Crossing/Culvert Enhancements

OUTSIDE HELP

- Landscape Architect
- Environmental Consultant
- River Constructor
- Engineer

Potential permits required: CWA 404, Threatened & Endangered Species, NHPA, Floodplain

If you currently have a crossing on your property, you may be interested in modifying it, removing it or combining it with other crossings. This could range from rebuilding the entire crossing structure itself or just making changes to the existing structure. These enhancements could improve the:

- Crossing capacity/conveyance
- Provide fish/aquatic organism passage
- Stabilize crossing embankments and abutments

Undersized culvert near Estes Park.

Enhancing an existing crossing can take the form of a variety of projects ranging from adding fish baffles for aquatic habitat connectivity, to adding additional culverts, to rebuilding or replacing parts of the culvert/ crossing. These improvements might involve extensive construction, in turn requiring permitting. The crossing must be adequately designed to pass daily flows, as well as stand up to large flood events.

Generally, any modification or enhancement should retain or increase the conveyance of the culvert (the flow of water through the culvert). In addition to design considerations of the culvert, you want to make sure that the project won't negatively impact upstream or downstream neighbors, or the riparian ecosystems. The required permits will ensure that these criteria are met.

This culvert was 'retro-fitted' with fish baffles to add fish passage.

When approaching someone for outside help in enhancing your crossing, there are a few key topics that a landowner should be aware of: **floodplain location, wildlife and fish species of concern and nearby infrastructure that could be affected.**

For projects that will impact the ecosystems, an environmental consultant can help plan the project. When enhancing a crossing, its ability to convey flood flows must also be analyzed to ensure the safety of those who use the crossing, as well as upstream and downstream neighbors. This analysis and design is typically done by engineers.

For additional information, see the **Resilient Crossings Guidebook** developed by the Fourmile Watershed Coalition:

fourmilewatershed.org/project/crossings-guidebook