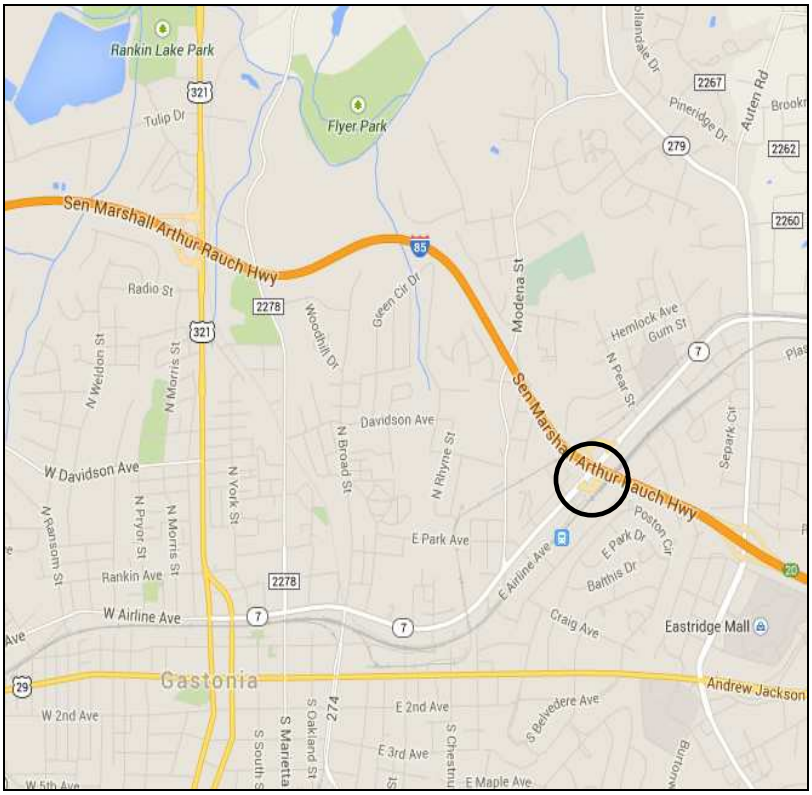
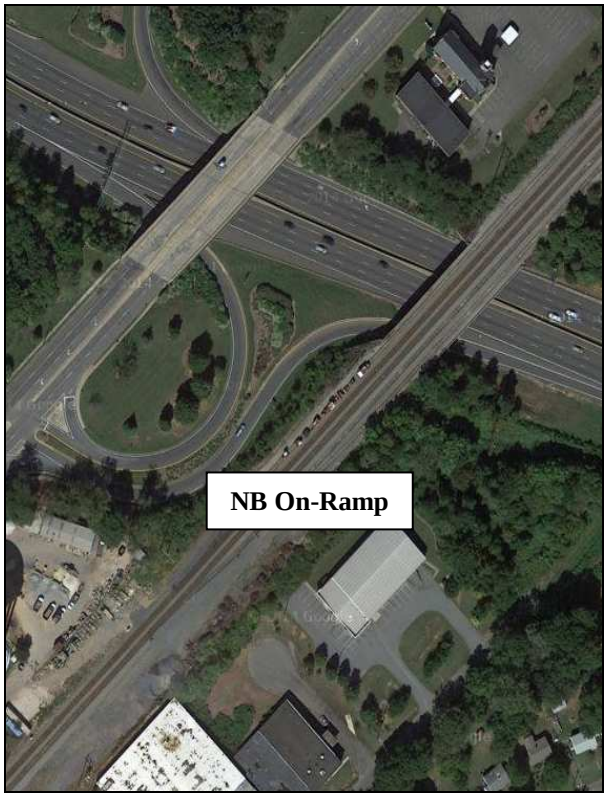
# Spot Safety Project Evaluation

## Project Information

| | |
|---|---|
| Order ID: | 41000032400 |
| Project ID: | 12-06-209 |
| Location: | I-85 Northbound On-Ramp from NC-7 (Ozark Ave) – Exit 19 |
| County: | Gaston |
| City: | Gastonia |
| Division: | 12 |
| Signal ID: | N/A |
| Countermeasure: | Skid Pavement Overlay and Guardrail around Railroad Bridge Abutments |
| Project Completion: | January 7, 2009 Project Cost: $120,000 |

## Map and Aerial (from Google Maps) – Coordinates 35.271884,-81.159804



## Naive Before and After Analysis

Before Period: January 1, 2003 through August 31, 2008 (5 years, 8 months)

Const. Period: September 1, 2008 through January 31, 2009

After Period: February 1, 2009 through September 30, 2014 (5 years, 8 months)

Analysis Criteria: Treatment data consisted of all crashes on the northbound on-ramp only – not including the ramp intersection with NC-7 (Ozark Ave) or collisions on I-85 Northbound in the vicinity of ramp connection.

