Spot Safety Project Evaluation

Order # 41000023129

Spot Safety Project # 02-06-201

Spot Safety Project Evaluation of the 2-Foot Paved Shoulders
SR 1125 (Lake Road) from SR 1124 (9-Foot Road) North for 1.5 Miles
Carteret County

Documents Prepared By:

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

Principal Investigator

_____ 5-13-2013

Jason B. Schronce Date

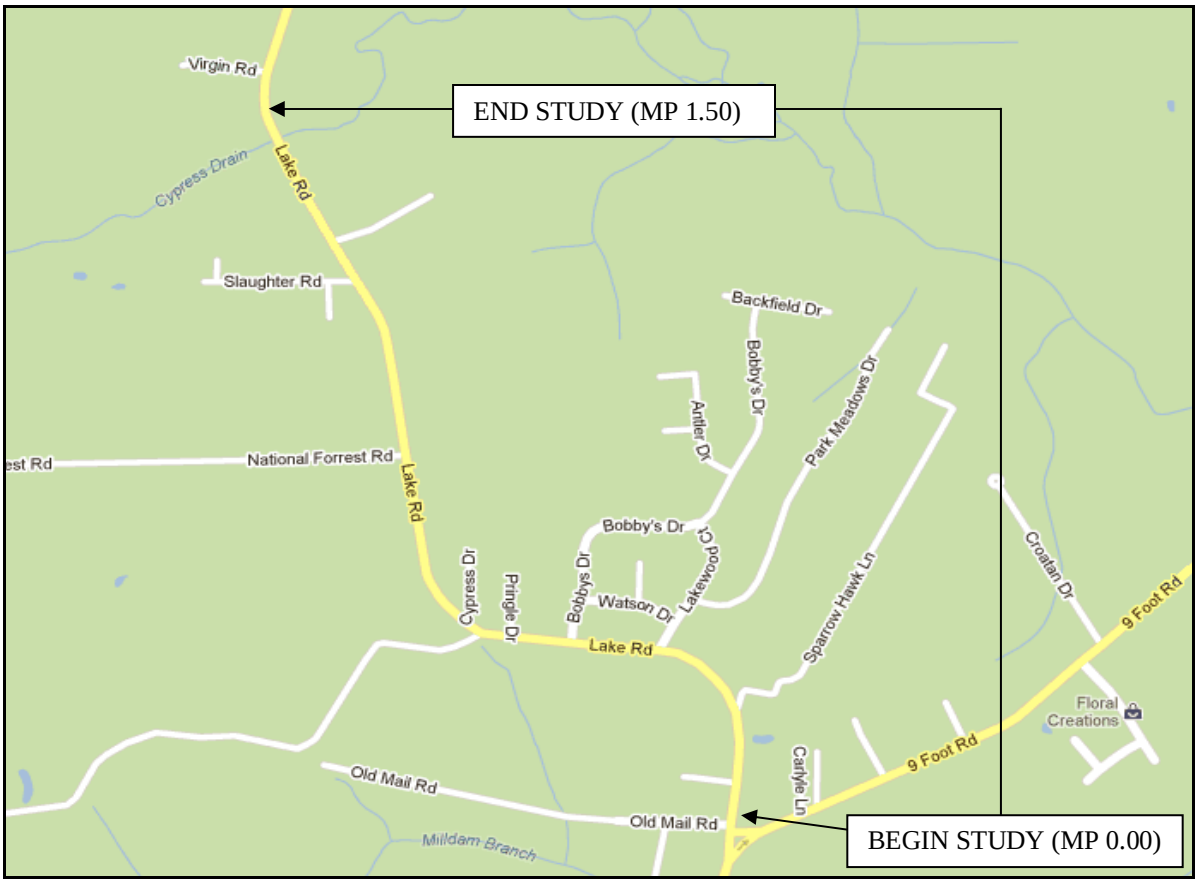
Traffic Safety Project Engineer

Spot Safety Project Evaluation Documentation

Subject Location

Evaluation of Spot Safety Project Number 02-06-201 located along the roadway of SR 1125 (Lake Road) from the SR 1124 (9-Foot Road) intersection northward for 1.5 miles (ending near Virgin Road) in Carteret County, west of the City of Newport.

Area Map provided from Google Maps



Area Map provided from Google Maps

Google Street View – Before Period (December 2007 Photo)

Project Information and Background from the Project File Folder

The spot safety project improvement countermeasure chosen for the subject location was the addition of 2-foot paved shoulders along both sides of SR 1125 (Lake Road). At the same time, both the edge-lines and roadway centerline were restriped. SR 1125 from SR 1124 (9-Foot Road) northward towards the Craven County Line is a winding 2-lane rural road with numerous curves and reverse turns. The speed limit is 45-mph from SR 1124 northward for approximately 0.8 mile (Ordinance 1052012 dated 5/12/2006) where it increases to 55-mph.

