

Spot Safety Project Evaluation

Order # 41000023507

Spot Safety Project # 03-07-210

**Spot Safety Project Evaluation of the Additional Left Turn Lane Installation
US-117 / NC-132 (S. College Road) at SR 1272 (New Centre Drive)
City of Wilmington, New Hanover County**

Documents Prepared By:

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

Principal Investigator



Jason B. Schronce

7-8-2013

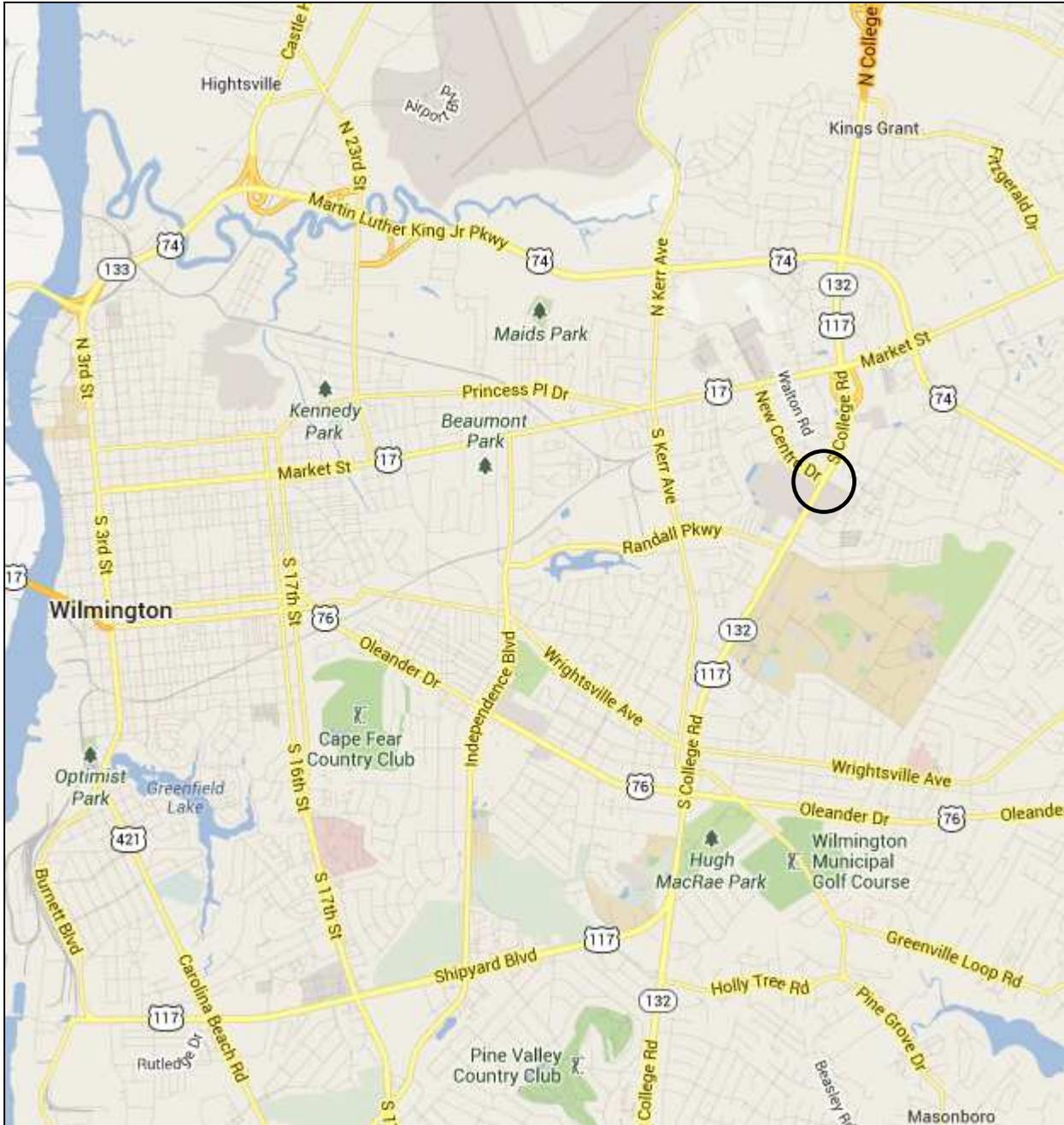
Date

Traffic Safety Project Engineer

Spot Safety Project Evaluation Documentation

Subject Location

Evaluation of Spot Safety Project Number 03-07-210 located at the Intersection of US-117 / NC-132 (South College Road) at SR 1272 (New Centre Drive) in New Hanover County, City of Wilmington. The Sig ID is 03-0240 for this existing signalized intersection.