Target Crashes: Lane Departure (LD) Crashes on the northbound on-ramp were the selected countermeasure: Ran-Off Road (Left, Right, Straight); Fixed Object, and Parked Vehicle. Each lane departure crash was independently verified. Additionally, Lane Departure Wet (crash report codes 2-3) and Lane Departure Winter (crash report codes 4-6) are highlighted below.

| **Treatment Information** | **Before** | **After** | **Percent Reduction (-) Percent Increase (+)** |
|---|---|---|---|
| Total Crashes | 50 | 11 | - 78.0 % |
| Total Severity Index | 4.70 | 2.35 | - 50.0 % |
| | | | |
| Lane Departure Crashes - Target | 48 | 9 | - 81.3 % |
| Lane Departure Crash Severity Index | 4.70 | 2.64 | - 43.8% |
| | | | |
| LD-Wet Crashes (Codes 2-3) | 45 | 7 | - 84.4 % |
| LD-Wet Crash Severity Index | 4.78 | 3.11 | - 34.9 % |
| | | | |
| LD-Winter Crashes (Codes 4-6) | 0 | 1 | 100.0 % |
| LD-Winter Crash Severity Index | 0.00 | 1.00 | 100.0 % |
| | | | |
| Volume (2005, 2011) | 5,700 | 6,000 | 5.3 % |

| **Injury Crash Summary** | **Before** | **After** | **Percent Reduction (-) Percent Increase (+)** |
|---|---|---|---|
| Fatal injury Crashes | 0 | 0 | N/A |
| Class A injury Crashes | 0 | 0 | N/A |
| Class B injury Crashes | 5 | 0 | - 100.0 % |
| Class C Injury Crashes | 20 | 2 | - 90.0 % |
| Property Damage Only | 25 | 9 | - 64.0 % |

| **Additional Information** | **Before** | **After** | **Percent Reduction (-) Percent Increase (+)** |
|---|---|---|---|
| Night Crashes | 10 | 4 | - 60.0 % |
| Wet Roadway Crashes (Codes 2-3) | 45 | 7 | - 84.4 % |
| Alcohol / Drug Involvement Crashes | 0 | 0 | N/A |

## Overall Summary Results

| | | |
|---|---|---|
| Total Crashes: | - 78 % | (reduction) |
| Total Crash Severity: | - 50 % | (reduction) |
| Target LD Crashes: | - 81 % | (reduction) |
| Target LD Crash Severity: | - 44 % | (reduction) |
| Volume: | 5 % | (increase) |

## Additional Summary Results

| | | |
|---|---|---|
| Lane Departure Wet Crashes: | - 84 % | (reduction) |
| Night Crashes: | - 60 % | (reduction) |

## Items for Discussion/Concerns

The skid overlay appears to have significantly reduced the frequency of lane departure wet crashes at this location.

Weather Data was also examined to compare natural rainfall/winter weather events during the analysis that affect roadway conditions. Historical weather data was obtained from the State Climate Office of North Carolina at the closest collection point (Gastonia: 313356). The date ranges match the study periods and "Total Days of Rain/Snow" must have precipitation that is greater than 0.01 inches of recorded measurement.

| Weather Information (313356) | Before 5.66 Yrs | After 5.66 Yrs | Percent Reduction (-) Percent Increase (+) |
|---|---|---|---|
| Total Days of Rain/Snow | 499 | 565 | 13.2 % |
| Avg Days of Wet Conditions per Year | 88.16 | 99.82 | 13.2 % |
| | | | |
| Precipitation Totals (inches) | 255.11 in | 236.79 in | - 7.2 % |
| Average Precipitation Total per Year (in) | 45.07 in | 41.84 in | - 7.2 % |
| Avg Precip per Day of Wet Conditions | 0.51 in | 0.42 in | - 17.6 % |

From the provided weather data, the after period experienced an increase in the number of days with wet roadway conditions furthermore indicating a benefit from the roadway countermeasure.

