Spot Safety Project Evaluation

Spot Safety Project # 05-06-230

Spot Safety Project Evaluation for Installing High Visibility Pedestrian Crossings and Countdown Pedestrian Heads for the East and West leg of Glenwood

US 70 / NC 50 (Glenwood Avenue) and Marriott Drive
Wake County

Documents Prepared By:

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For:

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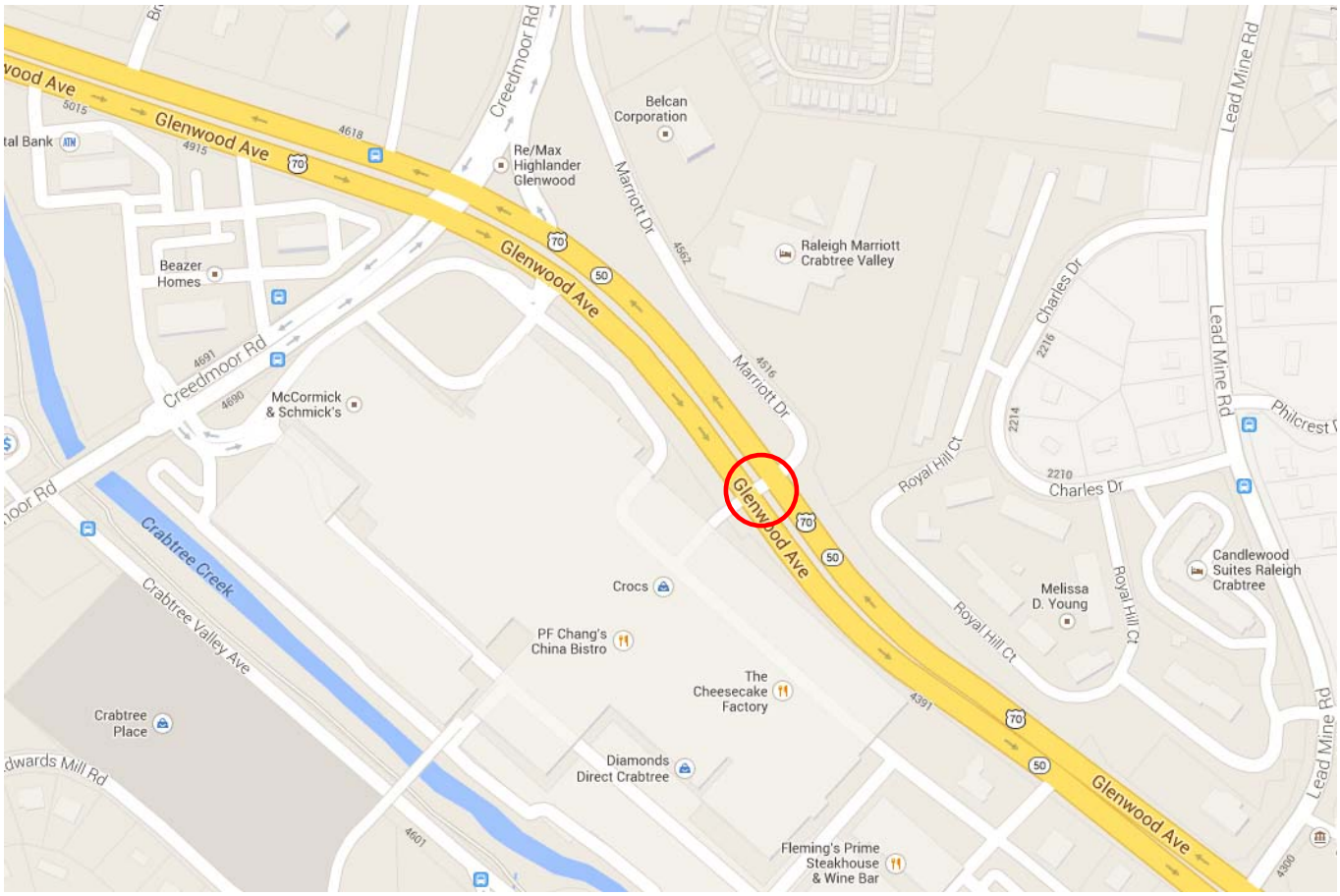
7-18-2013
Date