The original statement of problem was the issue of vehicles running off the roadway, striking the ditch and trees, due to the alignment of this section. The roadway was listed as part of the 2005 Highway Safety Improvement Program with HSIP# 15S00017.

The initial crash analysis was completed from November 1, 2000 to October 31, 2005 with thirty-six (36) reported run-off roadway correctable crashes. The final completion date for the improvement at the subject location was on June 9, 2008 with a total cost of $152,200.

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 May through June 2008. The before period consisted of reported crashes from December 1, 2003 through April 30, 2008 (4 years and 5 months); and the after period consisted of reported crashes from July 1, 2008 through November 30, 2012 (4 years and 5 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 along the section (SR 1125 Milepost 0.00 to 1.50) with a 0-foot y-line. *Please see attached location map, aerial map, and photo for further details.*

The following data table depicts the Naive Before and After Analysis for the treatment location. Please note that Lane Departure Crashes were the target crashes for the applied countermeasure. The Lane Departure Crash types considered are as follows: Fixed Object; Ran-Off Road (Left / Right / Straight); Head-On; Sideswipe (Opposite Direction); and Overturn/Rollover.

Treatment Information	Before	After	Percent Reduction (-) Percent Increase (+)
Total Crashes	60	36	- 40.0 %
Total Severity Index	8.00	9.99	24.9 %
Target Crashes – Lane Departure	41	25	- 39.0 %
Target Crash Severity Index	10.16	12.76	25.6 %
Volume (2006, 2010)	3,900	4,000	2.6 %

Injury Crash Summary	Before	After	Percent Reduction (-) Percent Increase (+)
Fatal injury Crashes	0	0	N/A
Class A injury Crashes	3	3	0.0 %
Class B injury Crashes	12	7	- 41.7 %
Class C Injury Crashes	14	6	- 57.1 %
Property Damage Only	31	20	- 35.5 %

The naive before and after analysis at the treatment location resulted in a 40 percent reduction in Total Crashes, a 39 percent reduction in Target Crashes, but a 25 percent increase in the Total Severity Index. The before period ADT year was 2006 and the after period ADT year was 2010.

Additional Statistics (TEAAS)	Before	After	Percent Reduction (-) Percent Increase (+)
Night Crashes	24	22	- 8.3 %
Wet Roadway Crashes	12	7	- 41.7 %
Alcohol / Drug Involved	1	5	100+ %
Total Crash Rate (100 Mil Veh Miles)	635.86	371.75	- 41.5 %

