

Crash Analysis Results

	Percent Reduction in Crashes
Total Crashes	68% (+/- 2%)
Injury Crashes - All Types	77% (+/- 3%)
Frontal Impact Crashes	75% (+/- 2%)

Crash reduction factors were determined using Empirical Bayes methodology with consideration for traffic increase. The results demonstrate that all-way stop control is a low-cost countermeasure that can be extremely cost effective from a safety standpoint. The study intersections generally appear to have had a significant reduction in the frequency of crashes after conversion to all-way stop control. While injury and frontal impact crashes especially benefited from the treatment, there was also an overall decrease in ran stop sign crashes.

There were generally greater crash reductions at the higher speed limit study sites, which held true when analyzing sites with or without flashing beacons. The study concludes that many more of the sites with moderate and high speed limits utilize a combination of additional signing and marking treatments to emphasize the all-way stop condition, which likely contributed to the greater crash reduction. Sites equipped with a flashing beacon generally showed a greater reduction in crashes, although all of the additional crash benefit may not be exclusively attributed to the presence of flashers and may be at least partially attributed to the large percentage of sites with additional signing and marking.

The conversion to all-way stop control was consistently effective at improving safety for a wide range of traffic volumes in the study sample, and may be just as effective at higher entering volumes as it is at lower. It may also be as effective when intersection volumes are unbalanced between the minor and major approaches as when they are nearly equal.



Leesville Rd at Shady Grove Rd in Durham County

North Carolina Department of Transportation
 Transportation Mobility and Safety Division
 Traffic Safety Systems Section
 Safety Evaluation Group

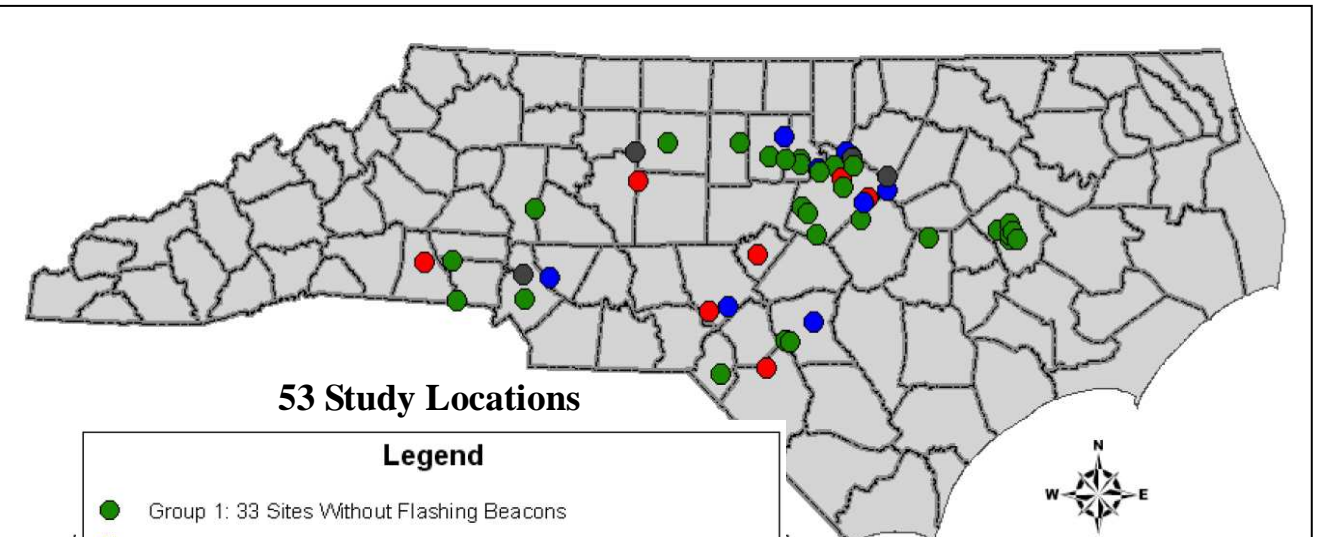
Safety Evaluation of All-Way Stop Intersections in North Carolina March 2010

The NCDOT has evaluated the safety effectiveness of converting intersection control from two-way stop to all-way stop at 53 intersections across the State. The evaluation analyzes crash frequency, severity, and types; examines the relationship between safety and entering volumes and vehicle speeds; and examines differences in crash reductions when an all-way stop control intersection is equipped with a flashing beacon.

The intersections included in the study were installed with all-way stop control between 1994 and 2008. Note that the study does not include every all-way stop controlled intersection in North Carolina, but it includes those known locations with enough after period crash data available to perform an evaluation. The study includes a diverse group of intersections with a range of volumes and speed limits located in both urban and rural areas.