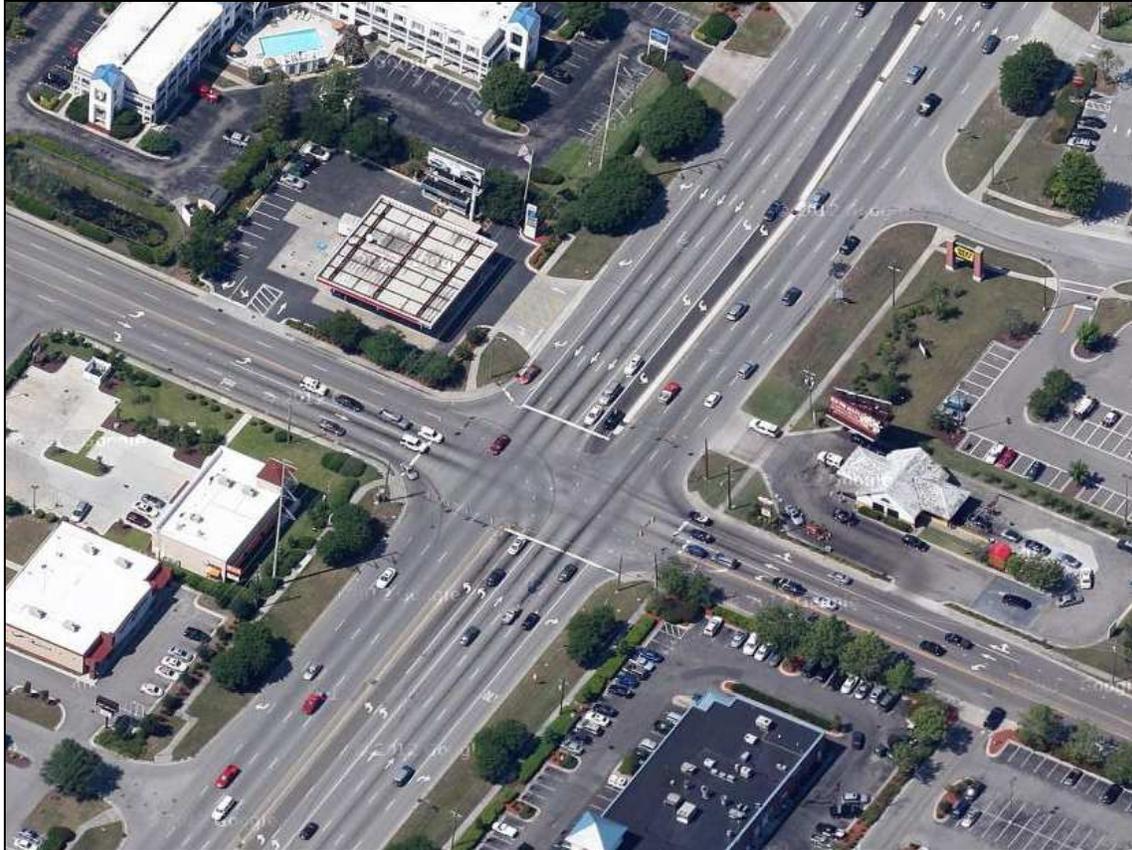




Before Period Aerial Map – BING Maps



**After Period-1 Aerial Map – New Hanover County GIS Map
Shows Subject Countermeasure in November 2008 – Northbound US-117 Dual Left Turn Lanes**



**After Period-2 Aerial Map – Google Maps
Southbound US-117 Dual Left Turn Lanes Added in October 2011**

Project Information and Background from the Project File Folder

The spot safety project improvement countermeasure chosen for the subject intersection was the installation of an additional US-117/NC-132 (South College Road) northbound left turn lane; to create dual left turns on this approach. US-117/NC-132 and SR 1272 are both multi-lane facilities at the subject intersection with speed limits of 45-mph and 35-mph respectively. The subject location is a four-leg crossroads urban intersection with major shopping centers located in all four quadrants of the intersection. The site is located along the major in-out thoroughfare for the City of Wilmington and provides access to a local university.

