

Hazard Elimination Project Evaluation

Project Information

Order ID: 41000029436

Project ID: W-5211A

Location: I-77 from MM 87 to MM 100

County: Surry

Division: 11

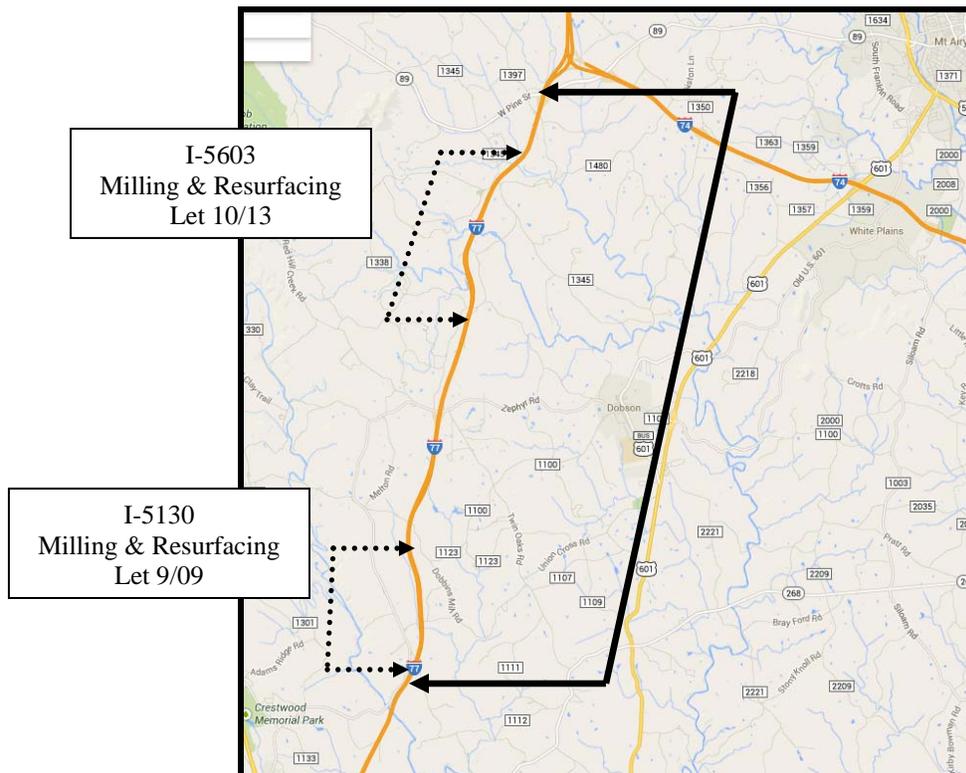
Countermeasure: Median Barrier at Various Sections (Approximately 4.9 miles)

Project Completion: September 2, 2010

Project Cost: \$350,000

Map (from Google Maps – Coordinates 36.441789, -80.777351)

Two TIP projects were completed on this section of roadway during the analysis periods for this evaluation. They are noted in the location map for your reference but are not accounted for in this evaluation.



Naive Before and After Analysis

- Before Period: January 1, 2007 through July 31, 2010 (3.58 years)
- Const. Period: August 1, 2010 through September 30, 2010
- After Period: October 1, 2010 through April 30, 2014 (3.58 years)
- Analysis Criteria: Treatment data consisted of all crashes on I-77 from MM 87 to MM 100.
- Target Crashes: There were originally two types of target crashes selected. The first were across median crashes. The second were crashes involving a vehicle hitting the cable median barrier.

After reviewing the crashes, it was noted that there were a few crashes in the before period that did not technically meet the criteria for either of the target crashes but could have potentially been prevented by the installation of the cable median barrier. These crashes involved a vehicle running off the road into the median near a bridge, traveling between the W-Beam guardrails, and then either hitting a bridge column or traveling off an embankment. These crashes are also noted in the tables.

<u>Treatment Information</u>	Before	After	Percent Reduction (-) Percent Increase (+)
Total Crashes	167	170	1.8
Total Severity Index	6.5	3.69	-43.2
Across Median Crashes	3	2	-33.3
Across Median Severity Index	28.73	4.7	-83.6
Cable Barrier Hit Crashes	14	29	107.1
Cable Barrier Hit Severity Index	1.53	1.26	-17.7
Between Guardrail Crashes	4	0	-100.00
Between Guardrail Severity Index	57.85	0	-100.00
Volume (2008, 2012)	19,900	21,400	7.5

<u>Combined Target Crash Injury Summary</u>	Before	After	Percent Reduction (-) Percent Increase (+)
Fatal injury Crashes	3	0	-100.0
Class A injury Crashes	1	0	-100.0
Class B injury Crashes	1	0	-100.0
Class C Injury Crashes	1	2	100.0
Property Damage Only	15	29	93.3

