

# **Guidance on Placement of Concrete Barriers**

**ENVIRONMENTAL SERVICES OFFICE**

**WASHINGTON STATE DEPARTMENT OF TRANSPORTATION**

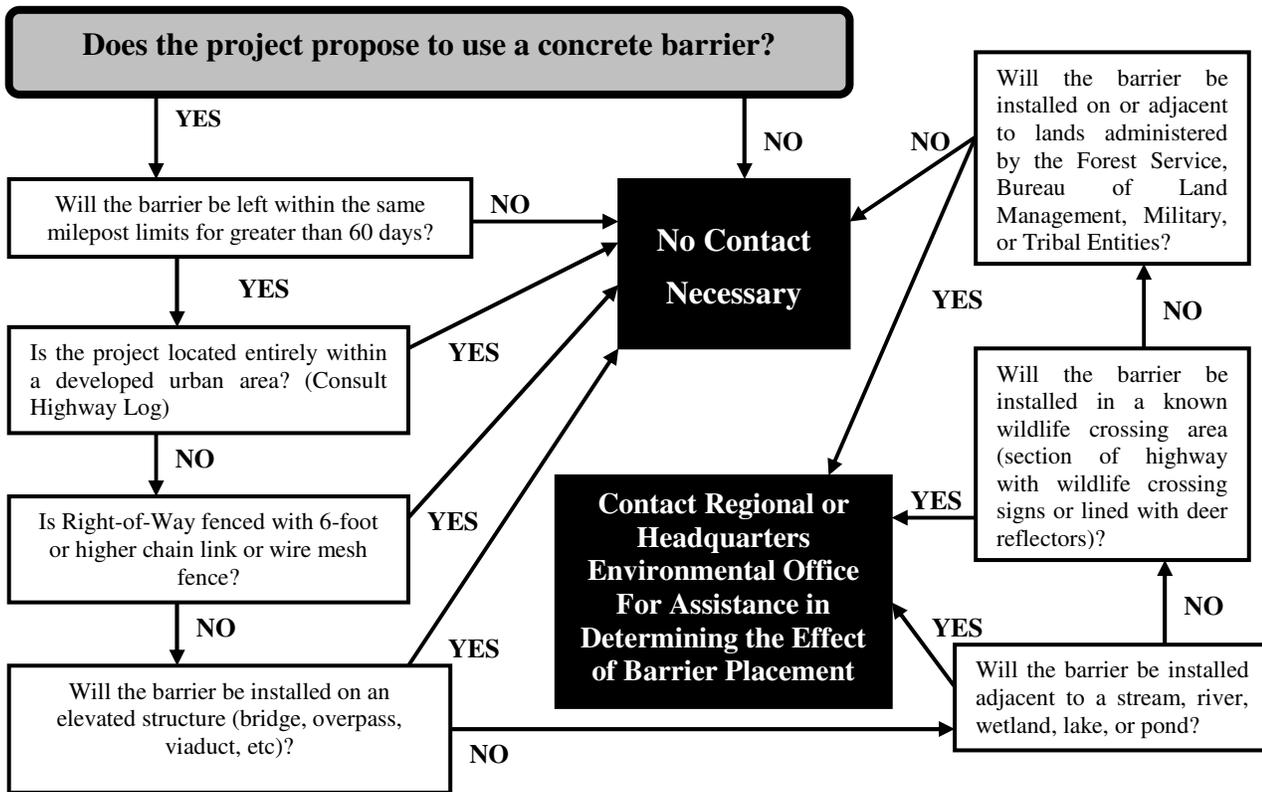
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## PURPOSE

The purpose of this document is to facilitate collaboration between Design and Environmental staff in determining the effect of concrete barrier placement on wildlife and public safety. The placement of concrete barriers in locations where wildlife frequently cross the highway can influence traffic safety and wildlife mortality. When wildlife encounter physical barriers that are difficult for them to cross, they often travel parallel to those barriers. With traffic barriers, this means that they often remain on the highway for a longer period, increasing the risk of wildlife/vehicle collisions or vehicle/vehicle collisions as motorists attempt avoidance. Traffic-related wildlife mortality may play a role in the decline of some species listed under the Endangered Species Act.

To address public safety and wildlife concerns, the following decision matrix (**Figure 1**) will be used by the Design Office to determine if an evaluation by the Environmental Office is necessary regarding the placement of concrete barriers and the possible impacts to wildlife. This collaboration will occur early in the project development phase to ensure adequate time for discussion of options.

**Figure 1. Decision Matrix**  
(used by Design Office to determine the need for consultation with the Environmental Office).



