US 278 TRUCK STUDY

Prepared for:

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INTRODUCTION AND EXISTING CONDITIONS

PROJECT DESCRIPTION

This study has been conducted to review the impacts of truck traffic on traffic operations for US 278 in the Bluffton area of Beaufort County, South Carolina and to investigate potential restrictions (if applicable) that could reduce truck impacts in order to improve operations. This study includes the following:

- Documentation of existing traffic volumes and truck traffic;
- Comparison of truck traffic for comparable roadways in South Carolina;
- Review of truck traffic on intersection service levels;
- Review of potential restrictions for truck traffic on US 278; and
- Recommendations and Conclusions

DATA COLLECTION

Truck classification data (manual and machine) was gathered along the US 278 corridor between Rose Hill Drive and the bridge to Hilton Head Island in order to determine existing truck traffic classifications/percentages for several segments of US 278 within the Bluffton area. The following segments of US 278 were selected for review based on coordination with Beaufort County staff:

1. Rose Hill Drive to Buck Island Road;
2. Simmonsville Road to SC 46;
3. Burnt Church Road to Tanger 1/Sawmill Creek Road; and
4. Malphrus Road to Moss Creek Plantation.

Manual Data

Manual data was collected at each of the locations listed above for a 12-hour period between 7:00 AM – 7:00 PM on weekdays in May and July 2006. Data was gathered for several different categories as coordinated with County staff. The categories were developed to determine if there are certain types of trucks that were more prevalent that could potentially be restricted. The benefit of collecting manual data is that error associated with "tube" data, as discussed later in this report, is not present. Data for each type of truck was separated into single-unit (SU) or tractor-trailer (TT). It should be noted that every vehicle other than a standard passenger vehicle or pick-up was included. The following categories were observed:

- Trash Trucks;
- Food & Beverage Trucks (Coca Cola, Bread, Publix, etc.);
- Gas Trucks;
- General Supply Trucks (Lowes, Furniture, Wal-Mart, etc.);

- Construction Trucks;
- Buses/RV's;
- Landscaping Trucks; and
- Other

The following **Tables 1A** through **1D** summarize the manually collected field data.

Table 1A
MANUAL TRUCK CLASSIFICATION DATA
Rose Hill to Buck Island

Time Period	Trash Trucks			Food & Bev. Trucks		Gas Trucks		Supply Trucks		Construction Trucks		Bus/RV's		Landscape Trucks	Other Trucks		Totals All Trucks	Totals Without Landscape	One-Way Volumes All Traffic	Hourly Truck % All Trucks	Hourly Truck % Without Landscape
	SU	SU	TT	SU	TT	SU	TT	SU	TT	SU	TT	SU	TT	TT	SU	TT					
7-8 AM	13	9	7	2	0	8	3	27	13	7	0			22	50	38	199	177	1203	16.54%	14.71%
8-9 AM	9	6	4	7	0	10	4	11	16	6	0			19	34	34	160	141	1445	11.07%	9.76%
9-10 AM	31	1	0	2	0	10	6	5	6	1	8			7	15	22	114	107	1417	8.05%	7.55%
10-11 AM	37	3	4	6	2	5	6	2	8	3	5			9	26	24	140	131	1417	9.88%	9.24%
11-NOON	20	7	1	1	3	8	6	10	12	3	1			12	39	18	141	129	1562	9.03%	8.26%
NOON -1 PM	20	1	2	0	4	8	4	4	1	8	3			13	28	19	115	102	1576	7.30%	6.47%
1-2 PM	22	5	2	2	0	13	5	10	7	0	4			6	24	20	120	114	1476	8.13%	7.72%
2-3 PM	30	10	8	2	0	6	4	17	9	0	3			7	34	18	148	141	1857	7.97%	7.59%
3-4 PM	10	8	5	2	1	8	5	22	10	3	6			17	19	31	147	130	2046	7.18%	6.35%
4-5 PM	10	1	2	1	1	5	3	2	1	10	3			8	27	9	83	75	2185	3.80%	3.43%
5-6 PM	2	0	0	1	0	4	0	2	1	2	0			2	8	2	24	22	2274	1.06%	0.97%
6-7 PM	3	3	6	0	0	3	2	9	11	5	1			8	15	9	75	67	1699	4.41%	3.94%
Totals	207	54	41	26	11	88	48	121	95	48	34			130	319	244	1,466	1,336	20,157		
7-8 AM	8	3	2	1	0	3	0	16	11	6	1			25	29	15	120	95	2091	5.74%	4.54%
8-9 AM	29	2	4	2	0	4	3	14	0	6	2			26	32	30	154	128	1847	8.34%	6.93%
9-10 AM	36	4	5	1	3	13	9	10	7	3	5			16	27	21	160	144	1619	9.88%	8.89%
10-11 AM	36	2	4	5	0	12	11	6	2	2	3			16	36	19	154	138	1574	9.78%	8.77%
11-NOON	16	3	5	2	2	13	6	16	1	3	4			15	32	17	135	120	1699	7.95%	7.06%
NOON -1 PM	29	5	3	1	3	13	5	5	3	5	1			21	55	24	173	152	1555	11.13%	9.77%
1-2 PM	22	0	1	0	0	5	6	13	5	3	4			7	25	17	108	101	1421	7.60%	7.11%
2-3 PM	8	2	1	1	0	7	1	24	10	4	0			15	9	18	100	85	1380	7.25%	6.16%
3-4 PM	7	0	2	0	1	5	2	19	4	1	2			10	13	11	77	67	1484	5.19%	4.51%
4-5 PM	33	12	3	3	2	8	3	14	11	4	2			20	51	24	190	170	1491	12.74%	11.40%
5-6 PM	13	2	1	1	0	4	1	7	4	2	2			8	33	8	86	78	1500	5.73%	5.20%
6-7 PM	2	0	2	0	1	2	1	5	0	1	0			4	7	2	27	23	1184	2.28%	1.94%
Totals	239	35	33	17	12	89	48	149	58	40	26			183	349	206	1,484	1,301	18,845		

