

Potential Problems and their Solution

Background information

A number of people have expressed skepticism that deer approaching a road from the side will be deterred from crossing when they see one or more reflectors get brighter, then dimmer as a car or truck passes by. It should be noted that these reflectors are designed to work when it is dark, at dawn and at dusk when the deer are less likely to see an approaching vehicle but will instead be blinded by the bright headlights. Their eyes are dark-adapted and they have acute night vision so light from the reflectors shining at them directly in their path will be very easy to see. They do not need to look left or right. Of course, the sound of the approaching vehicle provides a second, simultaneous warning. Deer quickly learn this association of sound and light and know that it is dangerous to cross the road.

Reasons why the reflector system may not work

- One or more of the posts is no longer vertical or is twisted. Therefore the deer cannot see the reflected light because it shines too high or too low or does not shine directly across the road.
- Reflectors are missing or damaged because of vandalism.
- The surface of a reflector may be covered with dirt or ice.
- Before 1986, reflectors were installed in a less efficient manner, allowing for gaps in coverage. They were installed to shine away from the road rather than across the road (as in newer installations). A deer close to the edge of the road may have been halfway between reflectors or even on the road so it would not have seen the reflected light.
- Before 1994, the reflectors had a different design that resulted in a much smaller vertical and horizontal coverage - so leaning or twisted posts were more of a problem. In addition, separate models were required for level and sloping roadsides. Thus, many were found to be improperly installed.
- Many deer are hit at dusk and dawn when headlights may not be turned on. Statistics indicate that 70-80% of deer-vehicle collisions occur between dusk and dawn.

Some solutions to these problems

- **Maintenance.** The first three problems listed above can be solved with regular maintenance as needed. This is usually twice a year. It simply requires an accurate map showing the layout for that road and a local trained crew that understands the importance of such maintenance.
- **Correct Installation.** Fix the old reflector installations. This may require purchasing some of the new Strieter-Lite reflectors. Position them so they direct light across the road where they will definitely shine light toward the deer at the proper time.

- **New reflector design.** The new Strieter-Lite reflectors are of a single, simple design. They have a wide angular coverage, both vertically and horizontally making improper installations virtually impossible.
- **Install new highway signs.** When motorists approach the locations where the reflectors are installed, they should be told that the reflectors are there and be instructed to turn on their headlights. We are working on the design of a sign that will say: *Deer Reflectors Ahead Turn on your Headlights from Sunset to Sunrise.*

Elaboration

From 1978 to 1986, the Swareflex Division of D. Swarovski and Co., Austria, prescribed that the reflectors were to be mounted on posts every 20 meters (66 feet) along each side of the road and directed *away* from the highway. This clearly resulted in many blind spots that were not protected by the reflectors. The effect was even more pronounced when there were trees and heavy vegetation close to the road. Nevertheless, this older method of installation has been shown to work effectively in wide open spaces and with a level terrain.

The patented Strieter-Lite reflector **installation method** is customized to the particular circumstances along the road where the deer are likely to cross. When properly installed, these wide-angle reflectors provide complete reflective light cover for any roadside terrain.

Unfortunately many of the early published reports which have concluded that the reflector system is not effective, used the original installation method. Since it was the only installation method known at that time, no comment was made and therefore to a casual observer or a researcher, the system has been and is still reported as being ineffective. It is important to read these reports very carefully to isolate the more recent results.

One Michigan researcher used stationary lighted headlights mounted on posts for 15-minute intervals with pen-raised deer. Missing the point of apparent moving light patterns along the roadside deterring the deer, he concluded that deer are not deterred by red light and hence the Swareflex reflectors are ineffective. Researchers referencing this study have also missed the point of unnatural light patterns present in the reflector system and use it as additional proof of ineffectiveness of the Strieter-Lite system.

Many studies published on the Internet are flawed for one or more of the following reasons: 1) inaccurate monitoring if dawn and dusk patrols are not made every day, 2) inaccurate recording of collisions if daylight hours are not counted and, 3) inaccurate locations of collisions within the test site.

Evidence for Effectiveness

We have found by **actual tests** that the Strieter-Lite system, when installed correctly, has indeed been effective with reductions as high as 100%. Many users report reductions in collisions over periods of 10-15 years with constant or increasing deer population. This system is an effective and economical way to dramatically reduce the tragic nighttime accidents caused by vehicles colliding with deer.

Another indication of effectiveness is that States and Provinces currently using the Strieter-Lite reflectors continue to purchase new installations and replacements. In particular, these orders are being made by State, County and City Departments of Transportation in Alberta, British Columbia, Colorado, Maryland, Michigan, New Jersey, New York, Washington and Wyoming.

As an additional incentive for installing this reflector system, the Federal Highway Administration in January 1985 approved the Swareflex and later the Strieter-Lite system for 80% federal funding through the Hazard Elimination Program (HEP) for States. Now they are eligible for **100% federal funding** under the Federal Highway Administration, Highway Safety Improvement Program (HSIP).

We have many **reports** of successful reductions of deer-vehicle collisions over the years. Highway maintenance crews and police attest to the reductions evidenced by less carcass removal and reported accidents. We are preparing a summary that analyzes the many published studies on the Internet regarding our systems.