Overall Summary Results

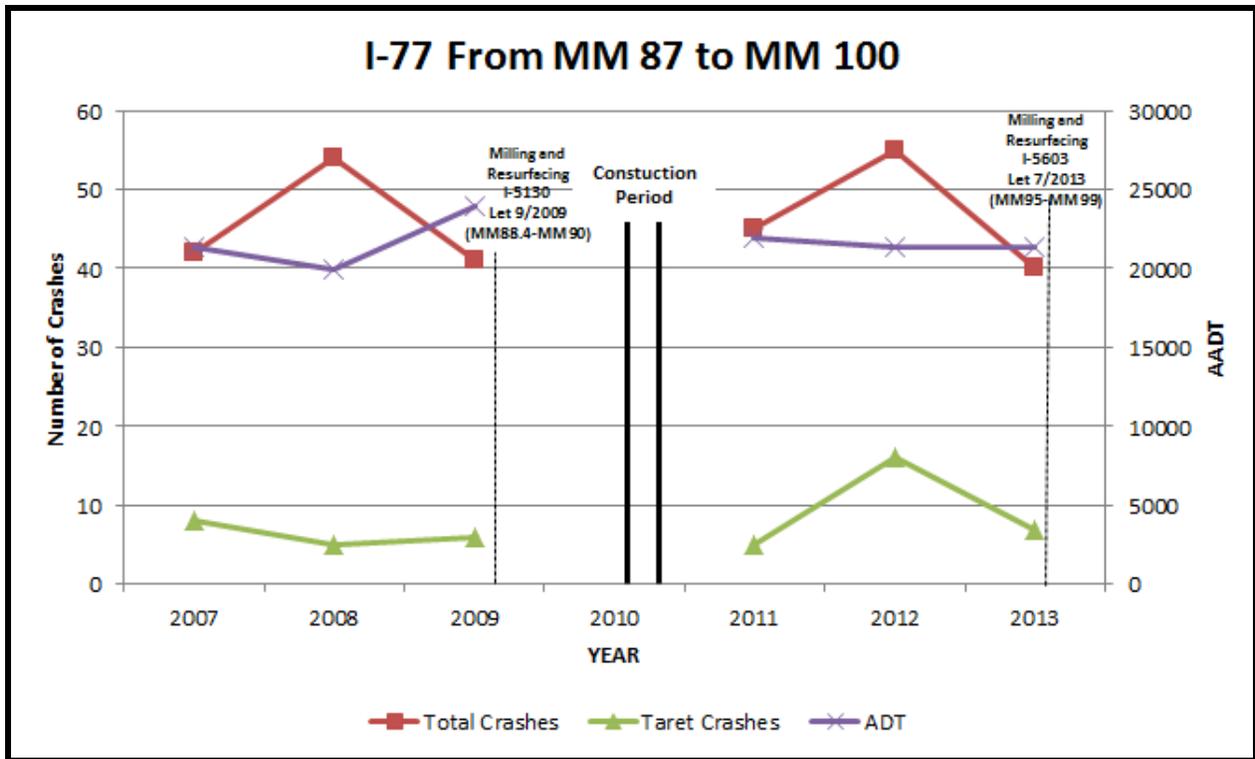
Total Crashes:	2 %	(increase)
Total Crash Severity:	-43 %	(decrease)
Target Crashes:	48 %	(increase)
<i>Across Median</i>	-33 %	(decrease)
<i>Cable Barrier Hits</i>	107 %	(increase)
<i>Between Guardrails</i>	-100 %	(decrease)
Target Crash Severity:	-91 %	(decrease)
<i>Across Median</i>	-84 %	(decrease)
<i>Cable Barrier Hits</i>	-18 %	(decrease)
<i>Between Guardrails</i>	-100 %	(decrease)
Volume:	8 %	(increase)

Items for Discussion/Concerns

Typically, one would expect guardrail installation projects to result in an increase in the frequency and a decrease in the severity of Ran Off Road crashes. The increase in Ran Off Road Crashes is expected due to the placement of a fixed object (guardrail) near the travel way. The decrease in the severity of Ran Off Road Crashes is expected due to the guardrail being more forgiving than the object it is protecting. The results from this project seem to be in concurrence with the abovementioned expectations.

There were still two across-median crashes in the after period. Neither of the crash reports mentioned median barrier.

The following chart shows Total, Target, and Correctable Crashes per year for the subject section of I-77 along with the AADTs. Also noted on the chart are any projects that were completed on the segment during the time periods according to the NCDOT TIP letting website.