12-Hour Truck % Both Directions	**7.56%**
12-Hour Truck % Without Landscape Trucks	**6.76%**

Table 1B
MANUAL TRUCK CLASSIFICATION DATA
Simmonsville to SC 46

Time Period	Trash Trucks			Food & Bev. Trucks		Gas Trucks		Supply Trucks		Construction Trucks		Bus/RV's		Landscape Trucks	Other Trucks		Totals All Trucks	Totals Without Landscape	One-Way Volumes All Traffic	Hourly Truck % All Trucks	Hourly Truck % Without Landscape
	SU	SU	TT	SU	TT	SU	TT	SU	TT	SU	TT	SU	TT	TT	SU	TT					
7-8 AM	7	1	3	1	0	5	1	6	30	6	1			6	34	14	115	109	1378	8.35%	7.91%
8-9 AM	8	4	4	0	1	16	3	14	49	2	1			7	53	30	192	185	1521	12.62%	12.16%
9-10 AM	35	2	3	0	2	14	7	17	8	5	8			16	20	24	161	145	1604	10.04%	9.04%
10-11 AM	35	11	3	6	1	7	7	17	7	8	3			9	37	30	181	172	1728	10.47%	9.95%
11-NOON	14	6	9	1	3	12	6	14	32	0	1			2	59	19	178	176	1848	9.63%	9.52%
NOON -1 PM	22	5	7	0	4	17	5	2	20	0	0			3	58	26	169	166	1801	9.38%	9.22%
1-2 PM	6	7	3	3	1	8	3	2	27	0	1			11	15	12	99	88	1918	5.16%	4.59%
2-3 PM	26	5	13	3	0	3	3	3	32	0	0			15	16	15	134	119	2030	6.60%	5.86%
3-4 PM	26	7	4	1	1	7	4	0	25	3	1			28	16	28	151	123	2091	7.22%	5.88%
4-5 PM	15	10	3	1	2	8	5	12	26	2	0			6	46	15	151	145	1923	7.85%	7.54%
5-6 PM	6	1	4	1	0	23	0	8	22	3	0			2	45	10	125	123	2140	5.84%	5.75%
6-7 PM	7	2	7	0	0	2	3	1	11	5	0			11	8	14	71	60	1707	4.16%	3.51%
Totals	207	61	63	17	15	122	47	96	289	34	16			116	407	237	1,727	1,611	21,689		
7-8 AM	16	5	6	2	0	9	0	19	24	6	0			18	84	29	218	200	2157	10.11%	9.27%
8-9 AM	12	6	8	3	1	11	4	14	36	3	0			17	92	42	249	232	1945	12.80%	11.93%
9-10 AM	37	8	4	4	2	16	8	12	9	4	6			21	34	18	183	162	1680	10.89%	9.64%
10-11 AM	25	9	2	6	1	12	14	9	8	2	0			23	35	24	170	147	1831	9.28%	8.03%
11-NOON	16	11	3	1	3	26	6	16	32	0	1			6	63	16	200	194	1733	11.54%	11.19%
NOON -1 PM	7	4	1	1	0	13	3	9	20	3	3			5	54	14	137	132	1906	7.19%	6.93%
1-2 PM	26	0	5	0	0	4	3	12	23	5	3			7	18	9	115	108	1680	6.85%	6.43%
2-3 PM	11	4	4	1	0	11	1	6	17	2	0			22	14	13	106	84	1646	6.44%	5.10%
3-4 PM	23	1	2	2	1	3	2	3	13	1	1			6	9	10	77	71	1639	4.70%	4.33%
4-5 PM	4	3	5	0	0	6	1	4	6	8	1			2	37	4	81	79	1746	4.64%	4.52%
5-6 PM	2	1	3	1	0	2	1	4	0	2	0			1	19	6	42	41	1710	2.46%	2.40%
6-7 PM	2	0	2	0	1	2	2	3	1	1	0			6	6	5	31	25	1610	1.93%	1.55%
Totals	181	52	45	21	9	115	45	111	189	37	15			134	465	190	1,609	1,475	21,283		

