



Purpose

This document provides guidance on how to address roadside safety in fish passage projects.

Guidance

For I-4 Environmental Retrofit (Fish Passage) projects, Design Manual Exhibit 1105-1 *Required Design Elements* specifies to only include roadside safety hardware when a roadside design element is changed as described in Design Manual Section 1105.02, or if another design element is added or changed by the project that necessitates adding/changing roadside safety hardware. For instance, a project may steepen a slope which extends the Design Clear Zone past fixed objects that cannot be removed or relocated. Roadside safety hardware, refers to the design elements discussed in Design Manual Chapters 1600, 1610, and 1620.

Design Manual 1105.02 *Selecting Design Elements*, states that an element is changed if one of the following applies:

- A new element is added
- An existing element is removed or relocated
- A dimension - such as a width - is modified

In summary, I-4 fish passage projects are not safety projects. The roadside hardware only needs to be installed and/or adjusted where project elements either change the characteristics of the existing roadside hardware, or the project adds/removes elements that necessitates adding/removing roadside hardware.

The rest of this guidance is provided in the form of real questions our office has received from design offices with answers and references to the relevant policy and guidance. **If after reading the questions and answers below you still have a question or concern about your particular project's situation, please contact your ASDE.**

Q - Are we responsible for replacing entire runs of existing Type 1 guardrail when we impact the run on our fish passage project, or do we only have to replace the length of guardrail we impact?

A - You only have to replace the length of guardrail that is impacted by the project. The intent of the reference in DM 1610.04(1)(b) guidance (shown below) to "extending" the rail can also be interpreted in the same manner when impacting a run. New guardrail will need to be installed to replace the portion of the existing run impacted/removed by the project. In that situation, install new Type 31 rail where the existing Type 1 rail was removed, and use the Type 1 to Type 31 adaptor (Standard Plan C 25.80) to transition the Type 31 guardrail back to Type 1 guardrail. Note that the first sentence in 1610.04(1)(b) provides that the entire run does not need to be replaced.



Reference: DM Section 1610.04(1)(b) *(Old) Type 1 Beam Guardrail: Existing runs of Type 1 guardrail are acceptable to leave in place. If an existing run of Type 1 guardrail requires extending, use the Beam Guardrail Type 31 to Beam Guardrail Type 1 Adaptor shown in the Standard Plans, and complete the guardrail extension using Type 31 guardrail.*

Q - The height of the Type 1 guardrail we've encountered on our fish passage project is below the height criteria in the Design Manual. Do we need to upgrade it or replace it?

A - You do not need to upgrade or raise an existing guardrail run unless the project is changing or adding a design element (e.g., raising the roadway, thus lowering the effective guardrail height outside of criteria limits; steepening a slope that extends the clear zone past fixed objects that cannot be removed or relocated and creates a new length of need start point; adding a bridge rail (fixed object) in the clear zone; etc). To clarify, if the existing run of guardrail is under 26.5" it does not have to be raised unless the project caused the guardrail to be low, or it introduced a new fixed object or slope which must be shielded by guardrail. It is permissible to transition from the new installation of Type 31 into the existing Type 1 guardrail that is under 26.5" once past the length of need for the new/changed object or slope.

Q - Do we need to reevaluate length of need calculations for guardrail runs we're replacing or can we install it as it exists (existing limits)?

A - The length of need needs to be recalculated as new fixed objects can be added, or their locations can change over time. It is possible that the reason for the barrier no longer exists and the barrier can be removed. To clarify, when the barrier needs to be addressed on the project, evaluate the length of need for the new/changed objects/slopes that the barrier is shielding traffic from.

Reference: DM Section 1610.03(5) *Length of Need.*

Q - If the existing barrier on our project is outside of our excavation/impact limits, but is within our project limits or construction limits, would we be required to address anything that is substandard with the barrier or its length of need?

A - Guardrail runs not impacted by a project do not need to be evaluated for substandard elements or the Length of need. For example existing runs of Type 1 guardrail that are low in height are acceptable to leave in place in their current condition as long as the projects new or changed elements do not affect the guardrail run in question. The length of need dictating the necessary length of guardrail would only need to be evaluated if the project introduced or changed design elements such as introducing new fixed objects in the Design Clear Zone, steepened side slopes, water over 2 feet deep. **Reference:** DM Exhibit 1105-1 *Required Design Elements*



Q - If there currently is no guardrail at the project location, do we reevaluate clear zone and chase out length of need requirements as needed even if this would cause us to widen our MP limits considerably?

A - You do not need to evaluate clear zone for existing conditions that are not being changed. If the project introduced a fixed object or otherwise modified the clear zone (e.g., widening, changed side slope, or alignment shift) then re-evaluation of the clear zone is needed. To be clear, if the existing conditions have steep slopes or a fixed object(s) that meet current criteria for barrier but there is no barrier present and the project is not changing the slopes, location of existing fixed object, introducing new fixed objects then it is not required to add guardrail.

Reference: DM Exhibit 1105-1 *Required Design Elements*.

Q - At an existing water crossing, there are 2:1 slopes with a 20' fill height down to a 3' corrugated metal culvert at the bottom of the slope (all existing conditions). Additionally, further up and down the highway there are utility poles inside the clear zone, and other places have 2:1 slopes tall enough to warrant guardrail. There is no barrier present anywhere along the highway. The proposed fish passage project will only remove the 3' culvert and replace it with a larger box culvert with wingwalls (introducing a 10' vertical drop and concrete wall (fixed object) inside clear zone). Do we need to install guardrail to protect the new 10' vertical drop and concrete wall inside clear zone?

A - Yes. Because the vertical drop and concrete wall are new elements/changed elements introduced by the project. However, you do not need to install guardrail to shield vehicles from the existing power poles or other steep slopes within the project limits since the project did not affect them.

Reference: DM Section 1105.02 *Selecting Design Elements*

Q - When we add guardrail to protect the 10' vertical drop and concrete wall inside clearzone, do we also need to look at extending our guardrail to protect the existing utility poles and steep slopes along the highway?

A - You only need to install guardrail to protect the changed conditions, the introduced vertical drop and concrete wall. **Reference** DM Section 1105.01

Q - If the project ended its MP limits at an intersection or a road approach, can the project terminate a run of guardrail on one side of that intersection or approach, and not be required to evaluate clear zone/need for guardrail on the opposite side of the intersection or approach?

A - The barrier only needs to extend to the intersection if you need to go that far to satisfy the length of need requirements to protect the introduced or changed element (e.g. new fixed object, new graded steep slope). You do not need to evaluate clear zone/need for guardrail on the opposite side of the intersection or approach unless the project element changes require you to do so.