

Guardrail Installation Guidelines

Kosciusko County Highway Department has several feet of guardrail throughout the county. In an effort to improve the existing guardrail and to provide reasonable amounts of safety the Department has embarked on a program to upgrade guardrail. It should be understood that guardrail can also become a traffic hazard. The intention is to use guardrail in areas where the risk of colliding with the protected object is worse than the risk of colliding with the guardrail. (Protected objects could be items such as houses, bridge abutments, deep drainage ditches and ravines, etc.)

It becomes difficult to find a standard installation practice for guardrail. However, upon review of several standards from the Indiana Department of Transportation and the Indiana Association of County Engineers and Supervisors along with discussing with the County Consultant on various standards for installing guardrails, the Department has developed general guidelines for use in Kosciusko County.

It is important to note that it is impossible for the Department to meet all the strict guardrail installations as designated by the State of Indiana. Budgetary and right-of-way restrictions prevent the Department from following state standards in every circumstance. Additionally, limited amounts of personnel to conduct in depth traffic studies and to perform in depth guardrail analysis are also a restriction to the Department.

However, it is important that the Department has tried to develop reasonable procedures for guardrail installations. It should be noted that these procedures are merely guidelines to assist the Department in evaluating how to install guardrail at specific sites.

The Department's guidelines generally include the following:

1. Installing guardrail posts at a 6' - 3" spacing in the areas of the Thrie-beam and the W-beam sections of the guardrail.
2. Installing guardrail post at a 12' - 6" spacing for the section of the guardrail end treatment.
3. Burying the end of the guardrail end treatment.
4. Installing the Thrie-beam in the area directly over the bridge or small structure.
5. Installing a W to Thrie-beam transition section after the Thrie-beam section.
6. Installing a W-beam guardrail section after the transition section. (Given the variable site conditions it is not possible to establish definite guidelines for the W-beam sections in all circumstances. The W-beam section of guardrail will vary in length depending on the site conditions to provide a reasonable amount of protection.)
7. Installing the guardrail end treatment after the W-beam section.

Given that the majority of county bridges are intended to carry vehicular traffic only and not pedestrian traffic (i.e. there are no sidewalks on our bridges) the guardrail height will vary between 27 inches to 30 inches for the W-beam sections and vary from 31 inches to 34 inches for the Thrie-beam sections. The intent is for the guardrail to be placed at the approximate location a bumper would collide with the guardrail. (Since the height of bumpers vary from different vehicles, it is not possible to establish a height of guardrail such

that every vehicle's bumper will collide with the guardrail.) However, that height should not be construed as a definite height for all circumstances it is a guideline to follow. Certain site conditions may require the guardrail to be raised or lowered. In general, the height is measured from the edge of road pavement.

Since county roads do not have unlimited amounts of right-of-way along the edge of pavement, the guardrail should be installed to balance the guardrail between the edge of pavement and the protected object while still being located in the right-of-way. Given that site conditions vary, it is not possible to establish a minimum horizontal distance between the edge of pavement and the guardrail while also establishing a minimum horizontal distance between the guardrail and the protected object.

The above explanation is intended to document the Department's thought process in determining guardrail installation guidelines for Kosciusko County.