12-Hour Truck % Both Directions	**7.76%**
12-Hour Truck % Without Landscape Trucks	**7.18%**

Table 1C
MANUAL TRUCK CLASSIFICATION DATA
Burnt Church to Tanger 1

Time Period	Trash Trucks	Food & Bev. Trucks		Gas Trucks		Supply Trucks		Construction Trucks		Bus/RV's		Landscape Trucks	Other Trucks		Totals All Trucks	Totals Without Landscape	One-Way Volumes All Traffic	Hourly Truck % All Trucks	Hourly Truck % Without Landscape
	Westbound (Towards I 95)																		
	SU	SU	TT	SU	TT	SU	TT	SU	TT	SU	TT	TT	SU	TT					
7-8 AM	12	0	2	0	2	2	2	0	0	4	1	7	10	20	62	55	1,378	4.50%	3.99%
8-9 AM	20	2	2	1	1	3	2	6	2	13	1	8	11	17	89	81	1,521	5.85%	5.33%
9-10 AM	9	2	3	1	1	9	4	13	3	3	3	1	13	14	79	78	1,604	4.93%	4.86%
10-11 AM	12	6	2	3	0	3	3	22	2	8	3	6	17	12	99	93	1,728	5.73%	5.38%
11-NOON	21	5	8	2	0	7	7	8	4	11	2	20	34	20	149	129	1,848	8.06%	6.98%
NOON -1 PM	22	5	2	3	0	8	5	5	0	10	0	15	28	25	128	113	1,801	7.11%	6.27%
1-2 PM	16	10	0	4	0	9	2	15	2	0	2	7	18	10	95	88	1,918	4.95%	4.59%
2-3 PM	13	11	6	2	0	3	2	30	3	0	0	8	17	10	105	97	2,030	5.17%	4.78%
3-4 PM	16	6	5	2	0	6	1	33	0	3	1	6	14	8	101	95	2,091	4.83%	4.54%
4-5 PM	10	4	1	4	2	7	6	8	1	4	3	22	38	17	127	105	1,923	6.60%	5.46%
5-6 PM	6	4	5	1	0	8	0	10	5	6	2	16	17	20	100	84	2,140	4.67%	3.93%
6-7 PM	9	1	4	0	0	2	1	22	2	0	0	1	9	4	55	54	1,707	3.22%	3.16%
Totals	166	56	40	23	6	67	35	172	24	62	18	117	226	177	1,189	1,072	21,689		
	Eastbound (Towards Hilton Head)																		
7-8 AM	23	4	7	0	0	4	0	15	12	14	2	20	34	53	188	168	2,157	8.72%	7.79%
8-9 AM	26	6	3	2	0	6	5	13	15	2	3	30	50	53	214	184	1,945	11.00%	9.46%
9-10 AM	14	5	2	3	1	12	7	20	7	4	0	7	26	15	123	116	1,680	7.32%	6.90%
10-11 AM	12	4	2	3	0	8	6	13	5	2	0	9	24	10	98	89	1,831	5.35%	4.86%
11-NOON	15	1	1	3	0	10	5	14	1	8	0	15	24	15	112	97	1,733	6.46%	5.60%
NOON -1 PM	13	3	0	4	0	7	5	14	1	5	0	16	28	25	121	105	1,906	6.35%	5.51%
1-2 PM	23	4	1	2	0	3	3	18	1	2	2	7	15	8	89	82	1,680	5.30%	4.88%
2-3 PM	12	2	1	0	0	8	1	27	4	2	3	9	10	9	88	79	1,646	5.35%	4.80%
3-4 PM	7	2	2	1	1	3	2	19	0	0	3	9	9	8	66	57	1,639	4.03%	3.48%
4-5 PM	4	0	0	1	0	3	1	2	0	6	1	9	21	9	57	48	1,746	3.26%	2.75%
5-6 PM	6	1	0	0	0	1	1	2	0	2	2	5	10	6	36	31	1,710	2.11%	1.81%
6-7 PM	2	1	0	0	1	2	1	4	0	1	1	1	8	3	25	24	1,610	1.55%	1.49%
Totals	157	33	19	19	3	67	37	161	46	48	17	137	259	214	1,217	1,080	21,283		

12-Hour Truck % Both Directions	**5.60%**
12-Hour Truck % Without Landscape Trucks	**5.01%**

