BEST PRACTICES USING Portable Skidder Bridges



VERMONT AGENCY OF NATURAL RESOURCES Department of Forests, Parks and Recreation 1 National Life Drive, Davis 2 Montpelier, Vermont 05620-3801





Portable Skidder Bridge Workshop, Bird Mountain Wildlife Management Area, Castleton, VT

ABOUT THIS MANUAL

This manual is primarily intended for loggers, foresters and forest landowners. It illustrates best practices to follow for using portable skidder bridges during logging to protect water quality. It also highlights the environmental and economic benefits of using portable skidder bridges and addresses planning considerations for crossing streams when logging. Following the steps outlined in this manual will help ensure that when using portable skidder bridges, they achieve what they are intended for — protecting water quality.

USING PORTABLE SKIDDER BRIDGES

Portable skidder bridges are designed and intended for use as temporary structures for crossing streams during logging.

When properly installed, used, and removed, they create less stream bank and stream bed disturbance as compared to alternatives such as culverts or poled fords, thereby reducing the potential for sedimentation and protecting fish and aquatic habitat.

Portable skidder bridges:

- are economical, since they are reusable;
- are easy to install;
- are easy to transport from job to job; and,
- allow loggers to harvest timber in compliance with Acceptable Management Practices (AMPs) for Maintaining Water Quality on Logging Jobs in Vermont.

What are AMPs?

AMPs are a set of practices for loggers and landowners to follow for protecting water quality and controlling soil erosion. Call (802) 828-1531 to request a copy or download from vtforest.com.



Always Follow AMPs!



BRIDGE DESIGN AND SPECIFICATIONS

Design and specifications for portable skidder bridges can be found on the Vermont Department of Forests, Parks and Recreation website: <u>vtforest.com</u>

- Maximum load rating is based on a 14-foot clear span in new condition using Number 1 Grade Eastern Hemlock.
 - A 14-foot clear span from top-ofstreambank to top-of-streambank corresponds to a drainage area of approximately 800 acres.





Portable skidder bridges are easily transported.

They can be damaged when loading or unloading if not handled carefully.



DID YOU KNOW?

Forests are the key to clean water.

The hair-like root fibers of trees help filter groundwater by absorbing nutrients and potential contaminants. The leaves and branches slow the movement of rain to the ground, allowing it to soak in slowly, while roots stabilize the soil so it doesn't wash away.



Things to consider when choosing the best site to install a bridge:

Place bridge at an adequate height (2-3 feet) above water level, allowing for high flows.

Avoid or minimize the number of crossings.

Avoid steep approaches to the stream.

Avoid wet ground.



- stream banks are well defined;
- stream channel is unobstructed; and
- stream channel is narrow and straight.



You may not always find the ideal place to cross but it is important to find the best place!



STEP 3

<u>Place sill logs</u> at the top of both stream banks at the crossing site.

- Sill logs provide for a stable bearing surface for the bridge to rest on.
 - Sill logs will prevent the bridge panels from being compacted into the ground and will make removal easier.
 - Sill logs will prevent the ends of the bridge from being frozen into the ground during winter logging and will reduce the potential for breaking the ends when removing.

▲ Do not install the bridge in the stream channel!



INSTALL BRIDGE PANELS

Bridge panels can be installed using an excavator, skidder, or forwarder.

<u>Wrap the bridge panel</u> with a chain when using a cable skidder.

• Use a small log or pole as a fulcrum point to help lift the panel.

Install bridge at right angle to stream channel.

Place panels on sill logs.

 \mathbf{i} • 3 feet of each end is resting on ground.

Place panels tight to avoid openings for soil to fall into the stream.

(i) • Ensure that the panels are level and stable to prevent rocking and sliding.



Use this method rather than driving through the stream!



STEP 5

Install bumper logs to keep hitches of wood on the bridge and out of the stream.

Secure bumper logs to the bridge.

- i Install multiple bumper logs if needed, such as when whole-tree harvesting.
 - Use adjacent trees, if available, to hold bumper logs in place.



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INSTALL WATERBARS

Install waterbars on both approaches to the stream crossing 25-50 feet back from the stream to intercept and divert surface runoff into a vegetated filter area.

- The filter area will trap sediment ſi before it enters the stream
 - Minimal disturbance to the forest floor within stream buffers maintains the high filtering and infiltrative capacity common to forest soils.
 - Maintaining tree cover along streams minimizes stream temperature fluctuations.
 - Root systems of trees along streambanks increase resistance to erosion



STEP 7

Stabilize approaches to and from stream crossings with poles and brush.

- This will help prevent mud from being dragged on and off the bridge deck and into the water.
 - Building up the approaches will also prevent the ends of the bridge from being damaged by chains on the skidder tires.

<u>Leave the brush and poles</u> in place after removing the bridge to provide for continued soil stabilization.

<u>Remove any material</u> within the stream channel.



MAINTENANCE DURING USE

Inspect the bridge regularly to check for damage and deterioration.

 Panels may need to be readjusted during use.

Tighten hex nuts as the timber beams dry.



DID YOU KNOW?

Sediment is the most common pollutant associated with logging.

Bare ground exposed during logging can be eroded by rainwater and enter nearby streams causing sedimentation. Follow the AMPs to control soil erosion and protect water quality.



Clean mud off bridge deck.

Chain and lift the panels.

• Keep the panels as level as possible to prevent dirt on the panels from entering the stream.

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DID YOU KNOW?

Headwater streams are the smallest parts of river and stream networks, but make up the majority of river miles in the United States.

These small streams are prevalent across Vermont's landscape and occur in the uppermost reaches of a watershed where it is generally forested. Headwater streams are the smaller tributaries that carry water from the upper reaches of the watershed to the main channel of the river.



Install waterbars on approaches to

stream crossings.

Seed and mulch.

 Seeding and mulching exposed soil is a cost-effective measure to help ensure protection of water resources!



Clean all mud from bridge panels.

Store off the ground and sticker between panels to allow for air flow.

Tighten hex nuts.

• This is especially important during the first year of a new bridge as the wood will shrink as it dries.

When properly used and maintained, a portable skidder bridge has a life expectancy of 3-5 years. The Natural Resources Conservation Districts rent portable skidder bridges to loggers. Bridges are staged at sawmills and log yards throughout Vermont for convenient pick up and return. Give your local Conservation District a call if you need a bridge for your next logging operation. You can find their contact information by going to: vacd.org/districts

For more information about Portable Skidder Bridges or the Forest Watershed Program:

vtforest.com 802-828-1531

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