Spot Safety Project Evaluation Documentation

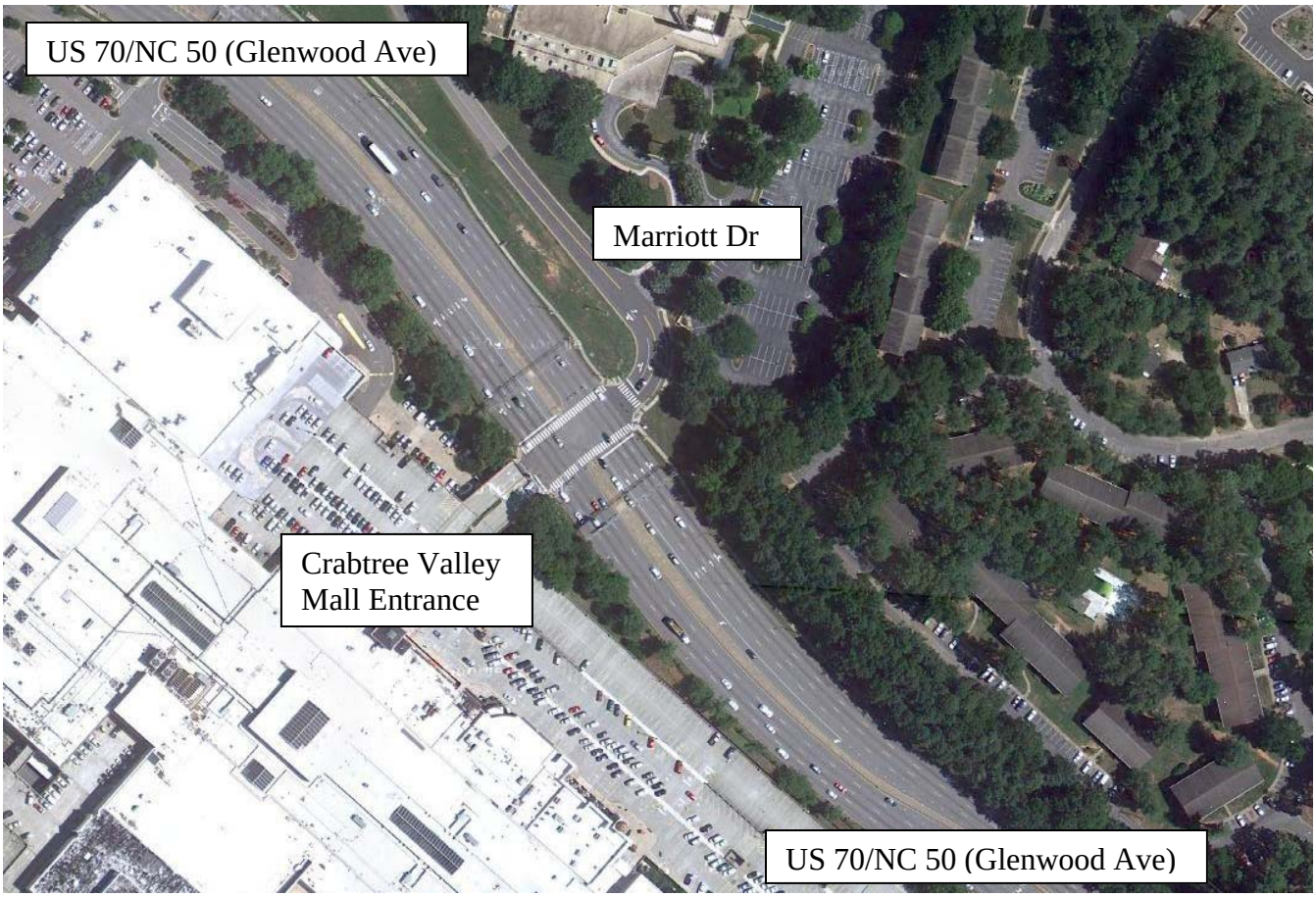
Subject Location

Evaluation of Spot Safety Project Number 05-06-230 located at the intersection of US 70/NC 50 (Glenwood Avenue) and Marriott Drive in Raleigh in Wake County.