Table 1D
MANUAL TRUCK CLASSIFICATION DATA
Malphrus to Moss Creek

Time Period	Trash Trucks	Food & Bev. Trucks		Gas Trucks		Supply Trucks		Construction Trucks		Bus/RV's		Landscape Trucks	Other Trucks		Totals All Trucks	Totals Without Landscape	One-Way Volumes All Traffic	Hourly Truck % All Trucks	Hourly Truck % Without Landscape
	Westbound (Towards I 95)																		
	SU	SU	TT	SU	TT	SU	TT	SU	TT	SU	TT	TT	SU	TT					
7-8 AM	8	0	1	1	2	4	0	1	1	7	0	10	7	12	54	44	1324	4.08%	3.32%
8-9 AM	11	3	2	0	1	5	4	13	1	10	0	9	7	10	76	67	1375	5.53%	4.87%
9-10 AM	9	2	4	1	1	10	3	7	4	2	4	13	28	14	102	89	1293	7.89%	6.88%
10-11 AM	13	9	2	4	0	13	3	7	2	4	4	8	14	11	94	86	1536	6.12%	5.60%
11-NOON	13	10	3	2	0	16	4	13	0	7	0	10	27	8	113	103	1688	6.69%	6.10%
NOON -1 PM	8	1	2	2	0	11	8	15	1	13	0	13	23	12	109	96	1759	6.20%	5.46%
1-2 PM	8	8	2	5	0	12	4	11	2	0	1	11	34	11	109	98	1664	6.55%	5.89%
2-3 PM	11	14	8	2	0	17	8	15	4	1	0	32	21	13	146	114	1861	7.85%	6.13%
3-4 PM	12	10	5	2	0	9	0	9	4	5	1	34	30	23	144	110	2156	6.68%	5.10%
4-5 PM	8	5	1	2	0	15	1	26	0	6	0	21	27	21	133	112	1555	8.55%	7.20%
5-6 PM	5	4	5	0	0	11	1	12	1	8	0	14	17	22	100	86	1685	5.93%	5.10%
6-7 PM	3	1	4	0	0	7	2	10	7	0	0	10	19	16	79	69	1460	5.41%	4.73%
Totals	109	67	39	21	4	130	38	139	27	63	10	185	254	173	1,259	1,074	19,356		
	Eastbound (Towards Hilton Head)																		
7-8 AM	19	6	6	0	0	7	15	11	3	11	0	34	25	28	165	131	2173	7.59%	6.03%
8-9 AM	13	3	4	1	0	26	12	27	5	2	0	30	27	44	194	164	2044	9.49%	8.02%
9-10 AM	13	6	2	6	2	18	7	6	2	1	0	27	29	16	135	108	1516	8.91%	7.12%
10-11 AM	11	4	1	4	0	18	5	12	3	0	0	23	31	19	131	108	1487	8.81%	7.26%
11-NOON	6	4	1	2	0	12	5	19	0	10	0	16	24	16	115	99	1453	7.91%	6.81%
NOON -1 PM	10	3	0	4	1	11	6	18	1	8	0	10	25	12	109	99	1546	7.05%	6.40%
1-2 PM	10	4	1	0	0	17	3	12	2	3	1	7	15	13	88	81	1479	5.95%	5.48%
2-3 PM	8	4	1	0	0	3	1	12	2	3	1	20	18	10	83	63	1409	5.89%	4.47%
3-4 PM	1	0	3	2	1	6	1	9	2	3	1	20	14	12	75	55	1426	5.26%	3.86%
4-5 PM	3	2	0	1	0	7	1	7	0	10	0	12	8	10	61	49	1467	4.16%	3.34%
5-6 PM	0	1	0	0	0	1	0	6	0	2	0	9	9	7	35	26	1426	2.45%	1.82%
6-7 PM	0	2	0	0	1	0	1	1	0	2	0	4	10	6	27	23	1452	1.86%	1.58%
Totals	94	39	19	20	5	126	57	140	20	55	3	212	235	193	1,218	1,006	18,878		

12-Hour Truck % Both Directions	**6.48%**
12-Hour Truck % Without Landscape Trucks	**5.44%**

As shown in Tables 1A-1D, the 12-hour truck percentage for US 278, excluding landscaping trucks with small trailers, ranges approximately between 5.0 and 7.2 percent.

With regards to general observations from the manual data collection, truck traffic did not appear to cause noticeable problems with traffic flow. Certainly large trucks were observed to accelerate slower than standard vehicles when stopped at a traffic signal; however this did not appear to cause undue congestion. The majority of congestion witnessed and videotaped reveals that general dense passenger vehicle traffic is the cause of congestion on US 278. As a general rule large trucks were observed to be more prevalent in the outside lane of travel. As shown in the preceding tables, food and beverage trucks represent a small portion of the overall trucks. Small-scale landscaping business trucks were very prevalent in the traffic stream, but did not appear to cause undue congestion.

Machine "Tube" Data

To supplement the manual data, SRS retained the services of Traffic Data Connection (TDC) to gather electronic machine "tube-count" data along US 278 in an attempt to collect volume and vehicular classification data for three consecutive 24-hour periods. Originally data was to be collected at locations coinciding with the four manual collection locations. Due to the fact that construction, specifically paving, was occurring within the study area the machine count locations were altered to the following three locations:

1. US 278: Between Rose Hill and Buck Island Road;
2. US 278: Just west of Simmonsville Road; and
3. US 278: Just east of Fording Island Road (on causeway).