The original statement of problem concluded that due to the high volume of left turns, vehicles tend to queue significantly at this intersection. The installation of the northbound dual left turn lane was intended to enhance mobility and safety by creating more storage capacity for this traffic maneuver.

The initial crash analysis was completed from November 1, 2001 to November 1, 2006 with ten (10) Left-Turn Same Roadway crashes and sixty-eight (68) rear-end collisions for the total intersection. The final completion date for the improvement at the subject intersection was on November 4, 2008 with a total cost of \$170,000.

Additionally, the southbound approach of US-117/NC-132 (South College Road) was upgraded to dual left turn lanes in October 2011. This project was completed with money other than Spot Safety Funds.

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 was separated into the following time periods:

Before Period	8/1/2005 – 7/31/2008	(3 Years)
Construction-1	August – November 2008	
After -1	12/1/2008 – 7/31/2011	(2 Years, 8 Months)
Construction-2	August – October 2011	
After-2	11/1/2011 – 1/31/2013	(1 Year, 3 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.

Please see attached location map, aerial maps, and photos for further details.

The following data table depicts the Naive Before and After Analysis for the treatment location. Please note that a particular target crash type was not selected for the applied countermeasure since the background information considered total intersection collisions. Therefore, multiple intersection crash types are highlighted in the tables and displayed in crashes-per-year format.

<u>Treatment Information</u>	Before 3.0 Yrs	After-1 2.66 Yrs	After-2 1.25 Yrs
Total Crashes	90	54	29
Total Severity Index	3.30	6.27	4.83
Total Crashes Per Year	30.0 CPY	20.3 CPY	23.2 CPY
US-117 Rear-Ends Approaching SR 1272	19	8	7
Rear-End Approaching Crashes Per Year	6.3 CPY	3.0 CPY	5.6 CPY
Left Turn Same Road (Permissive)	9	5	1
LTSR (Permissive) Crashes Per Year	3.0 CPY	1.9 CPY	0.8 CPY
US-117 Ran Red-Light Crashes	13	8	5
US-117 Ran Red Light Crashes Per Year	4.3 CPY	3.0 CPY	4.0 CPY
Volume (2007, 2010, 2011)	60,000	56,300	56,500

<u>Injury Crash Summary</u>	Before 3.0 Yrs	After-1 2.66 Yrs	After-2 1.25 Yrs
Fatal injury Crashes	0	0	0
Class A injury Crashes	0	2	0
Class B injury Crashes	5	2	4
Class C Injury Crashes	23	16	11
Property Damage Only	62	34	14
Injury Crashes Per Year (K/A/B/C)	9.3 CPY	7.5 CPY	12.0 CPY

Results and Discussion

Referencing the *Collision Diagrams* and the charts above, crashes at this intersection appeared to experience some benefit in the After-1 Period from a crashes per year analysis compared to the before period. Total crashes per year reduced by 32 percent and rear-end collisions on US-117 approaching New Center Drive saw a 52 percent reduction in crashes per year from the Before Period to After-1 Period.

However, during the last 1.25 years of the After-2 Period, crashes per year have rebounded upward in the selected categories except left turn same roadway crashes. US-117/NC-132 is still experiencing four (4) red light run crashes per year and rear-end collisions increased to nearly six (6) collisions per year.

