NCDOT Traffic Safety Unit Programs

Chevron Evaluation

NCDOT has completed 2 analyses on chevron sites – 1 in 2020 on standard chevron improvements and another in 2021 on dynamic chevrons also known as Sequential Light Chevron Systems. Both studies looked at sites across the state where existing chevrons were modified, new chevrons were installed, and where new chevrons were installed with other additional improvements.

Background

Chevron signs are a countermeasure that can be used to help drivers navigate curves in the road by defining the direction and sharpness of the curve. Dynamic Chevrons add flashing LED lights that utilize solar power to chevron signs, increasing visibility especially at night and during adverse weather conditions.

Top: Standard Chevrons
Bottom: Dynamic Chevrons

Using an empirical bayes analysis, the evaluation on standard chevron improvements looked at 56 2-lane rural road sites across the state and compared sites that modified existing chevrons, only installed new chevrons, and installed new chevrons with additional improvements, such as brightside posts and curve warning signs.

Using a naïve analysis, the evaluation on dynamic chevrons looked at 16 curves across 8 sites and looked at a variety of facility types: rural 2-lane, ramp, multilane highway, rural 3-lane, and urban 6-lane. Some of these locations had existing chevrons and others were new. Some locations also had other treatments applied to help reduce lane departures. Due to the smaller sample size, this evaluation is considered interim and the Safety Evaluation Group plans to re-evaluate in the future.

Results

The overall results from all study locations indicate a:

- 33% reduction in lane departures for standard chevrons
- 67% reduction in lane departures for dynamic chevrons

Other Key Takeaways:

- In the standard chevron evaluation, sites that had additional improvements to curve signing received additional benefits.
- In general, dynamic chevrons demonstrated a larger reduction in all crash types than standard chevrons, however there are much more costly. The cost of a Sequential Lighted Chevron System can be 5 -10 times that of a set of standard chevrons.