The collection of the electronic data proved to be difficult on US 278 for several reasons. US 278 carries significant traffic which can cause problems with the tubes that spread across the roadway to collect the data. During the May collection period, several tubes were damaged from the traffic, thus affecting the gathered data. The tubes were repaired as soon as possible however there were still "gaps" present in the data. The May data was reviewed and certain segments were cited for additional data collection in June.

In addition to physical problems with tubes being damaged, the heavy traffic in general on US 278 caused for inconsistent data readings on classifications during certain periods. The tubes attempt to measure the distance between axles in order to classify each vehicle. When vehicles are traveling very close together or if there is "bumper to bumper" traffic, the tubes can wrongly classify a vehicle. This phenomena is evident in that the truck percentages seem to make sense during low volume periods and then are sporadic during heavier time periods. The machine data does not have good correlation with the manually collected data, which is considered accurate.

The machines collect data for the following vehicle classifications:

- Class 1- Motorcycles
- Class 2- Passenger Cars
- Class 3- Pickups & Vans
- Class 4- Buses
- Class 5- Two-Axle, Six Tire Single Unit Trucks
- Class 6- Three-Axle, Single Unit Trucks
- Class 7- Four or More Axle Single Unit Trucks
- Class 8- Four or Less Axle Single Trailer Trucks
- Class 9- Five Axle Single Trailer Trucks
- Class 10- Six or More Axle Single Trailer Trucks
- Classes 11 thru 13 – Multi-Trailer Trucks (None Observed in Manual Data Collection)
- Class 14- Unclassified Vehicles

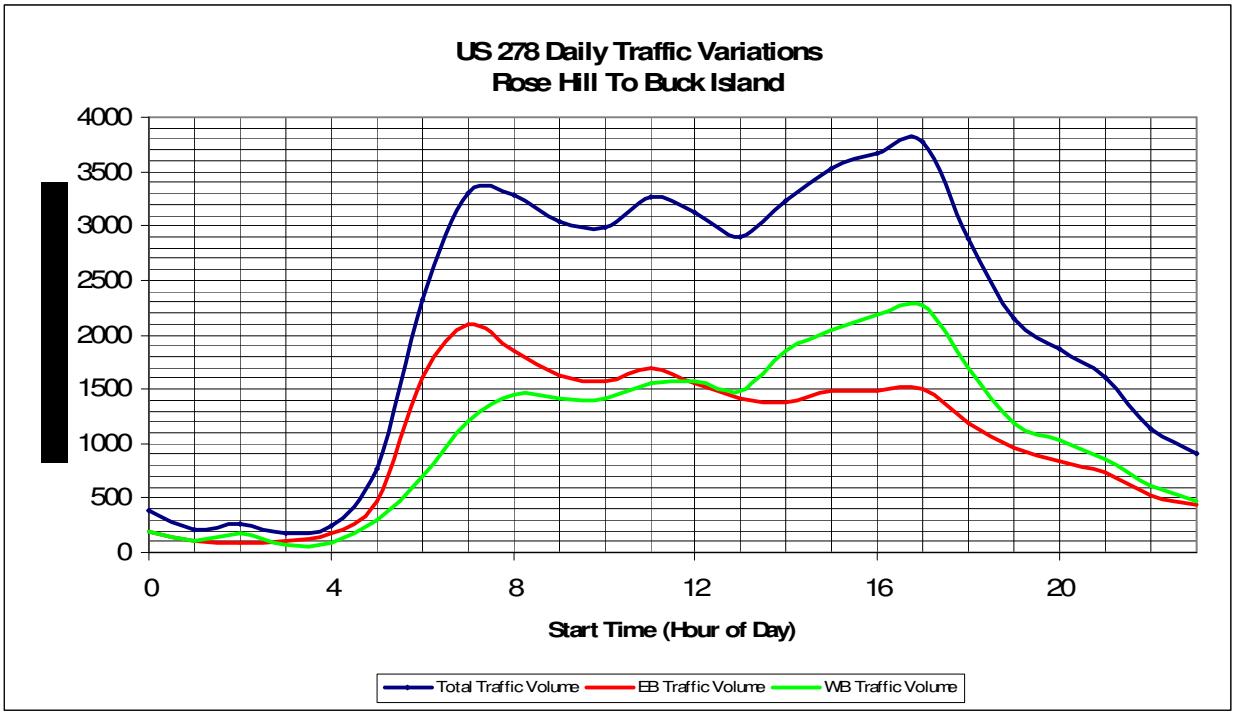
The data collected had large percentages of Class 14, or unclassified vehicles, during times of significant volume. This is likely due to the heavy traffic on US 278 as mentioned previously. The machine data is

provided in the appendix of this report, but has not been presented in the report body due to the perceived inaccuracy.

Raw Volume Data

While the classification data obtained from the tubes is questionable, the volume data from the machines is considered accurate and has been used to project daily volumes as well as hourly peaks. The following **Figures 1A – 1C** depict the raw volume data for each of the three locations of data collection along US 278. Volumes are summarized in the eastbound and westbound directions as well as total traffic.