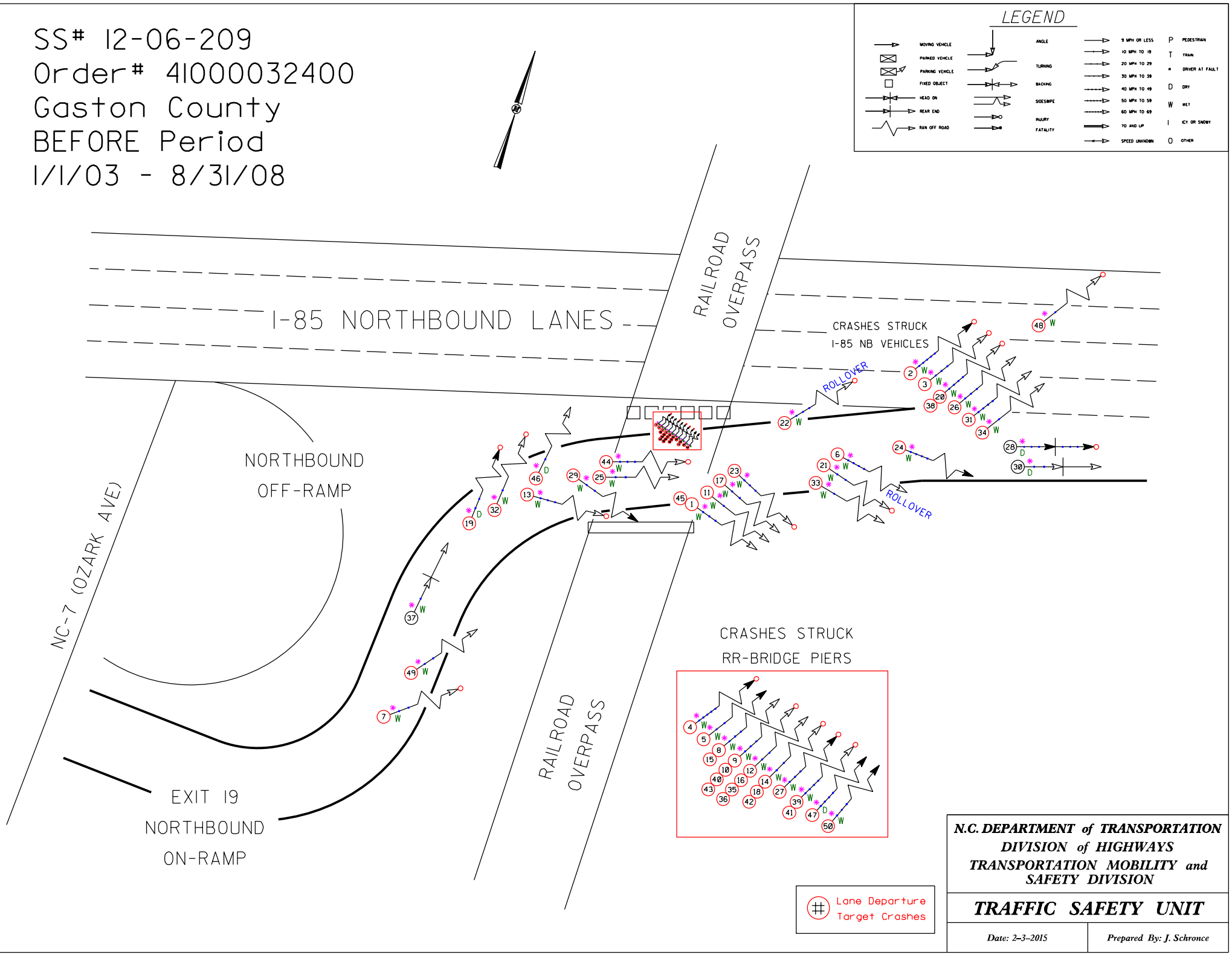
**Data Prepared For**

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: | Jason B. Schronce, PE |
| Work Group/Consultant: | NCDOT - Safety Evaluation Group |
| Date: | February 4, 2015 |

