

# Temporary Stream Crossings

## Description

A temporary stream crossing is used to provide a safe, stable way for construction vehicle traffic to cross a watercourse. Temporary stream crossings provide streambank stabilization, reduce the risk of damage to the streambed or channel, and minimize sediment loading from construction traffic. The crossing might be a bridge, a culvert, or a ford.

## Applicability

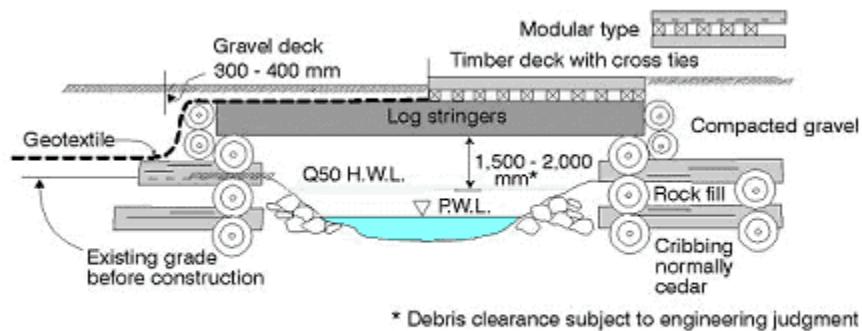
Temporary stream crossings are appropriate where heavy construction equipment must be moved from one side of a stream channel to the other. They can also be used where lighter construction vehicles will cross the stream repeatedly during construction.

A bridge or culvert is the best choice for most temporary stream crossings because each can support heavy loads. The materials used to construct most bridges and culverts can be salvaged after they are removed. A ford is a shallow area in a stream that can be crossed safely. Fords are appropriate in steep areas where flash flooding might occur and where normal flow is shallow or intermittent across a wide channel. Fords should be used only where stream crossings are expected to be infrequent.

## Siting and Design Considerations

Because of the potential for stream degradation, flooding, and safety hazards, avoid stream crossings whenever possible. Consider alternative routes to accessing a site before planning to erect a temporary stream crossing. If a stream crossing is necessary, select an area where the potential for erosion is low. If possible, select the stream crossing structure during a dry period to reduce sediment transport into the stream.

If over-stream bridges are needed, construct them only under the supervision and approval of a qualified engineer.



**Properly installed stream crossings can prevent destruction of stream habitat (Source: British Columbia Ministry of Forests, no date)**

When constructing a culvert, use filter cloth to cover the streambed and streambanks to reduce settlement and make the culvert structure more stable. The filter cloth should extend at least 6 inches and no more than 1 foot beyond the end of the culvert and bedding material. The culvert piping should not exceed 40 feet in length and should be of sufficient diameter to allow flow to pass completely during peak flow periods. Cover the culvert pipes with at least 1 foot of aggregate. If multiple culverts are used, separate the pipes with at least 1 foot of aggregate.

Construct fords of stabilizing material such as large rocks.

## **Limitations**

Bridges can be a safety hazard if not properly designed and constructed. Bridges might also be costly in terms of repairs and lost construction time if they are washed out or collapse (Smolen et al., 1988).

Construction and removing culverts usually disturb the surrounding area, and erosion and downstream soil movement often occur. Culverts can create obstructions to flow in a stream and get in the way of migrating fish. Depending on their size, culverts can be blocked by large debris in a stream and are vulnerable to frequent washout.

The approaches to fords are likely to erode. In addition, excavating the streambed and approach to lay riprap or other stabilization material causes major stream disturbance. Mud and other debris are transported directly into the stream unless the crossing is used only during periods of low flow.

Take care to obtain all necessary permits for work in and around streams. Review local, state, and federal regulations before starting any stream-related work.

## **Maintenance Considerations**

Inspect temporary stream crossings at least once a week and after all significant rainfall events. If any structural damage to a bridge or culvert is reported, stop using the structure until it is repaired. Repair streambank erosion immediately.

Inspect fords closely after major storm events to make sure stabilization materials remain in place. If material has moved downstream during periods of peak flow, replace the lost material immediately.

## **Effectiveness**

The effectiveness of a temporary stream crossing depends on the applicability of the crossing type, proper design and installation, and long-term maintenance needs.

## **Cost Considerations**

Implementation costs for a temporary stream crossing depend on the site needs, crossing type, maintenance needs, and other site-specific factors. Typically, temporary bridges are more expensive to design and construct than culverts. Bridges also have higher maintenance and repair costs if they fail.

## **References**

British Columbia Ministry of Forests. No date. *Forest Practices Code Stream Crossing for Fish Streams Guidebook*. [\[www.for.gov.bc.ca/tasb/legsregs/fpc/fpcguide/FishStreamCrossing/FSCGdBk.pdf\]](http://www.for.gov.bc.ca/tasb/legsregs/fpc/fpcguide/FishStreamCrossing/FSCGdBk.pdf) [PDF - 1.94 MB - 74 pp] [\[EXIT Disclaimer\]](#). Accessed January 2001.

Smolen, M.D., D.W. Miller, L.C. Wyatt, J. Lichhardt, and A.L. Lanier. 1988. *Erosion and Sediment Control Planning and Design Manual*. North Carolina Sedimentation Control Commission; North Carolina Department of Environment, Health, and Natural Resources; and Division of Land Resources Land Quality Section, Raleigh, NC.

VDCR (Virginia Department of Conservation and Recreation). 1995. *Virginia Erosion & Sediment Control Field Manual*. 2nd ed. Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation, Richmond, VA.