

Montana Department of Transportation
Research Programs
February 2011

Experimental Project Construction Report

**EVALUATION OF STRIETER-LITE WILD ANIMAL HIGHWAY WARNING
REFLECTOR SYSTEM™ ON REDUCING VEHICLE-ANIMAL COLLISIONS**

Project Name: Safety Improvement Project
Fencing – East of Whitehall

Project Number: HSIP 69-1(22)2

FHWA Project Number: MT 09-02

Project Location: Highway MT 69, P-69, Jefferson County, Butte District:
Approximate Reference Point 1.72 to 3.1

Description: An experimental trial of a wild animal reflector warning system for reducing the number of vehicle and animal collisions.

Date of Installation: May – October 2010

Principal Investigator: Kris Christensen
Research Programs Project Manager

Objective

Determine the effectiveness of wild animal reflector warning systems for reducing the number of vehicle and animal collisions and the maintenance efforts needed to maintain this type of system. Maintenance costs will be recorded and collected when available.

Experimental Design

Installation of the Strieter-Lite Wild Animal Highway Warning Reflector system, consisting of 700 reflectors along MT Highway 69 between reference points 1.7 (just east of Briggs Lane) and 3.1 for a project length of 1.4 miles. Research will monitor the installation of the reflector system (if possible) or document it shortly after completion and report on any issues based on visual observation. If unable to be at site during installation, Research will interview the Maintenance crew regarding the installation process and document any comments and/or concerns. The evaluation phase of the project will encompass a five-year period, including initial observations during and directly after installation.

Background Information

Historical and/or relevant information about this safety improvement project is listed below.

Project- initially this project was scoped to install three wildlife underpasses and wildlife fence along the right-of-way with jump-outs. The scope of work altered to an animal reflector warning system for a variety of reasons, including landowner opposition and construction costs.

Accidents- according to information provided by the Safety Management System, during the ten-year period from January 1, 2000 to December 31, 2009, the Montana Highway Patrol records show 13 animal-vehicle collisions with no persons injured. During this same time, MDT's Maintenance staff recorded 152 animal carcass removals in the study area. A majority of the animal carcasses were whitetail deer.

Installation Information

Research staff was unable to monitor the entire installation of the system, however documented it shortly after completion, and interviewed the Whitehall Maintenance Section staff who performed the installation.

Installation followed Strieter Corporation instructions with post locations for the reflector system surveyed and marked by a Butte District construction crew. The installation method was an alternate back-to-back mounting method using standard U posts as seen in Figure 1. Post placement was staggered with spacing between posts ranging from 38 to 50 feet depending on the roadways inclines and curves (see Figure 2).



The westbound side of the road installation was done with a tractor driven post pounder; the eastbound side of the road was installed by hand due to utility locations. In addition, the eastbound side locations had to be resurveyed and moved because of utilities.

Figure 1- Alternate back-to-back mounting of reflectors



Figure 2- Staggered placement of reflectors

Additional reflectors were installed in areas where the roadside slopes downwards and when grade elevation is such that deer cannot view the reflectors on the opposite side of the road, such as near approaches as seen in Figure 3.



Figure 3- Additional reflector placement

Project Cost

The total installation and material costs for this safety project was \$32, 621 (see Table 1 for details).

Table 1

Strieter-Lite Reflectors	\$ 14,370.00
U Posts	\$ 8,396.50
Mounting Hardware	\$ 1,498.85
Installation (includes labor)	\$ 8,355.41
Total	\$ 32,620.76

Initial Reflector System Comments

Installation of the reflector system was delayed and prolonged for several reasons including the lack of mounting hardware for the reflector system. If this system is used again, mounting hardware and U posts will need to be purchased separately.

The Strieter Corporation recommends the following maintenance at least twice a year:

- Replacement of any damaged or missing reflectors
- Straighten and adjust bent or twisted posts so the reflectors are vertical and their bases are parallel with the direction of traffic
- Wash with detergent and rinse with clear water
- Keep vegetation from interfering with the light directed and from reflectors

Concerns regarding the maintenance of the system were expressed to Research staff by the Whitehall Maintenance crew and landowner reaction to the reflector system. Spacing of the posts does not leave much room for vehicles to pull off to the side of the road if needed and Maintenance crews will have to hand mow around the reflector system. Since the eastbound side of the roadway was installed by hand because of utility location issues, concerns were expressed that the posts were not installed as deep as recommended and may be more likely to come out of the ground and/or alignment. Local landowners expressed concerns about hitting reflectors when moving hay equipment and livestock.

Since completion of installation (October 2010), four deer have been hit in the study area. As mentioned above, carcass data will be collected annually for the next five years in the study area. In addition, documentation of maintenance activities for the reflector system including costs when available will be collected.

Additional Study Area Images



Figure 4- Reflector on eastbound side of roadway- notice the utility location flag and the surveyed location for post on road



Figure 5- Near beginning of study area looking east