Figure 1A
TRAFFIC VOLUME SUMMARY
Rose Hill to Buck Island Road



As shown in Figure 1A typical commuter peaks are evident in the AM and PM periods and total traffic is generally heavier during the afternoon. The total two-way volume for this segment of US 278 was measured at approximately 51,030 vehicles-per-day (vpd). The AM peak hour for this location indicates a volume of 3,294 vph (2,091 Eastbound, 1,203 Westbound). The PM peak hour indicates a volume of 3,774 vph (1,500 Eastbound, 2,274 Westbound).

Figure 1B
TRAFFIC VOLUME SUMMARY
Just West of Simmonsville Rd.

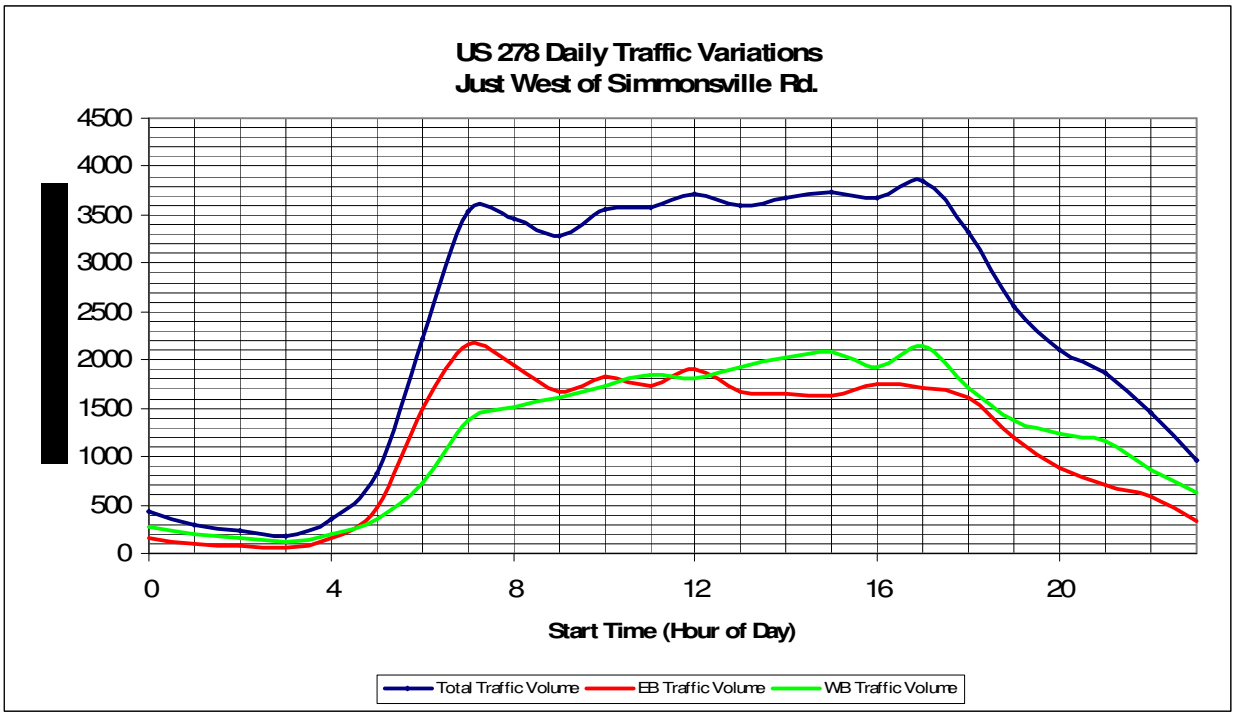


Figure 1B also shows typical commuter peaks, with less of a decline during the middle of the day. The total two-way volume for this segment of US 278 was measured at approximately 56,470 vpd. The AM peak hour for this location indicates a volume of 3,535 vph (2,157 Eastbound, 1,378 Westbound). The PM peak hour indicates a volume of 3,850 vph (1,710 Eastbound, 2,140 Westbound).

Figure 1C
TRAFFIC VOLUME SUMMARY
East of Moss Creek (Causeway)