This brochure briefly summarizes the crash analysis results of the safety evaluation. Included are crash reduction factors, a brief discussion of the study results, and example before and after collision diagrams.

For more information on this project, please view the full project report:
<http://www.ncdot.org/doh/preconstruct/traffic/safety/reports/data/completed/4Way033110.pdf>

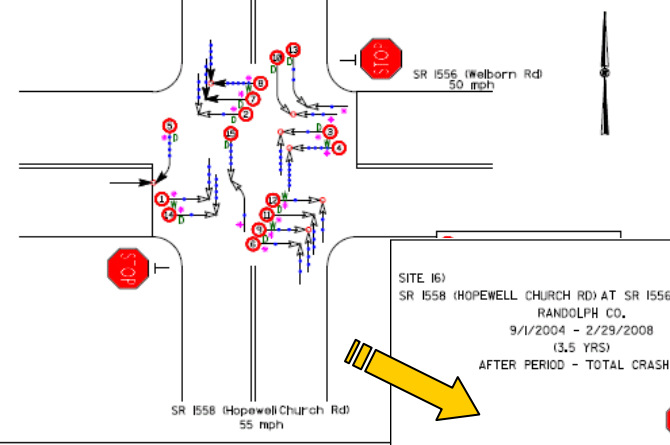


53 Study Locations

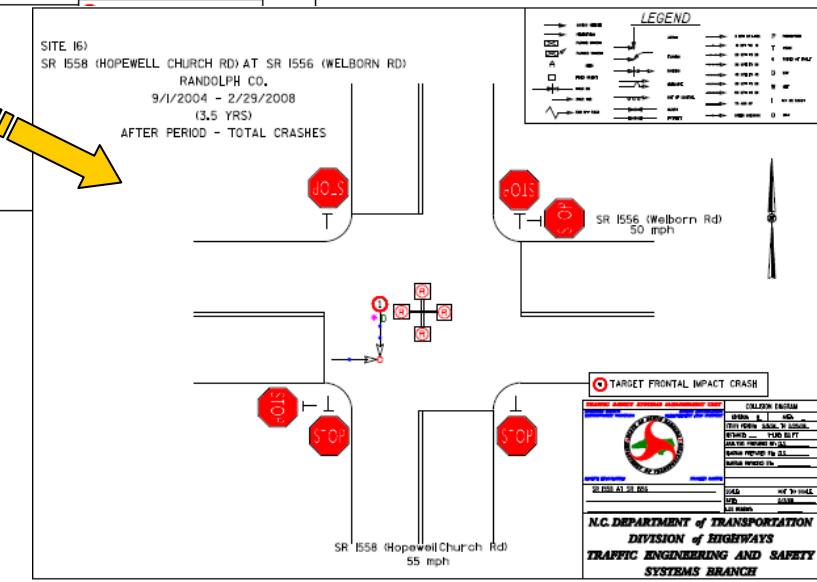
Legend

- Group 1: 33 Sites Without Flashing Beacons
- Group 2: 8 Sites With Flashing Beacons in Before and After Period
- Group 3: 8 Sites With Flashing Beacons Only in After Period
- 4 Additional Sites

SITE 15)
 SR 1558 (HOPEWELL CHURCH RD) AT SR 1556 (WELBORN RD)
 RANDOLPH CO.
 12/1/2000 - 5/31/2004
 (3.5 YRS)
 BEFORE PERIOD - TOTAL CRASHES



BEFORE



AFTER

COLLISION DIAGRAMS

LEGEND

Symbol	Crash Type	Count
Red circle with C	Frontal Impact	1
Blue circle with C	Side Impact	1
Green circle with C	Other	1

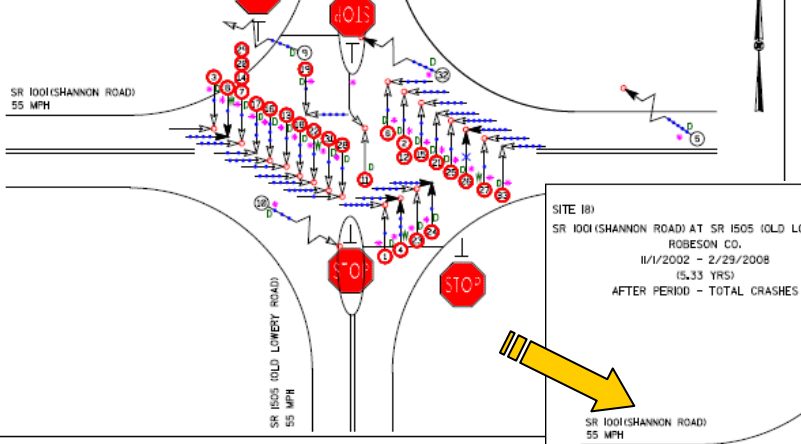
LEGEND

Symbol	Crash Type	Count
Red circle with C	Frontal Impact	1
Blue circle with C	Side Impact	1
Green circle with C	Other	1