## DESIGN PROCESS

When WSDOT projects are designed to use concrete barriers, the potential for impacts to wildlife and the safety of the traveling public may occur. The questions in the decision matrix (**Figure 1**) are designed to establish a set of parameters where the placement of a barrier will most likely affect wildlife, and initiate contact with the Environmental Office. Each of these decisions and associated justifications are outlined in **Table 1**.

**Table 1. Decision Matrix Questions and Justification.**

MATRIX DECISION	JUSTIFICATION
<div style="border: 2px dashed black; padding: 5px; text-align: center;"> <p>Does the project propose to use a concrete barrier?</p> </div>	<p>If the project does not propose the use of a barrier, continuing is not necessary.</p>
<p>Will the barrier be left within the same milepost limits for greater than 60 days?</p>	<p>If the project will temporarily use concrete barriers (&lt;60 days), contact is not necessary due to the low potential for a wildlife encounter during construction activities.</p>
<p>Is the project located entirely within a developed urban area? (Consult Highway Log)</p>	<p>The WSDOT State Highway Log classifies each section of roadway in the State as Rural or Urban. In general, urban areas are not considered high-risk due to the low potential for wildlife occurrences.</p>
<p>Is Right-of-Way fenced with 6-foot or higher chain link or wire mesh fence?</p>	<p>Areas with this type of fencing are likely to preclude use of the roadway by wildlife that could be affected by a barrier.</p>
<p>Will the barrier be installed on an elevated structure (bridge, overpass, viaduct, etc)?</p>	<p>Wildlife crossing would be unlikely on elevated structures.</p>
<p>Will the barrier be installed adjacent to a stream, river, wetland, lake, or pond?</p>	<p>Riparian areas have high likelihood of use by wildlife.</p>
<p>Will the barrier be installed in a known wildlife crossing area (section of highway with wildlife crossing signs or lined with deer reflectors)?</p>	<p>These areas have already been identified as high-use areas by wildlife.</p>
<p>Will the barrier be installed on or adjacent to lands administered by the Forest Service, Bureau of Land Management, Military, or Tribal Entities?</p>	<p>Lands administered by these Agencies are likely to contain habitat conducive to use by wildlife. Also, other laws and regulations may apply which protect species on Federal lands.</p>

## ENVIRONMENTAL REVIEW

Regional and/or Headquarters biologists will be contacted by Design offices if a proposed project involves using a concrete barrier for longer than 60 days in the following areas: riparian habitats, including rivers, lakes, streams, ponds, and wetlands; known wildlife crossing areas, or; on or adjacent to lands under the jurisdiction of the Forest Service, Bureau of Land Management, Military, or Tribal Entities. Once contacted, the biologist should assess the project effects of barrier placement on wildlife. Biologists have several tools available to assess the impact of barrier placement.

- **Topographic Maps**
  - Check for natural wildlife crossings
  - Topography may limit wildlife crossing to a particular section of highway
- **Aerial Photos**
  - Establish stand structure and size of contiguous habitat
  - Wildlife will likely cross by using larger stands of existing cover
- **WSDOT Deerkill Database**
  - The Deerkill Database can provide mortality data for each State Highway
  - The database identifies problem crossing areas
- **WDFW Priority Habitats and Species Database**
  - PHS Database can identify wildlife use in an area
  - Known occurrences and wintering or breeding ranges can be determined

After review of the available resources, a site visit may need to be scheduled. If it is determined that placement of concrete barriers may affect wildlife or increase threats to public safety, the next step is to work with the Design Office to avoid or minimize impacts through design changes. There will not be a single solution to minimizing impacts. This is why it is critical to complete this process early in the project development stage, so adequate time is available to discuss options. These options may include, but are not limited to:

- Alter project design to include a break in the barrier at a determined location. The distance to these locations will vary depending on the species that are using the section of roadway and site-specific conditions. For example, amphibians or small mammals might require a gap every 50 feet, while large mammals may use a gap every 300 feet to exit the roadway. The gap in the barrier can be as simple as installing a section of guardrail, similar to those used at drainage inlets, or changing the type of barrier.
- Right-of-way exclusionary fencing would be an option to keep wildlife off the section of highway where barrier placement is necessary and no other alternative exists.
- A change in barrier type may allow wildlife to cross. For example, changing from a 42-inch single-slope barrier to a 32-inch jersey barrier may meet the design needs of the project while allowing wildlife to cross.

The use of this guidance will obviously not eliminate wildlife mortality on our State Highways. However, the collaboration between WSDOT Design and Environmental Staff when using concrete barriers will improve survival of species listed under the Endangered Species Act and ensure that the Agency meets its responsibility for sound stewardship of all species.