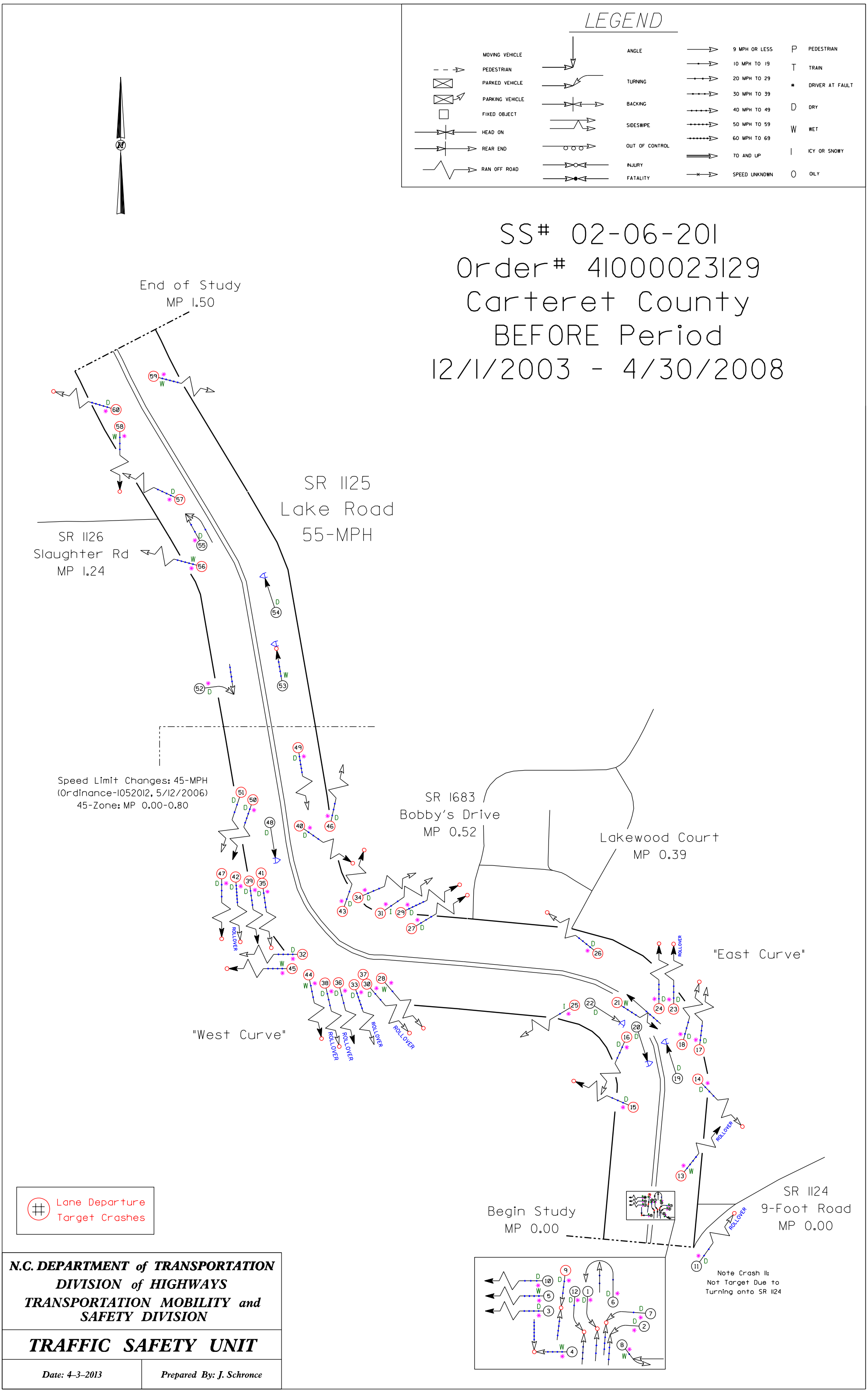
Results and Discussion

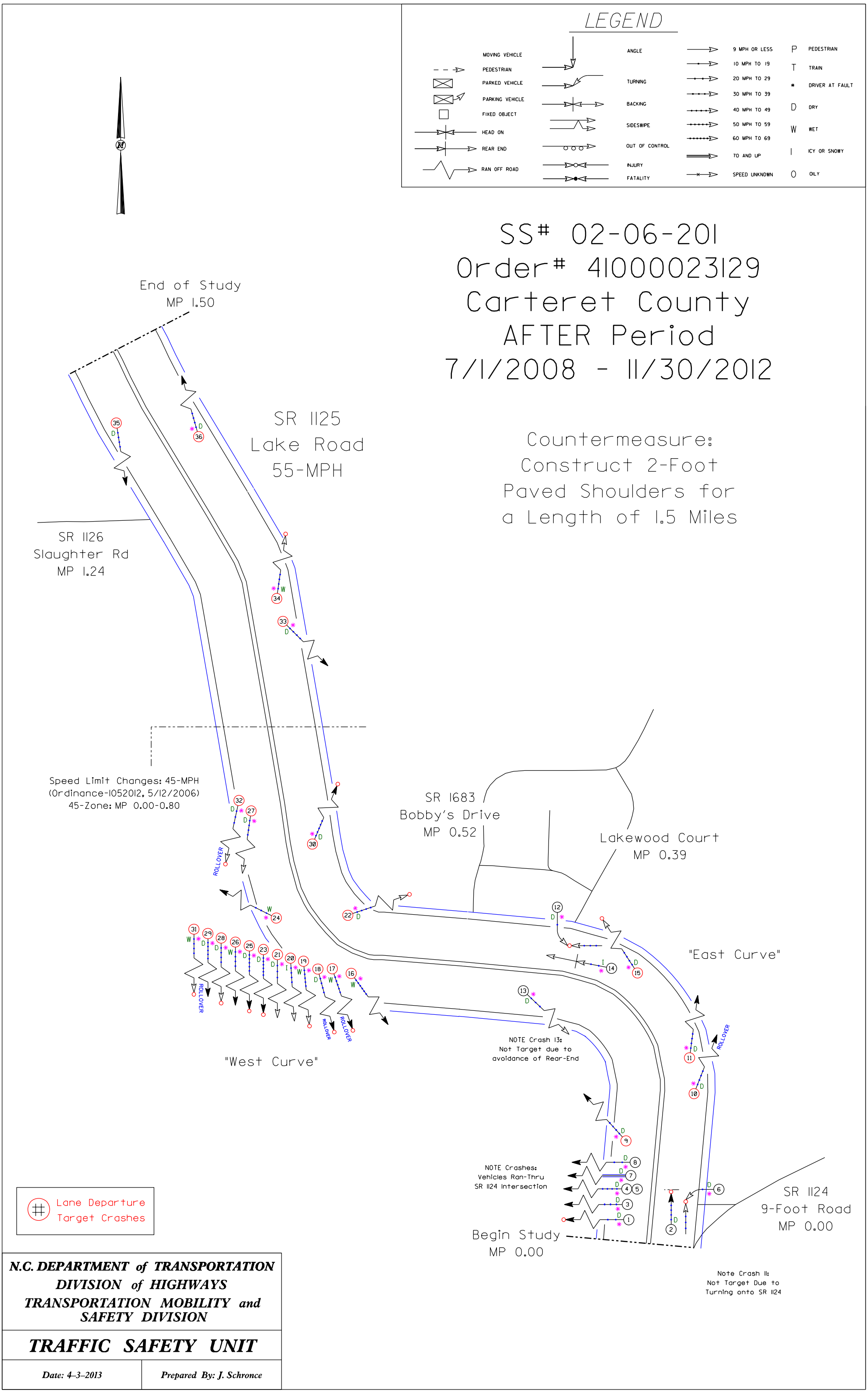
Referencing the *Collision Diagrams*, the before period presented a strong pattern of lane departure target crashes in both major curves, with 11 target crashes in the east curve and 24 target crashes in the curve to the west. After the 2-foot paved shoulders, the east curve crash pattern dropped significantly to 4 target crashes (-63.6%) and the west curve maintained a pattern of 17 target crashes (-29.2%). The after period west curve pattern mainly consist of vehicles running off the roadway while travelling south as the motorist approaches their first curve with too much speed.