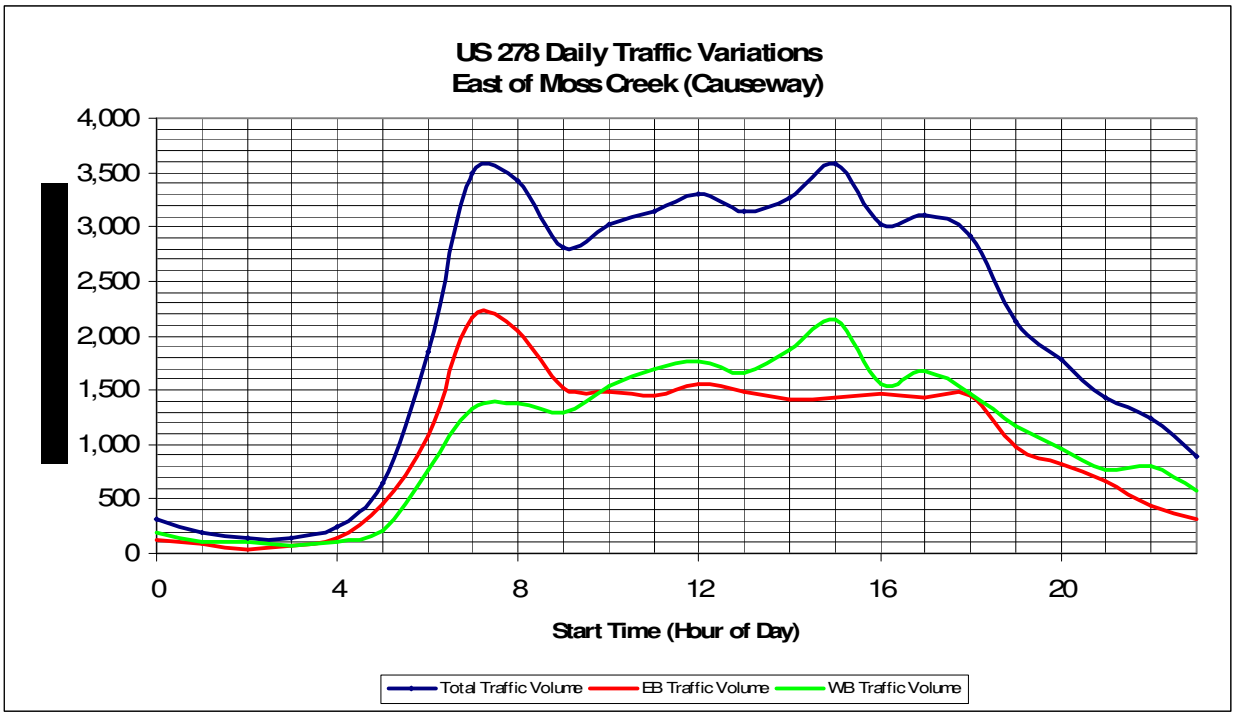


Figure 1C more shows more pronounced commuter peaks, similar to Figure 1A. The total two-way volume for this segment of US 278 was measured at approximately 49,260 vpd. The AM peak hour for this location indicates a volume of 3,497 vph (2,173 Eastbound, 1,324 Westbound). The PM peak hour indicates a volume of 3,582 vph (1,426 Eastbound, 2,156 Westbound).

Comparison of Truck Percentages with Similar Routes

Research was conducted for other major non-interstate routes in South Carolina in order to see how US 278 compares with these routes. The data in the following **Table 2** summarizes this research.

Table 2
SCDOT TRUCK DATA FOR MAJOR ROUTES

Roadways	Approximate Truck Percentage[1]
US 17: Mount Pleasant	6%
US 17: Myrtle Beach Area	6%
US 501: Myrtle Beach Area	6%
US 29: Between Greenville & Spartanburg	7%
US 1: Between Columbia & Lexington	7%
US 378: Between Columbia & Lexington	6%
US 278: Jasper County Near I 95	8%
US 278: Bluffton Area	5%

[1] Based on SCDOT Data.

As shown in Table 2, truck percentages on other major non-interstate routes in South Carolina generally ranges between 5-percent and 8-percent. It should be noted that based on conversations with the SCDOT, their method for estimating truck percentages typically includes trucks "larger than a UPS truck." This differs slightly from the methodology used in this report as during the manual counts, any vehicle larger than a standard passenger vehicle or pick-up was included. The manual data collected for this report should be higher than data collected by SCDOT. As shown in Table 2, SCDOT's approximation of truck traffic for the Bluffton area is 5%. Data collected for this report indicates a truck percentage of approximately 6%. The differences in these numbers make sense based on the different methodologies. Regardless of the methodology chosen, it does not appear that truck traffic on US 278 is significantly greater than other major non-interstate routes across South Carolina.

Impact of Truck Percentages on Capacity Analyses

When conducting intersection analyses, the default value for percentage of trucks is 2-percent. This value is often held since actual truck percentages are often unknown. In order to review the impact of using the actual truck percentage data, capacity analyses have been conducted at a subject intersection, US 278 at SC 46, utilizing the default 2-percent value and the actual 6-percent value. The results of these analyses are shown below in **Table 3**. It should be noted that the volumes in these analyses were collected in March of 2006. A US 278 pre and post widening scenario has been reviewed.

Table 3
TRUCK PERCENTAGE IMPACT ON LOS

Intersection	Time Period	EXISTING VOLUMES DEFAULT 2-PERCENT TRUCKS V/C[a]	Delay[b]	LOS[c]	EXISTING VOLUMES ACTUAL 6-PERCENT TRUCKS V/C	Delay	LOS
US 278 at SC 46 (4-Lane US 278)	AM	0.79	29.1	C	0.82	30.8	C
	PM	0.92	47.4	D	0.95	53.3	D
US 278 at SC 46 (6-Lane US 278)	AM	0.64	23.4	C	0.66	23.9	C
	PM	0.78	33.0	C	0.82	32.9	C

a. Volume-to-Capacity ratio.

b. Delay in seconds-per-vehicle.

c. LOS = Level-of-Service.