Data Prepared For

The Traffic Safety Unit *of the*
 Transportation Mobility and Safety Division *of the*
 Division of Highways *of the*
 North Carolina Department of Transportation

Data Prepared By

Principal Investigator: Brad Robinson, PE
 Work Group/Consultant: NCDOT - Safety Evaluation Group
 Date: September 12, 2014

SURRY COUNTY
I-77 from MM 87 to MM 100
Before Period - 1/1/07-7/31/10



Target Crashes Only
Crashes Right of I-77 are Northbound Crashes
Crashes Left of I-77 are Southbound Crashes

Note: Crashes mileposted to nearest 0.1 mile for visual clarity on diagram

Legend

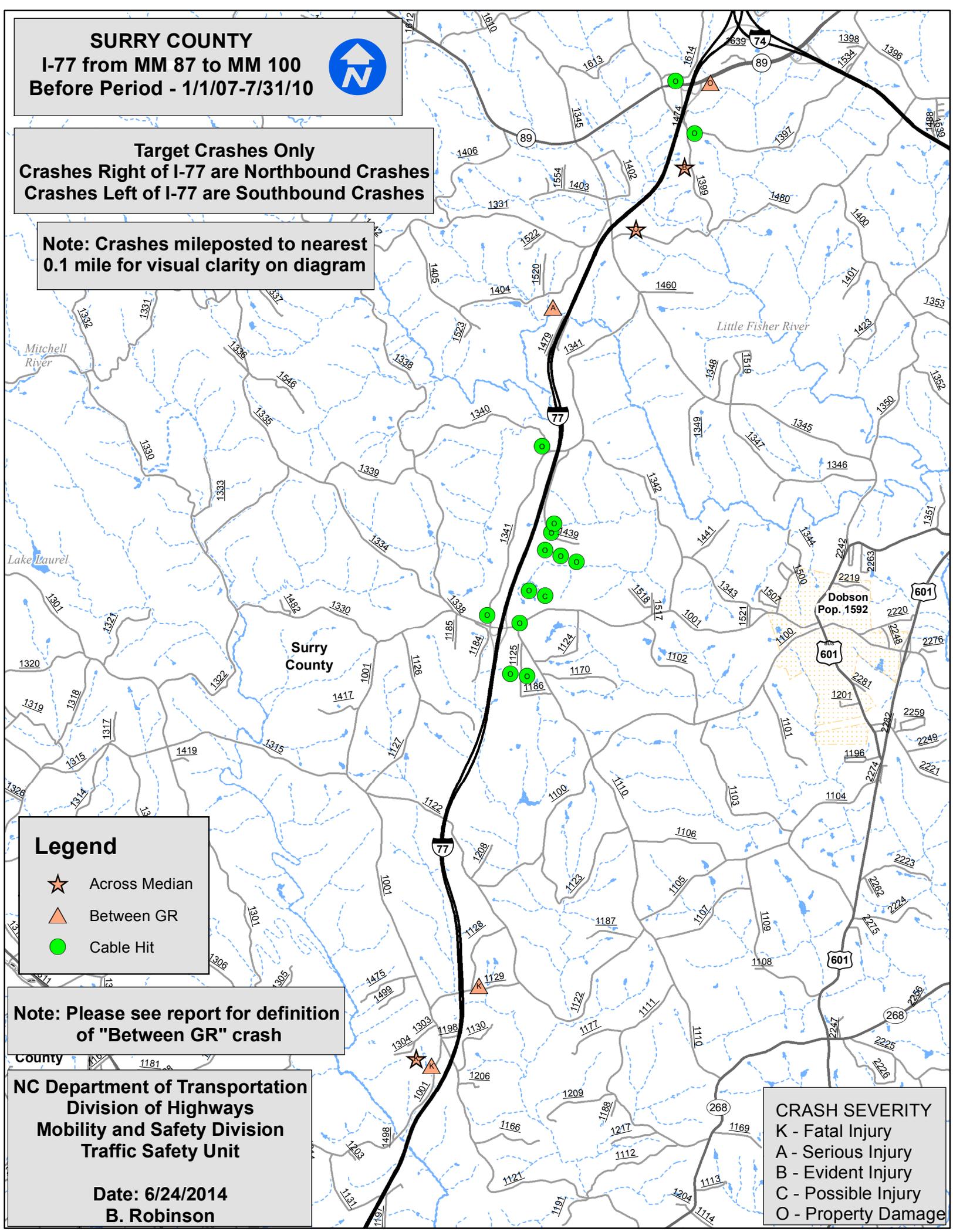
- Across Median
- Between GR
- Cable Hit

- CRASH SEVERITY**
- K - Fatal Injury
 - A - Serious Injury
 - B - Evident Injury
 - C - Possible Injury
 - O - Property Damage

Note: Please see report for definition of "Between GR" crash

NC Department of Transportation
Division of Highways
Mobility and Safety Division
Traffic Safety Unit

Date: 6/24/2014
B. Robinson



SURRY COUNTY
I-77 from MM 87 to MM 100
After Period - 10/1/10-4/30/14



Target Crashes Only
Crashes Right of I-77 are Northbound Crashes
Crashes Left of I-77 are Southbound Crashes

Note: Crashes mileposted to nearest 0.1 mile for visual clarity on diagram

Legend

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