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



**Travelling North on US-117/NC-132 approaching intersection – After-1 Period
Google Maps – August 2011 Photo (Shows Construction of SB Turn Lane)**



**Travelling South on US-117/NC-132 approaching intersection – After-1 Period
Google Maps – April 2008 Photo**



**Travelling East on SR 1272 (New Centre Drive) approaching intersection – After-1 Period
Google Maps – August 2011 Photo (Shows Construction of SB Turn Lane)**



**Travelling West on New Centre Drive approaching intersection – After-1 Period
Google Maps – August 2011 Photo**

TIME PERIODS
NOT EQUAL

ADT (Year)
21,000 (2007)

SR 1272
New Centre Drive
35-MPH

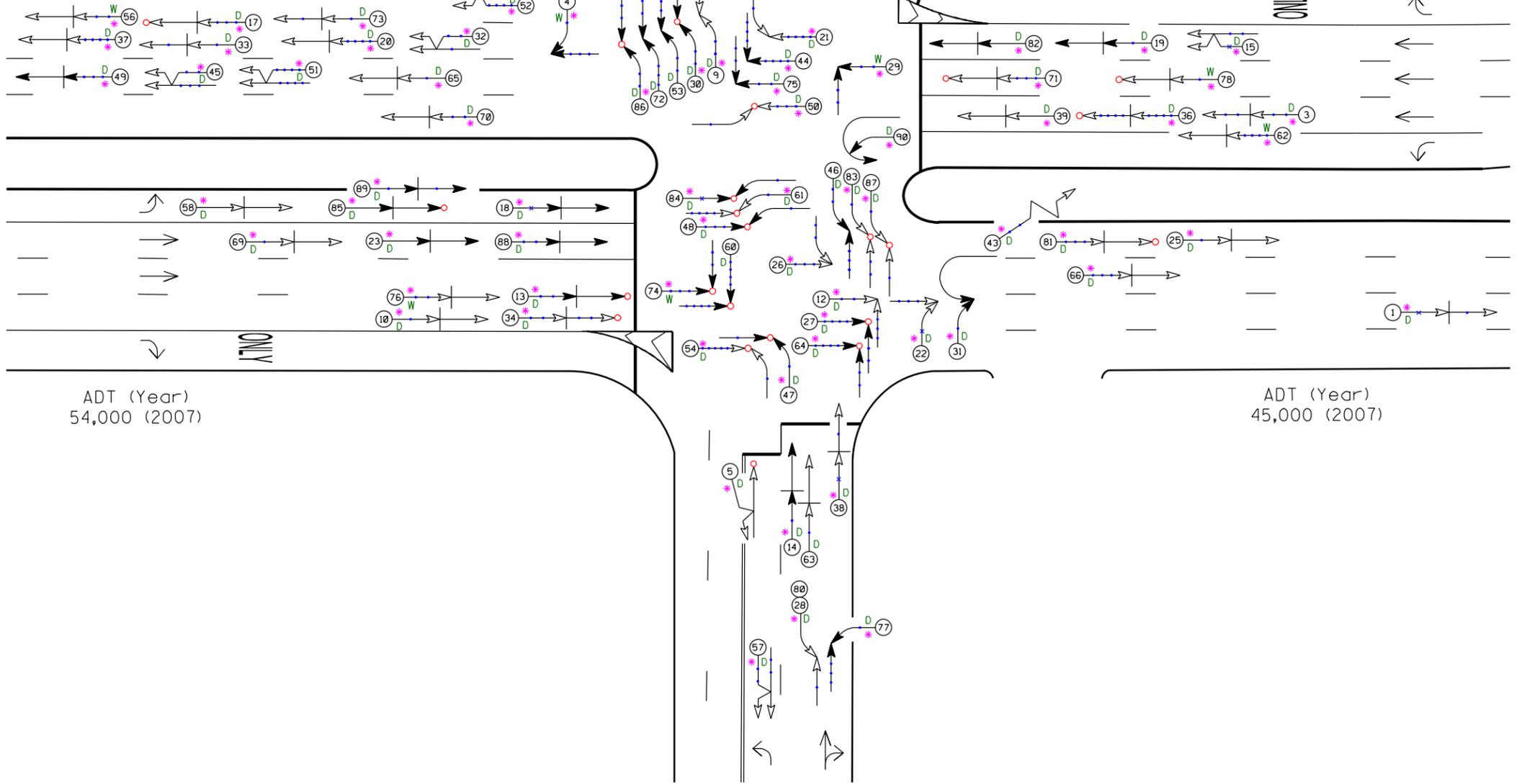


LEGEND

	MOVING VEHICLE		ANGLE		9 MPH OR LESS		PEDESTRIAN
