

NCDOT Traffic Safety Unit Programs



Vehicle Entering When Flashing

In 2023 NCDOT completed a safety study of 59 two-lane at two-lane minor road stop-controlled intersections where “Vehicle Entering When Flashing” (VEWF) intersection conflict warning systems were installed between 2011 - 2019. The treatment consists of vehicle actuated sign and flasher assemblies placed at or near the intersection to warn motorists on the major and/or minor road of vehicles entering the intersection.

Background

VEWF systems come in different configurations based on the direction of the alert and placement from the intersection. All warnings depend upon vehicle detection via inductive loops and activate flashing beacons in conjunction with a static sign.

Photo 1 – Overhead Signs and Flashers at the Intersection on Major Road

Photo 2 – Overhead Signs and Flashers at the Intersection on Minor Road

Photo 3 – Post Mounted Signs and Flashers in Advance of Intersection on Major Road

Photo 4 – Locations with Combination of Signing Types



A 2013 study by NCDOT had indicated safety effectiveness for this countermeasure (up to a 32% reduction in total crashes for some configurations); however, more recent installations did not appear to demonstrate the same safety benefit and NCDOT felt reevaluation was needed.

Results

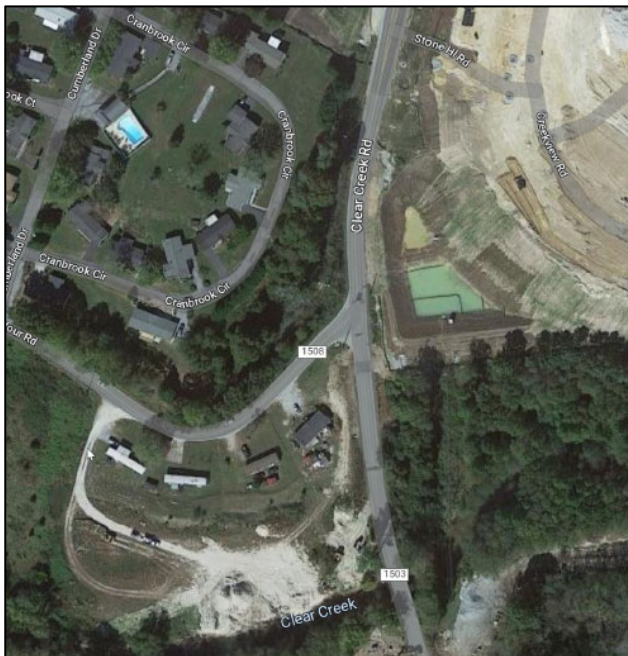
- The updated VEWF study results indicate all sites experienced an **overall 11% Increase in Total Crashes**.

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Results (Continued)

- The data was disaggregated by signing configuration and site characteristics to determine whether any subset of the VEWf systems saw benefit. Google Maps were used to assess whether intersections had skew, horizontal or vertical alignment, or presence of an embankment or vegetation that may hinder intersection sight distance.
- The VEWf subcategory showing improvement was a set of 15 **intersections with an embankment or vegetation hindering sight distance (and may have skew)**. Those sites saw a **10% Reduction in Total Crashes**. The NCDOT Crash Reduction Factor (CRF) List has been updated to reflect this result and the context behind its applicability.
 - The 10% Reduction can only be applied to intersections with sight distance constraints or with intersection skew (> 25 degrees).
 - The 10% Reduction may be applied to all signing scenarios because a variety of signing types were included in this group.
 - The 10% Reduction may NOT be applied to sites where an existing VEWf was in place in the before period and the treatment was to enhance that existing system. Those locations did not demonstrate benefit.



Example VEWf Site with sight distance factors such as an embankment and vegetation, as well as curvature and intersection skew. This site demonstrated a reduction in total crashes comparing 3-year before and after periods.