The Sig ID is 05-0195 for this 5-Phase Fully Actuated Traffic Signal.



Location Map Provided from Google Maps



Aerial Map Provided from Google Map

Project Information and Background from the Project File Folder

The spot safety project improvement countermeasure chosen for the subject location was installing additional crossing on the east leg of Glenwood with countdown pedestrian heads and upgrading the existing crosswalk and pedestrian heads.

US 70/NC 50 (Glenwood Avenue) is a multi-lane facility with turn lanes on both approaches of the intersection and a speed limit of 45 mph. Marriott Drive is a two-lane roadway with a speed limit of 35 mph. The northbound approach is the main entrance to Crabtree Valley Mall.

The original statement of problem was that significant pedestrian traffic generated by Crabtree Valley Mall and the Marriott Hotel had created the need for improved pedestrian facilities at the intersection. The initial crash analysis was completed from October 1, 2001 to November 30, 2006 with two (2) pedestrian crashes. The final completion date for the improvement at the subject intersection was on August 7, 2008 with a total cost of $72,000.00.

Naive Before and After Analysis

After reviewing the spot safety project file folder along with all the crashes at the subject location, the crash data omitted from this analysis to consider for an adequate construction period were the months of July through September 2008. The before period consisted of reported crashes from November 1, 2003 through June 30, 2008 (4 years 8 months); and the after period consisted of reported crashes from October 1, 2008 through May 31, 2013 (4 years 8 months). The ending date for this analysis was determined by the date of available crash data at the time of analysis.

The treatment data consisted of all crashes within 150 feet of the subject intersection for the US 70/NC 50 (Glenwood Avenue) and Marriott Drive/Crabtree Valley Mall Entrance approaches. *Please see attached location map and aerial map for further details.*

The following data table depicts the Naive Before and After Analysis for the treatment location. Please note that Pedestrian Crashes were the target crashes for the applied countermeasure.

Treatment Information	Before	After	Percent Reduction (-) Percent Increase (+)
Total Crashes	85	134	+ 57.6 %
Total Severity Index	3.55	2.60	- 26.8 %
Target Crashes	1	1	0.0 %
Target Crash Severity Index	76.80	8.40	- 89.1 %
Volume (2006, 2011)	56,300	50,800	- 9.8 %

Injury Crash Summary	Before	After	Percent Reduction (-) Percent Increase (+)
Fatal injury Crashes	0	0	N/A
Class A injury Crashes	1	0	- 100.0 %
Class B injury Crashes	3	6	+100.0 %
Class C Injury Crashes	16	23	+ 43.8 %
Property Damage Only	65	105	+61.5 %

The naive before and after analysis at the treatment location resulted in a 58 percent increase in Total Crashes and a 27 percent reduction in the Total Severity Index. The before period ADT year was 2006 and the after period ADT year was 2011.

To further analyze the intersection crash patterns, the following chart shows different traffic movements and the change in crash totals through the study:

Additional Information	Before	After	Percent Reduction (-) Percent Increase (+)
Total Rear End, Slow or Stop	51	102	+ 100.0 %
US 70 EB Rear End, Slow or Stop	16	73	+ 356.3 %
US 70 WB Rear End, Slow or Stop	35	28	- 20.0 %

Results and Discussion

The total crashes at the study intersection experienced an increase from 85 crashes in the before period to 134 crashes in the after period. Please note that due to the high number of crashes collision diagrams were not created for this study.

The number of target crashes (pedestrian crashes) remained the same from the before period to the after period. There was one (1) pedestrian crash in before period and one (1) pedestrian crash in the after period.