SS# 12-06-209
Order# 41000032400
Gaston County
BEFORE Period
1/1/03 - 8/31/08



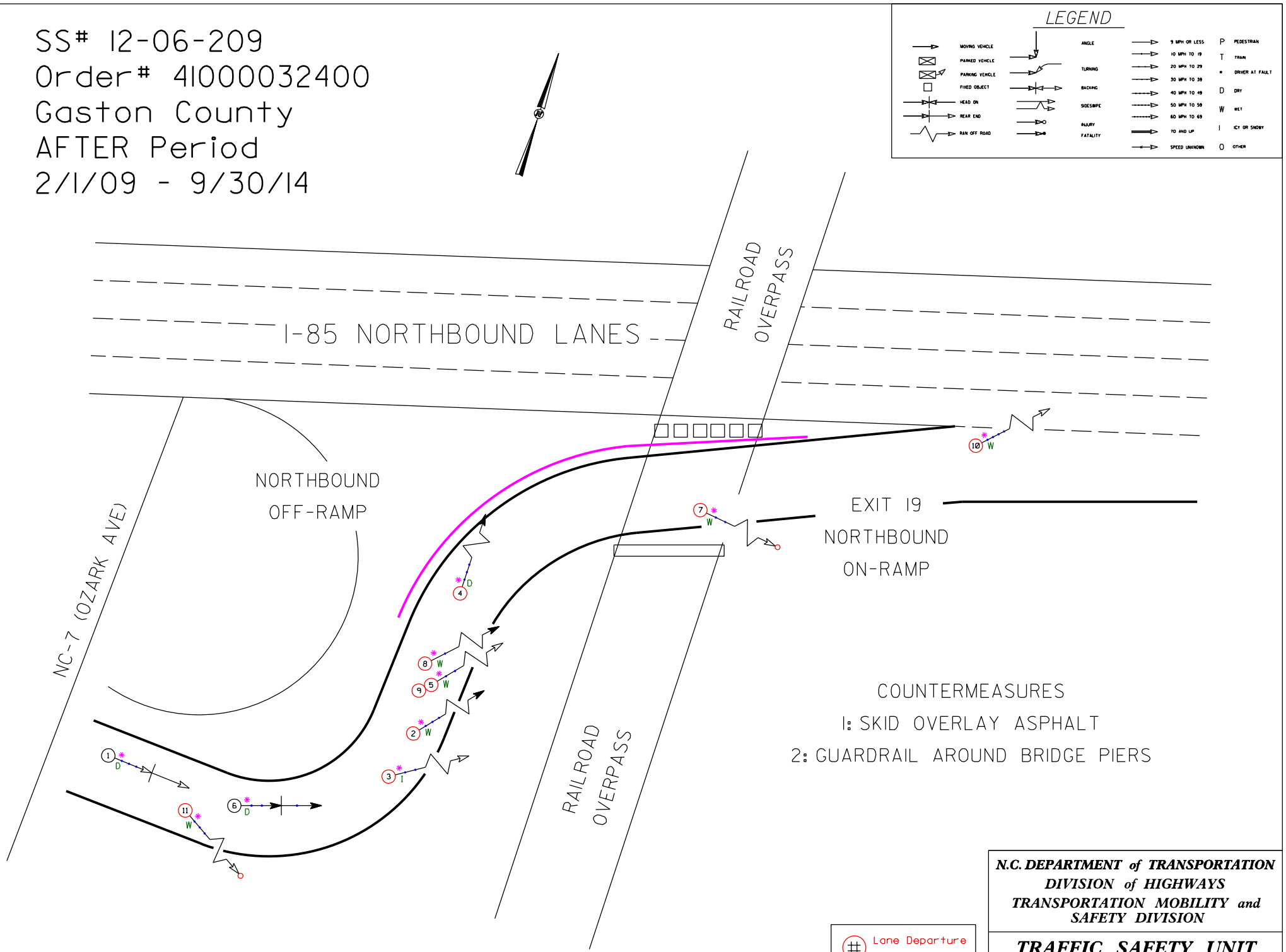

N.C. DEPARTMENT of TRANSPORTATION
DIVISION of HIGHWAYS
TRANSPORTATION MOBILITY and SAFETY DIVISION

TRAFFIC SAFETY UNIT

Date: 2-3-2015

Prepared By: J. Schronce

SS# 12-06-209
Order# 41000032400
Gaston County
AFTER Period
2/1/09 - 9/30/14




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

**TRAFFIC SAFETY UNIT**

Date: 2-3-2015

Prepared By: J. Schronce