

Temporary Stream Crossing Options

Forest Management Practices Fact Sheet Crossing Options Series #1

Introduction

Timber harvesting and hauling equipment can damage water quality by stirring up sediment and harming fish and other aquatic organisms when crossing streams. However, operators can use special stream crossing options to minimize the impact. Many of these options are temporary and can be reused at another crossing.

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

Where Used

Temporary stream crossing options are used in forests with streams.

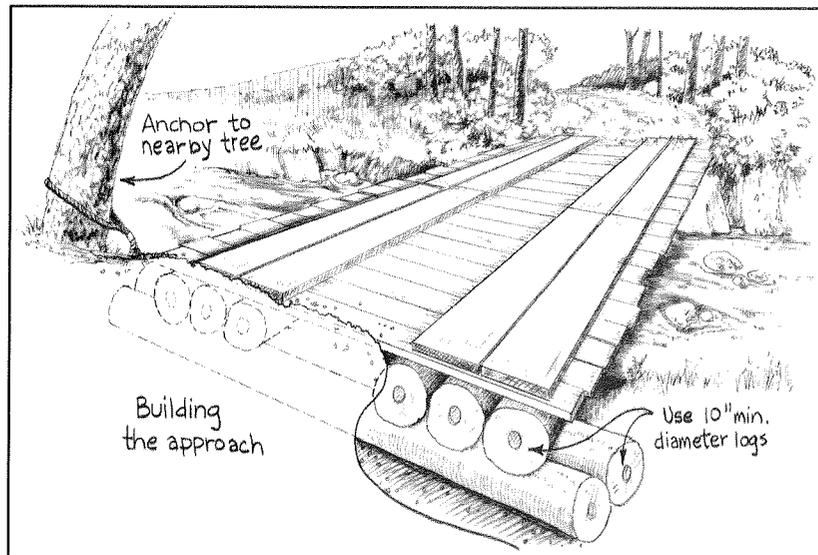
Application

Survey the area and plan the harvest to minimize the number of stream crossings. Then determine which stream crossing option to use for each crossing. Generally, avoid crossing streams when fish are spawning, incubating eggs, or migrating. Some states require permits for crossing both permanent and intermittent streams. Check with the appropriate regulatory or natural resource agency.

Many stream crossing options work best with a proper foundation. Logs, railroad ties, or similar abutments help level the structure. They also minimize stream bank disturbance and make removal easier. PVC or HDPE pipe bundle crossings and some fords work best with a porous fabric mat called geotextile under them. Geotextiles support the option and separate it from the soil, making removal easier.

Options

A *ford* is a crossing in which vehicles drive directly through the stream. Use fords only when crossing infrequently or for short periods. Clean rock on top of geotextile can strengthen the ford and the approaches leading up to it.



Log stringer bridge

A *culvert* is a pipe or other round or oblong object that diverts water under the crossing. Culverts work well in streams with well-defined, deep channels. Operators can install and remove them quickly. Culverts are very portable.

An *ice bridge* consists of packed snow that is iced over with water. It is useful on streams with low water flow. Operators may need to pack and ice the structure for several days to build a strong structure.

A *timber bridge* is built from logs, railroad ties, demolition materials, or lumber. To build, cable the materials together and nail over them with lumber. This gives the structure stability, strength, and allows it to control sediment from passing vehicles. A *solid-sawn stringer* is similar in construction. A *panel bridge* is built using stress-laminated, glued-laminated, dowel-laminated, or nail-laminated materials. Firmly anchor timber bridges at one end—it should be able to swing away during flooding. Install curbs or guardrails on bridges designed for truck traffic to help the driver position the vehicles safely. Most timber bridges are temporary and reusable.

Railroad cars, truck flatbeds, steel bridges, and prestressed concrete panels are commercial options that are often used to span wider streams. Operators generally can reuse them again.

A *PVC or HDPE pipe bundle crossing* consists of pipes cabled together with galvanized steel to form mats. Place the mats on top of geotextile. Use wood mats, wood panels or pallets, or other materials on top of the pipe bundles to increase traction. Securely anchor pipe bundles so they don't move downstream.

Maintenance

Keep culverts and pipe bundles clear of debris. Re-ice bridges as needed. Check bridges and pipe bundle strength and wear during and between uses.

Costs

<u>Option</u>	<u>Cost</u>
Fords	Low
Culverts	Low
Ice bridges	Low
Timber bridges	Low - Medium
Pipe bundles	Low - Medium
Other options	Medium - High

Related Fact Sheets in This Series

Fords (FS-7002); *Culverts* (FS-7003); *Ice Bridges* (FS-7004); *Timber Bridges* (FS-7005); *Railroad Car, Steel, and Prestressed Concrete Bridges* (FS-7006); and *PVC or HDPE Pipe Bundle Crossings* (FS-7007).

Cooperators

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



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