Bridge Decks, Tire Mats, and Pole Rails

Forest Management Practices Fact Sheet
Crossing Options Series #13

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

Introduction

When vehicles cross wetlands during forest operations, they can damage soils, water quality, and hydrology. Temporary wetland crossings reduce this problem by providing a protective layer between the wetland and machinery.

Bridge decks, *tire mats*, and *pole rails* can be used for temporary wetland crossings. Bridge decks are simply the decking of a timber bridge (e.g., prefabricated stress-laminated, glued-laminated, nail-laminated, or dowel-laminated panels). Tire mats may be purchased commercially or built by interconnecting tire sidewalls with corrosion-resistant fasteners. Some tire mat designs use double layers of sidewalls, while others use a layer of treads topped by sidewalls. Pole rails are made from straight hardwood trees laid in the direction of travel below each wheel.

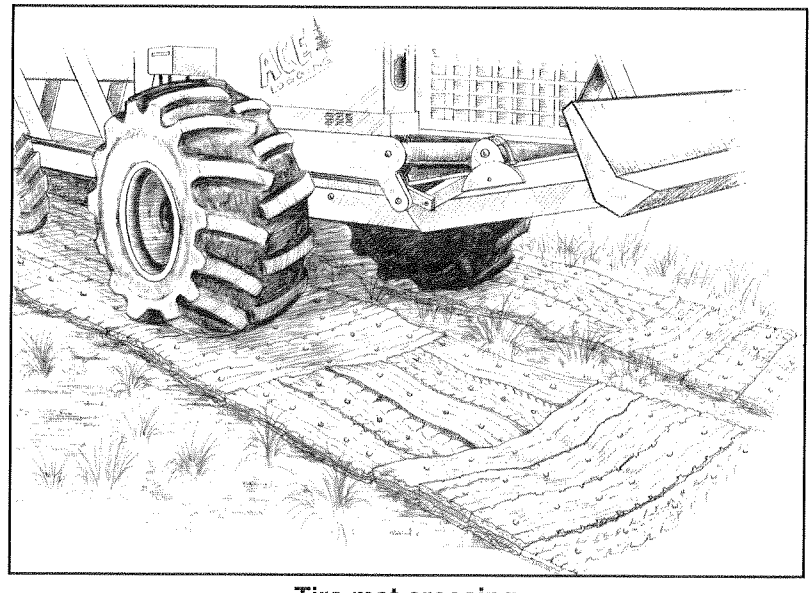
Where Used

Bridge decks are suitable for most wetland soils. Tire mats are suitable for wet mineral soils. Either option can be used to cross wet areas on a haul road. Because skidding will move mats, these options are best limited to hauling and forwarding. Use pole rails on small, mineral-soil wetlands under skidders with wide, high-flotation, or dual tires. All options require relatively flat topography (less than 4 percent grade).

Application

When installing a bridge deck crossing:

- Buy prefabricated stress-laminated, glued-laminated, nail-laminated, or dowel-laminated bridge panels from a commercial vendor.



Tire mat crossing

- Do not construct the crossing in an area with rocks or other firm high spots, since the bridge panels may break.
- Smooth out any high spots and fill ruts. Do not disturb the root mat of vegetation because it provides additional support for the crossing. Cover the crossing with nonwoven geotextile and lay the panels on top.

Geotextile is a fabric mat that allows water to drain through it. It supports material placed on top of it and makes removal of that material easier.

When installing a tire mat crossing:

- Purchase commercially available mats or construct mats from waste tires and corrosion-resistant fasteners. Size mats according to site needs.
- If you use a nonwoven geotextile below the tire mats, carefully place it with a loader.

When constructing a pole-rail crossing:

- Use hardwood poles harvested on-site that have a diameter of less than 10 inches. Use two or more if they are small in diameter.
- Place the poles parallel to each other below each wheel path on top of nonwoven geotextile with the larger end of the pole on the softer ground.
- Drive across the poles a few times without a load to secure them into the soil.
- Remove the poles when the crossing is no longer needed.

Advantages

Bridge decks and pole rails are easy to install and remove. Bridge decks also can be used at stream crossings. Tire mats can last for many crossings, if properly cared for. Pole rails may be available on-site and are inexpensive.

Disadvantages

Tire mats cannot support skidding, are heavy and hard to build, and may be difficult to install and remove. Tire mats must be installed and removed with care to avoid compressing the bolts that hold them together. Pole rails can't be used with conventional width tires.

Maintenance

Tire mats need little maintenance.

Related Fact Sheets in This Series

Temporary Wetland Crossing Options (FS-7008); *Wood Mats* (FS-7009); *Wood Panels and Pallets* (FS-7010); *Expanded Metal Grating* (FS-7011); *PVC or HDPE Pipe Mats and Plastic Roads* (FS-7012); *Corduroy Crossings* (FS-7014); *Low-Ground-Pressure Equipment* (FS-7015); and *Equipment With Central Tire Inflation* (FS-7016).

Cooperators

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