	PEDESTRIAN		TURNING		10 MPH TO 19		TRAIN
	PARKED VEHICLE		BACKING		20 MPH TO 29		DRIVER AT FAULT
	PARKING VEHICLE		SIDESWIPE		30 MPH TO 39		DRY
	FIXED OBJECT		OUT OF CONTROL		40 MPH TO 49		WET
	HEAD ON		INJURY		50 MPH TO 59		ICY OR SNOWY
	REAR END		FATALITY		60 MPH TO 69		OILY
	RAN OFF ROAD				70 AND UP		
					SPEED UNKNOWN		

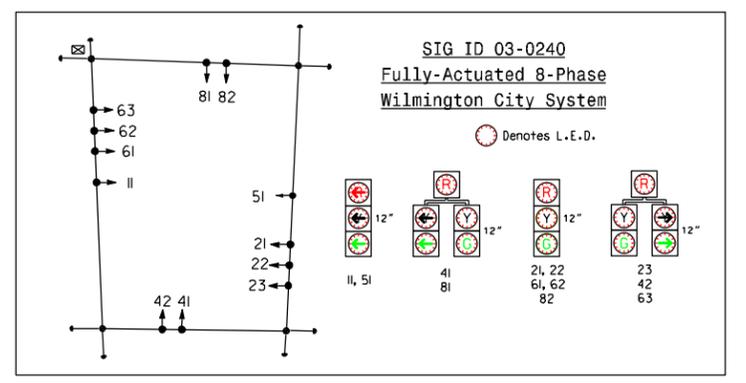
SS# 03-07-210
Order# 41000023507
New Hanover County
BEFORE Period
8/1/2005 - 7/31/2008
3.0 Years

US 117/NC 132
South College Road
45-MPH



ADT (Year)
54,000 (2007)

ADT (Year)
45,000 (2007)



N.C. DEPARTMENT of TRANSPORTATION
DIVISION of HIGHWAYS
TRANSPORTATION MOBILITY and SAFETY DIVISION

TRAFFIC SAFETY UNIT

Date: 6-17-2013

Prepared By: J. Schronce

TIME PERIODS
NOT EQUAL

ADT (Year)
19,000 (2010)