As shown in Table 3, the actual truck percentage does have a minor impact on delay and V/C ratio values at a signalized intersection; however the service level is not changed. Also shown in the table are the improvements that can be expected with the current widening project (4 to 6 lanes on US 278). It should be noted that these service levels can vary depending on time of year. The volumes utilized in the analysis were collected in early March, which should represent an average condition.

REVIEW OF POTENTIAL TRUCK RESTRICTIONS

A comprehensive review of potential truck restrictions has been conducted in order to determine what has been done in other areas regarding truck restrictions and the potential applications for US 278. It should be noted that US 278 is a US Highway, which would technically fall under the control of the Federal Highway Administration (FHWA). The roadway is actually maintained by the SCDOT. Conversations with upper level SCDOT staff indicate that any truck restrictions would fall under the prevue of the SCDOT, as FHWA tends to only get involved with interstate routes in South Carolina.

The following sections detail types of restrictions that have been used in the United States and their potential application for US 278.

Lane Restrictions

Some jurisdictions have sought to restrict truck traffic to only the outside lane of a freeway. This application is much more feasible on an interstate route where there is typically not median exits and there are usually multiple miles between access points. South Carolina has utilized this strategy in certain areas of the state as a safety measure to help keep trucks separated from passenger vehicles as much as possible. Conversations with SCDOT staff indicate that data collected before the restrictions were implemented indicated that most trucks were actually utilizing the outside lane even before the restrictions were implemented.

It would be difficult to implement lane restrictions for trucks on US 278 due to the fact that many of the trucks are delivery related and must utilize both the inside and outside lanes in order to make turning movements. Furthermore the signing and enforceability of such a restriction may not be feasible.

Route Restrictions

Trucks are often prohibited from certain routes based on geometric restrictions, residential neighborhoods or other factors. These restrictions typically do not occur on major US routes such as US 278. Furthermore there has to be a viable alternative route for truck traffic when route restrictions are implemented. Due to the fact that US 278 is the only link from the mainland to Hilton Head Island, a route restriction is not feasible or practical. Even when the Bluffton Parkway is completed as an alternative parallel roadway to US 278, it would not be feasible to implement a route restriction on US 278.

Time of Day Restrictions

The truck data collected along US 278 indicates a pattern where there are more trucks coming into the area from I 95 during the morning hours. This is preferred in that total traffic is generally higher on US 278 during the afternoon hours. This is typical to truck traffic research in other areas. This is likely due to the fact that commercial entities would rather not be slowed by congestion that is often present during the afternoon

commuter peak. Feasibility and enforcement is again a factor in a potential time-of-day restriction for US 278. However, there could be a benefit from notifying local merchants of the best times to traverse US 278 based on the data collected for this study. The "management of heavy vehicles" would presumably be on a voluntary basis and could be investigated with local merchants along US 278 and on Hilton Head Island.

RECOMMENDATIONS & CONCLUSIONS

This study has been conducted to document the amount of truck traffic and review the impacts on US 278 in the Bluffton area of Beaufort County, South Carolina and to investigate potential restrictions (if applicable) that could reduce truck impacts in order to improve operations.

Manual and machine (automatic) data was collected at several points along US 278. Manual data reveals that the percentage of trucks varies between 5 and 7 percent, which is similar to other major routes across the state of South Carolina. While the manually collected data is considered very accurate, the machine data with regards to classification data appears to be suspect. This is due to the configuration of tubes necessary to collect classification data and the often very heavy volumes along US 278, which coupled together, can produce sporadic results.

The machine data did produce what are considered accurate volume depictions for different segments of US 278. Graphical depictions of this data reveal general typical commuter AM, Midday, and PM peaks with lesser traffic in between the peaks.

A review of potential truck restrictions has revealed that the implementation of any restrictions is likely not feasible. US 278 is a major US route, and the only means of vehicular access to Hilton Head Island. If there were alternate routes to Hilton Head Island and a documented problem with excessive trucks, then restrictions might make more sense. Furthermore, effective enforcement of any lane, time-of-day, or other restrictions would likely prove difficult.

Beaufort County may want to consider a public service announcement to local merchants in the Bluffton/Hilton Head area to relay the best times to receive deliveries, which appear to be outside of the hours of 7-9 AM, 11-1 PM and 4-6 PM. Encouraging trucks to use off-peak times would not only benefit local drivers by reducing truck traffic during peaks, but would benefit the delivery trucks as well in that they would also see less congestion. This could be accomplished via a mailer that includes data and recommendations. Another potential strategy would be to host a public meeting for local merchants to relay the findings of the study and listen to comments/suggestions from the merchants. The County GIS department could likely help with any notices with regards to identifying commercial businesses along US 278 or in close proximity for potential mailings.