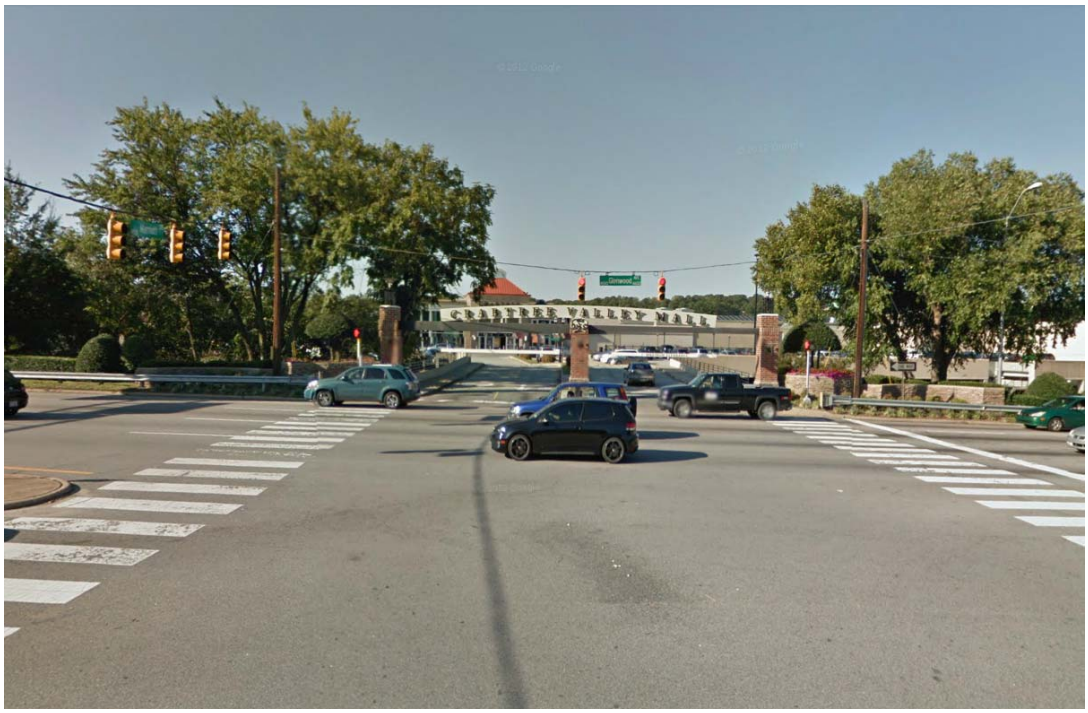
The total Rear End, Slow or Stop crashes experienced an increase from 51 crashes in the before period to 102 crashes in the after period. The Rear End, Slow or Stop crashes on US 70 EB increased from 16 crashes in the before period to 73 crashes in the after period. Of the 73 Rear End, Slow or Stop crashes that occurred on US 70 EB in the after period, 41 of the crashes occurred behind the stop bar approaching the study intersection. In addition, 65 of the 73 (89.0 %) crashes occurred in the two right most lanes. Also, 45 of the 73 (61.6 %) crashes occurred between 2:00 PM and 7:00 PM. The Rear End, Slow or Stop crashes on US 70 WB decreased from 35 crashes to 28 crashes.

Please see the attached *Treatment Site Photos*. Photos are provided from Google Street View for all four approaches to the treatment intersection. As the Safety Evaluation Group completes additional spot safety reviews for this type of countermeasure, we will be able to provide objective and definite information regarding actual crash reduction factors for this type of intersection.

Treatment Site Photos from Google Street View

Google Maps (Image Date: 10/11) - Looking West on US 70/NC 50 (Glenwood Ave) Approach

Google Maps (Image Date: 10/11) - Looking East on US 70/NC 50 (Glenwood Ave) Approach



Google Maps (Image Date: 10/11) – Looking South toward Crabtree Valley Mall Entrance

Google Maps (Image Date: 10/11) – Looking South from Marriott Drive Approach