New Centre Drive
SR 1272
35-MPH



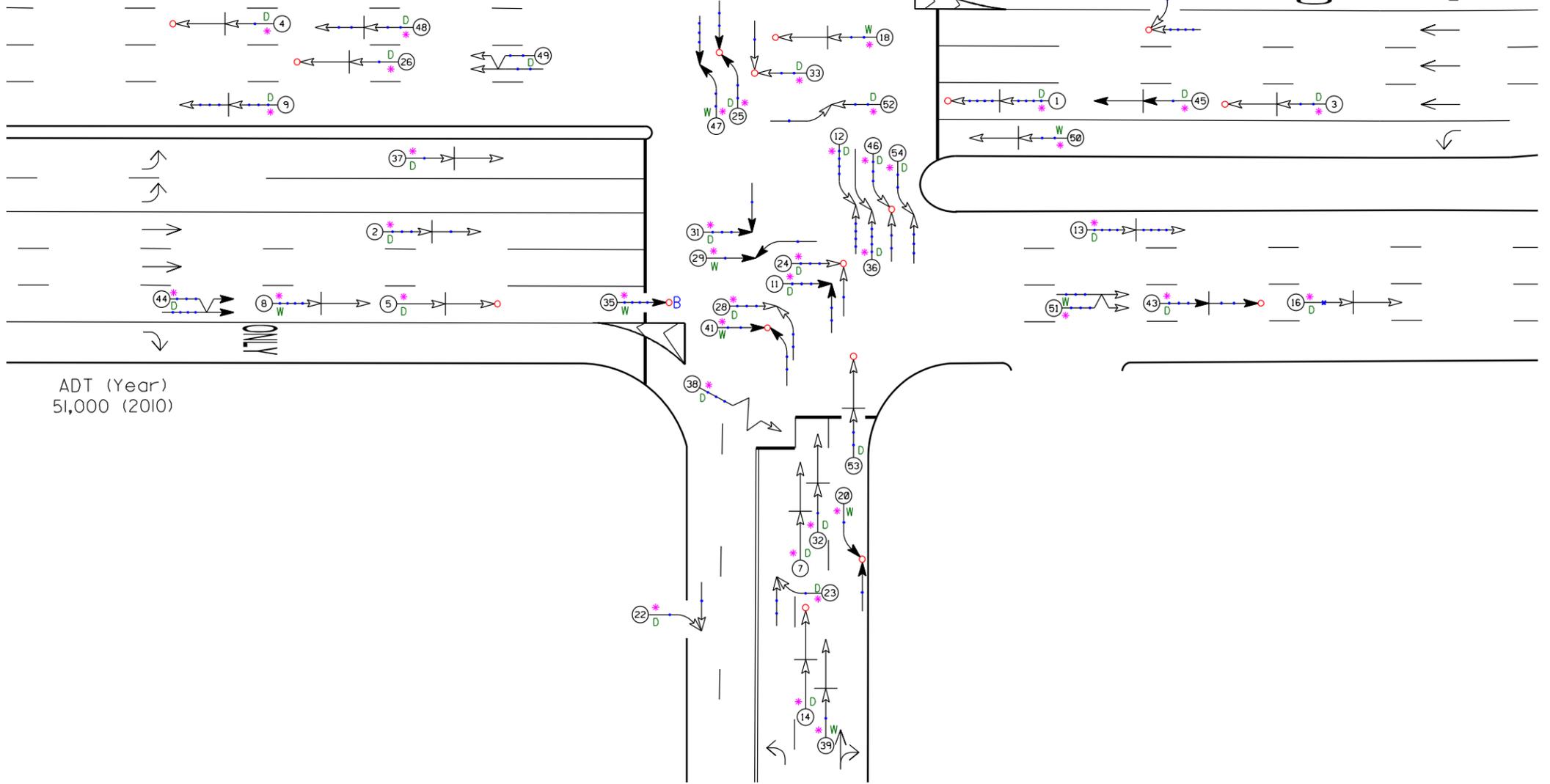
LEGEND

	MOVING VEHICLE		ANGLE		9 MPH OR LESS		PEDESTRIAN
	PEDESTRIAN		TURNING		10 MPH TO 19		TRAIN
	PARKED VEHICLE		BACKING		20 MPH TO 29		DRIVER AT FAULT
	PARKING VEHICLE		SIDESWIPE		30 MPH TO 39		DRY
	FIXED OBJECT		OUT OF CONTROL		40 MPH TO 49		WET
	HEAD ON		INJURY		50 MPH TO 59		ICY OR SNOWY
	REAR END		FATALITY		60 MPH TO 69		OILY
	RAN OFF ROAD		70 AND UP		SPEED UNKNOWN		

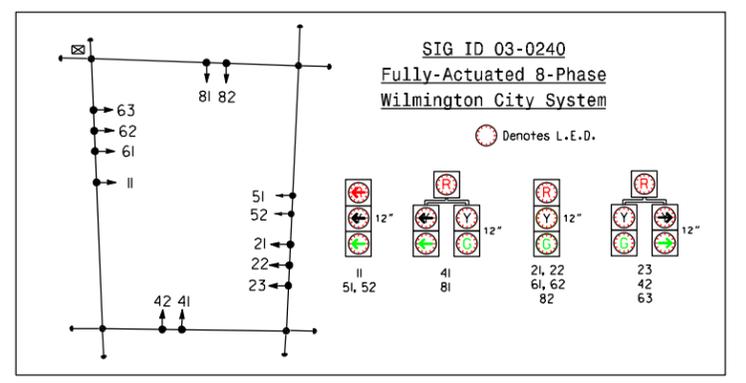
SS# 03-07-210
Order# 41000023507
New Hanover County
AFTER-1 Period
12/1/2008 - 7/31/2011
2.66 Years

US 117/NC 132
South College Road
45-MPH

ADT (Year)
42,500 (2010)



ADT (Year)
51,000 (2010)



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