Also, the collision diagram indicates a pattern of intersection run through collisions at the SR 1124 (9-Foot Road) intersection. The before period experienced three (3) run-through crashes and this pattern doubled to six (6) run-through crashes in the after period.

Overall, the crash totals have decreased along this segment however there were still three (3) target after period A-injury collisions. Additionally, from the tables above, night crashes were down 8 percent and wet roadway collisions dropped by 42 percent.

Please see the previously attached *Site Photo* provided from Google Street View. The photo is from the before period (December 2007) and does not show the 2-foot paved shoulders. 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 countermeasure.


LEGEND
MOVING VEHICLE
PEDESTRIAN
PARKED VEHICLE
PARKING VEHICLE
FIXED OBJECT
HEAD ON
REAR END
RAN OFF ROAD
ANGLE
TURNING
BACKING
SIDESWIPE
OUT OF CONTROL
INJURY
FATALITY
9 MPH OR LESS
10 MPH TO 19
20 MPH TO 29
30 MPH TO 39
40 MPH TO 49
50 MPH TO 59
60 MPH TO 69
70 AND UP
SPEED UNKNOWN
P PEDESTRIAN
T TRAIN
* DRIVER AT FAULT
D DRY
W WET
I ICY OR SNOWY
O OILY
SS# 02-06-201
Order# 4100023129
Carteret County
BEFORE Period
12/1/2003 - 4/30/2008
End of Study
MP 1.50
SR 1125
Lake Road
55-MPH
SR 1126
Slaughter Rd
MP 1.24
Speed Limit Changes: 45-MPH
(Ordinance-1052012, 5/12/2006)
45-Zone: MP 0.00-0.80
SR 1683
Bobby's Drive
MP 0.52
Lakewood Court
MP 0.39
"East Curve"
"West Curve"
ROLLOVER
Begin Study
MP 0.00
SR 1124
9-Foot Road
MP 0.00
Note Crash 11:
Not Target Due to
Turning onto SR 1124
Lane Departure
Target Crashes
N.C. DEPARTMENT of TRANSPORTATION
DIVISION of HIGHWAYS
TRANSPORTATION MOBILITY and
SAFETY DIVISION
TRAFFIC SAFETY UNIT
Date: 4-3-2013
Prepared By: J. Schronce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W WET
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O OILY
SS# 02-06-201
Order# 4100002312 9
Carteret County
AFTER Period
7/1/2008 - 11/30/2012
Countermeasure:
Construct 2-Foot
Paved Shoulders for
a Length of 1.5 Miles
End of Study
MP 1.50
SR 1125
Lake Road
55-MPH
SR 1126
Slaughter Rd
MP 1.24
Speed Limit Changes: 45-MPH
(Ordinance-1052012, 5/12/2006)
45-Zone: MP 0.00-0.80
SR 1683
Bobby's Drive
MP 0.52
Lakewood Court
MP 0.39
"East Curve"
"West Curve"
ROLLOVER
NOTE Crash 13:
Not Target due to
avoidance of Rear-End
NOTE Crashes:
Vehicles Ran-Thru
SR 1124 Intersection
Begin Study
MP 0.00
SR 1124
9-Foot Road
MP 0.00
Note Crash 11:
Not Target Due to
Turning onto SR 1124
Lane Departure
Target Crashes
N.C. DEPARTMENT of TRANSPORTATION
DIVISION of HIGHWAYS
TRANSPORTATION MOBILITY and
SAFETY DIVISION
TRAFFIC SAFETY UNIT
Date: 4-3-2013
Prepared By: J. Schronce