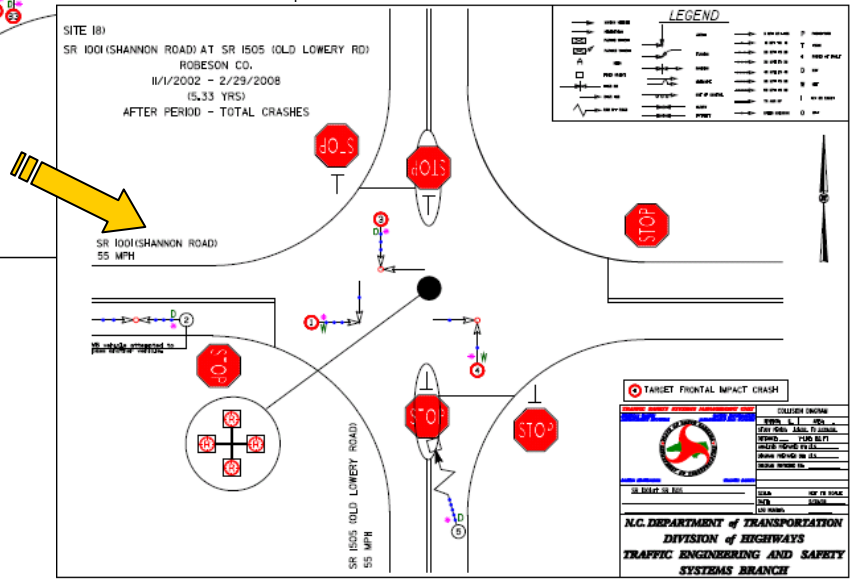
TARGET FRONTAL IMPACT CRASH

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 SYSTEMS BRANCH

SITE 18)
 SR 1001 (SHANNON ROAD) AT SR 1505 (OLD LOWERY RD)
 ROBESON CO.
 10/1/1996 - 1/31/2002
 (5.33 YRS)
 BEFORE PERIOD - TOTAL CRASHES



BEFORE



AFTER

LEGEND

Symbol	Crash Type	Count
Red circle with C	Frontal Impact	1
Blue circle with C	Side Impact	1
Green circle with C	Other	1

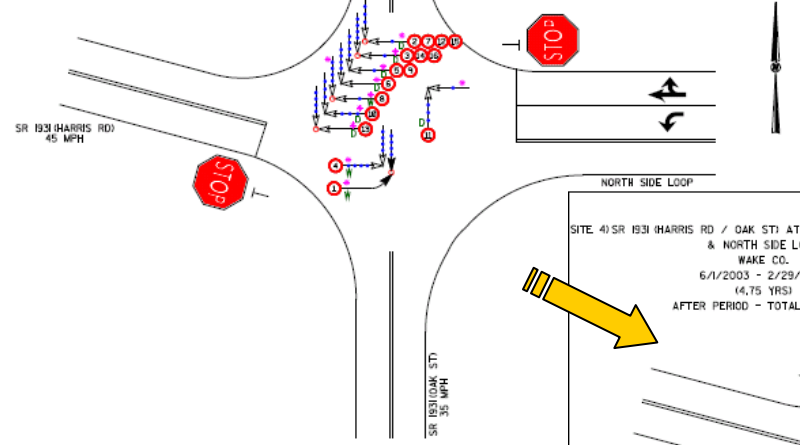
LEGEND

Symbol	Crash Type	Count
Red circle with C	Frontal Impact	1
Blue circle with C	Side Impact	1
Green circle with C	Other	1

