



Evaluation of Roundabouts on High-Speed Roadways

NCDOT completed a safety study of 13 intersections in North Carolina where a high speed (at least one 55 mph approach) roundabout was installed. A majority of the study locations were converted from a stop-controlled intersection to a roundabout as a safety countermeasure to mitigate frontal impact crashes.

Background

All of the roundabouts included in this study effort were located in rural areas and were converted from minor road stop-controlled intersections. Additionally, all of the roundabouts in the study were single lane and had at least one leg with an approaching speed limit of 55 mph. The included roundabouts had inscribed circle diameters between 100 and 160 feet and had an average major road volume of 6,000 AADT and an average minor road volume of 3,600 AADT.

The Empirical Bayes methodology was utilized to provide a more robust statistical analysis of the data. The purpose of the evaluation is to measure changes in total intersection crashes, fatal and injury crashes, and frontal impact crashes after intersections were converted to roundabouts.

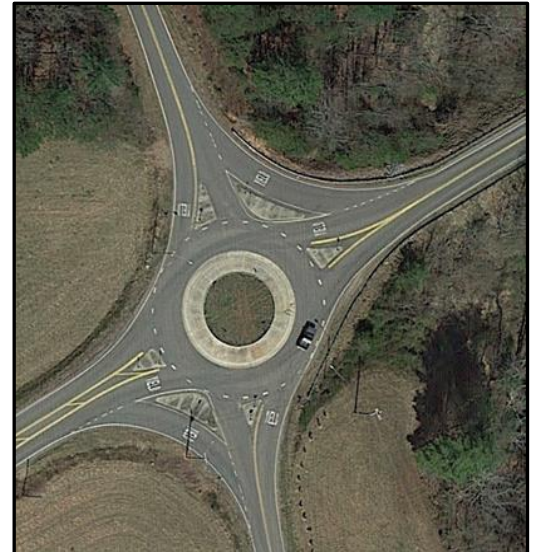
Results

The overall results from all study locations indicate a:

- **41% Reduction** in Total Crashes,
- **79% Reduction** in Fatal and Injury Crashes, and
- **62% Reduction** in Frontal Impact Crashes.

Other key points of the study:

- The results are similar to the crash reductions previously determined in an NCDOT study of 30 intersections converted from two-way stop sign control or from signalization to a roundabout in urban, suburban and rural areas with varying ranges of volumes and approach speeds.
- The reductions in Total Crashes were similar regardless of whether the intersection has three legs or four legs.



Top: Aerial View of a rural roundabout included in the study
Middle: Roundabout located near South Stanly High School in Norwood
Bottom: Roundabout located in Clemmons