



8' Concrete Arch With Footers

[FIN - An information sharing network for Maine forest landowners, fisheries agencies and NGO's](http://www.sfimaine.org/fin-meetings/)

Foresters and contractors working in the field often come up with innovative solutions to stream crossing problems. FIN "Crossing Innovation" information sheets highlight some of these creative solutions. Landowners should evaluate the merits of these designs for their own particular use. FIN does not in anyway guarantee the performance of these crossings. For more on FIN visit the FIN website <http://sfimaine.org/fin-meetings/>

Description

The pre-cast concrete arch and footers assemble easily to create a stream crossing with a natural channel bottom.

Specifications

The pre-cast arch we used was built by Dirigo Timberlands in North Anson <http://www.dirigotimberlands.com>. It was just under 8' wide and came in 4' sections. The pre-cast footers were 2' wide by 1' high with a channel on top that the arch sits in. The cross-sectional opening with the footer is 20.7 sq. ft., which is roughly equivalent to a 5' diameter round culvert. We installed the footer partially below the grade of the channel and placed riprap inside the footer to protect from scour, so the actual as-built cross sectional area was lower.



Installation

The arch was installed on a major woods road immediately west of the village of Grand Lake Stream. The footers were placed on 6" of crushed rock. Angular riprap was used to armor footers on the inside of the pipe. Because the footers are set independently from the pipe sections, the rip rap was able to be placed with the excavator before the pipe was set. This is a considerable labor savings compared to a multi-plate arch where the riprap must be hand placed from the inside after the pipe is set. The arch segments were cabled together before covering the entire structure with geotextile fabric. Backfill was thoroughly compacted with a plate compactor to a cover depth of 1.5'.



Cost

In 2013 each 4' arch section cost \$350.00; footers cost \$10 per foot. Our total cost for materials, delivered, was under \$5,000 for a 36' long structure. Installation was also under \$5,000 for a project cost under \$10,000.

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The Fisheries Improvement Network is a cooperative effort of the Maine Sustainable Forestry Initiative, Maine Forest Service, Maine Department of Inland Fisheries and Wildlife, Maine Department of Marine Resources and the US Fish and Wildlife Service