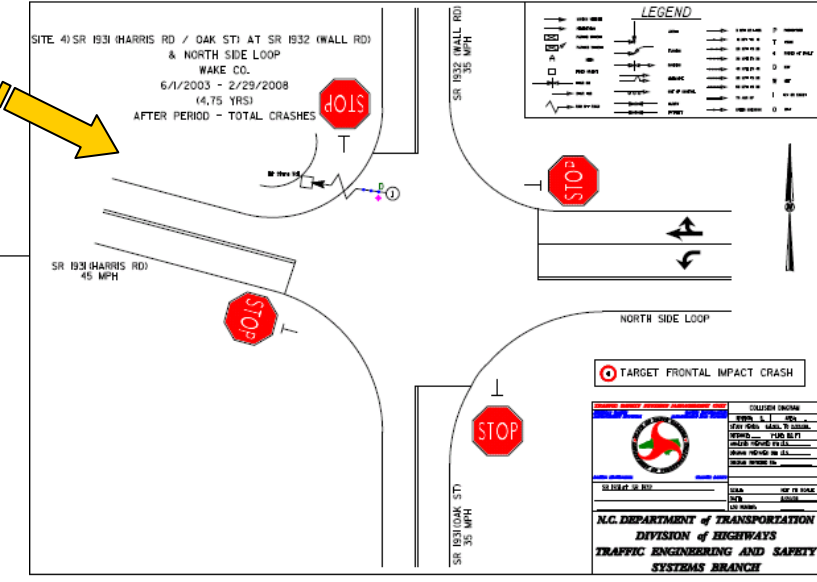
TARGET FRONTAL IMPACT CRASH

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SITE 4) SR 1931 (HARRIS RD / OAK ST) AT SR 1932 (WALL RD) & NORTH SIDE LOOP
 WAKE CO.
 6/1/1998 - 2/28/2003
 (4.75 YRS)
 BEFORE PERIOD - TOTAL CRASHES



BEFORE



AFTER

COLLISION DIAGRAMS

LEGEND

Symbol	Crash Type	Count
Red circle with C	Frontal Impact	1
Blue circle with C	Side Impact	1
Green circle with C	Other	1

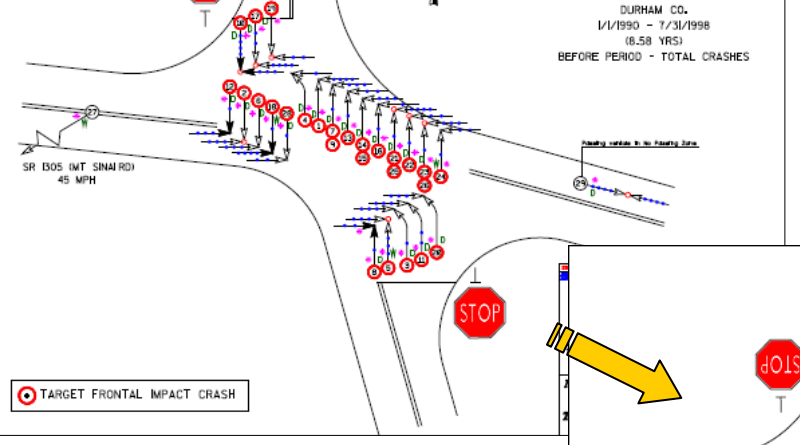
LEGEND

Symbol	Crash Type	Count
Red circle with C	Frontal Impact	1
Blue circle with C	Side Impact	1
Green circle with C	Other	1

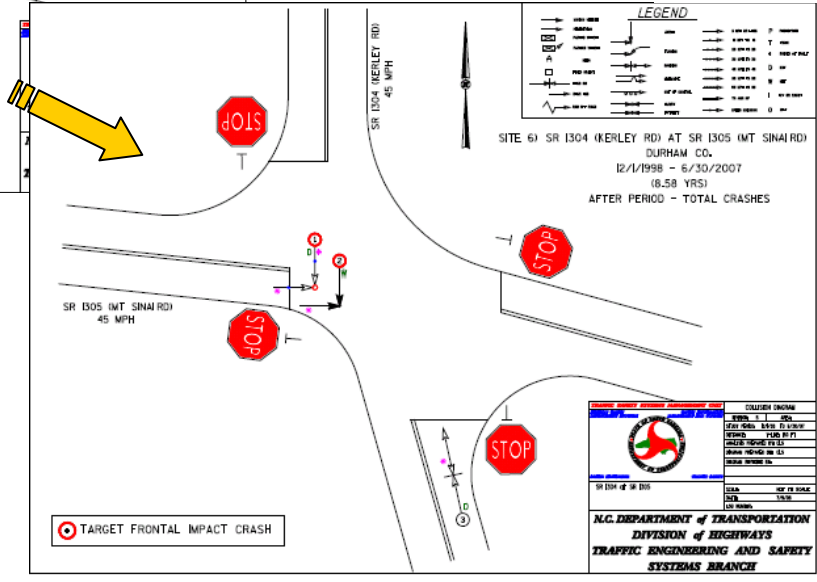
TARGET FRONTAL IMPACT CRASH

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SITE 6) SR 1304 (KERLEY RD) AT SR 1305 (MT SINAI RD)
 DURHAM CO.
 1/1/1990 - 7/31/1998
 (8.58 YRS)
 BEFORE PERIOD - TOTAL CRASHES



BEFORE



AFTER

LEGEND

Symbol	Crash Type	Count
Red circle with C	Frontal Impact	1
Blue circle with C	Side Impact	1
Green circle with C	Other	1

TARGET FRONTAL IMPACT CRASH

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