance with the American Disabilities Act, this material is available in alternative formats upon request. Please contact your Minnesota county extension office or, outside of Minnesota, contact the Distribution Center at (612) 625-8173.

Printed on recycled paper with minimum 10% postconsumer waste, using agribased inks.