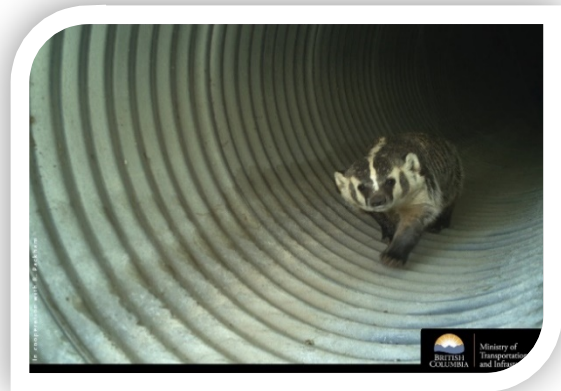


Badger Culvert Guidance: Installation and Maintenance

Badgers are an endangered species in BC that are burrowing mammals and excellent diggers. Road mortality is the primary way they are dying in BC. They often use dry culverts bored under highways to cross roads safely. Although badgers can swim, they really do not like water and will avoid using culverts with any standing water.













Culvert Installation and Maintenance Checklist

All culverts intended for badger crossing require inspection and maintenance. It is good practice to mark badger crossing sites within a road inventory system, mark on a map, or electronic database.

<input type="checkbox"/>	Culvert diameter: 900mm (or > 600mm).
<input type="checkbox"/>	Substrates filling ~30% of the culvert diameter.
<input type="checkbox"/>	On a slight grade (<5%) to prevent water from pooling.
<input type="checkbox"/>	Low in the road profile as possible so that badgers can use them, but not too low to allow water to enter culvert inlets or pool at culvert outlets.
<input type="checkbox"/>	Consider installing riprap (or similar) headwalls below culvert inlet/outlets to prevent sloughing/erosion of road embankments or extend culvert length beyond the toe of the road embankment
<input type="checkbox"/>	Inlets and outlets should be free of standing water, sediment, rocks, vegetation, debris, and garbage.
<input type="checkbox"/>	Drainage ditches beyond culvert outlets should be free of obstructions, lower in elevation than the culvert invert and on a negative grade to prevent water pooling at culvert outlets and inside culverts.
<input type="checkbox"/>	Remove trees and shrubs within the highway right-of-way from culvert approaches and openings.

Maintenance Field Guide

	Impassable Badger Culvert:		Passable Badger Culvert:
	<p>Hanging culvert that prevents access to the culvert entrance.</p> <p>a) On shallow slopes</p> 		<p>Add local or imported rocks on shallow slopes.</p> 
	<p>b) On steep slopes</p> 		<p>Saw off the hanging edge on steep slopes, where it is not appropriate to add rocks.</p> 
	<p>Culvert outlet is higher than surrounding ground culvert, but rocks/dirt are preventing drainage.</p>		<p>Remove rocks/dirt to allow drainage.</p>

			
	<p>Culvert outlet invert is lower than receiving ground so that pooling occurs and it cannot drain.</p> 		<p>Dig water “infiltration sumps” lower in elevation than the culvert outlet invert and at least one meter beyond the culvert outlet (leave “porch” for access to culvert; see Figure 1).</p> 
	<p>Sloughed road embankment is damming water, preventing drainage.</p> 		<p>Removing sloughed road embankment to allow culvert drainage.</p> 

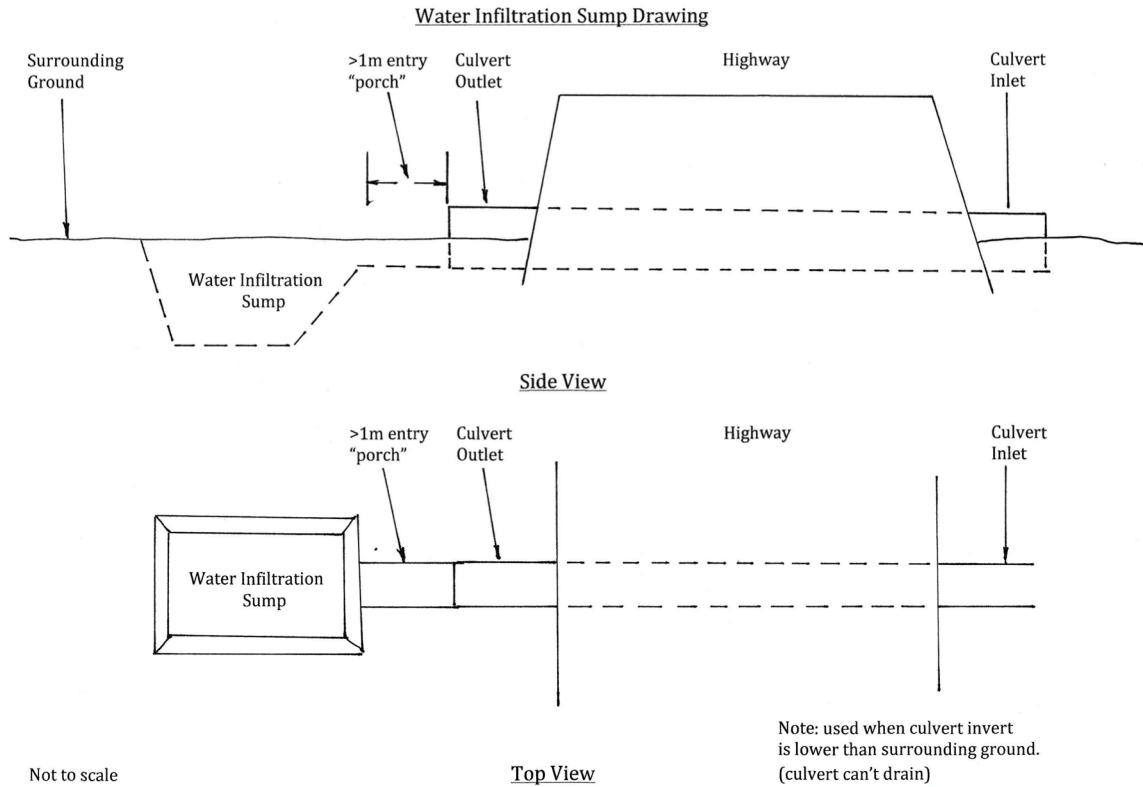


Figure 1. Water infiltration sump diagram.