I-75 REST AREAS PROJECT DEVELOPMENT AND ENVIRONMENT (PD&E) STUDY

SARASOTA AND CHARLOTTE COUNTIES

DRAFT DESIGN TRAFFIC TECHNICAL MEMORANDUM

FINANCIAL PROJECT NO.: 423373-1-22-01

APRIL 2017

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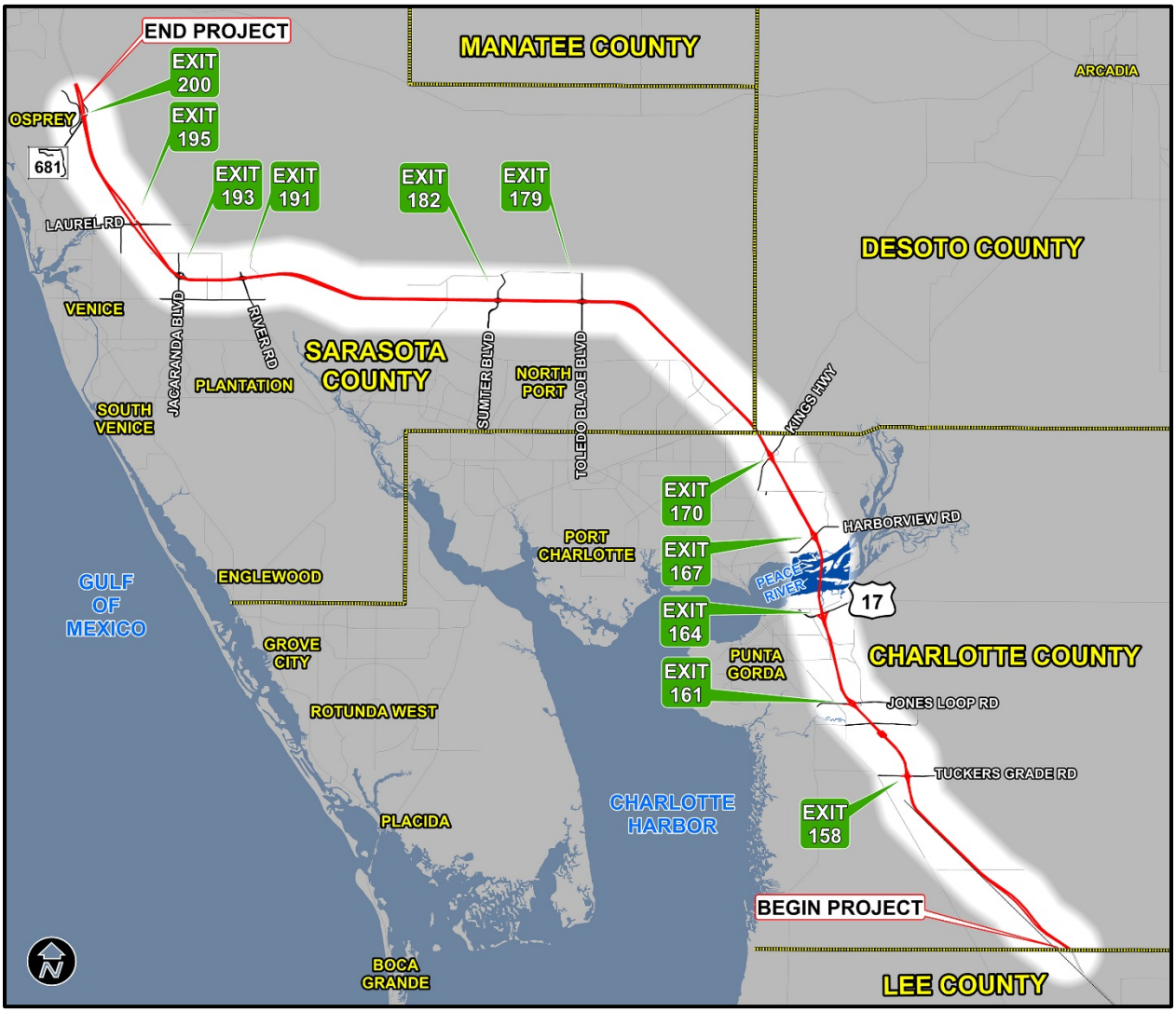
CHAPTER 1

INTRODUCTION

The Florida Department of Transportation (FDOT) is conducting a Project Development and Environment (PD&E) Study to identify sites for the placement of one northbound (NB) and one southbound (SB) rest area facility along I-75 in Charlotte and/or Sarasota County. The study limits extend from the Charlotte/Lee County line northward to the interchange of SR 681 and I-75, see **Figure 1-1**. The total study corridor length is approximately 51 miles (22 miles in Charlotte County and 29 miles in Sarasota County). Note that there is a very small segment (approximately 0.214 miles) of I-75 located in DeSoto County between Charlotte County and Sarasota County which is included in the Sarasota County portion of this study. During the course of the PD&E Study, the No Build option will remain a viable alternative until the final selection is made.

FIGURE 1-1 PROJECT LOCATION MAP



1.1 PURPOSE AND NEED

The purpose of FDOT rest areas on the interstate system are to provide safe rest stops for the motoring public. The rest areas provide comfort and convenience with restrooms, parking, and vending machines adjacent to the interstate. They enhance safety by providing a refuge for motorists to stop, reducing driver fatigue. Also, rest areas can provide a site for FDOT and Florida Highway Patrol (FHP) emergency operations during disasters, such as hurricanes.

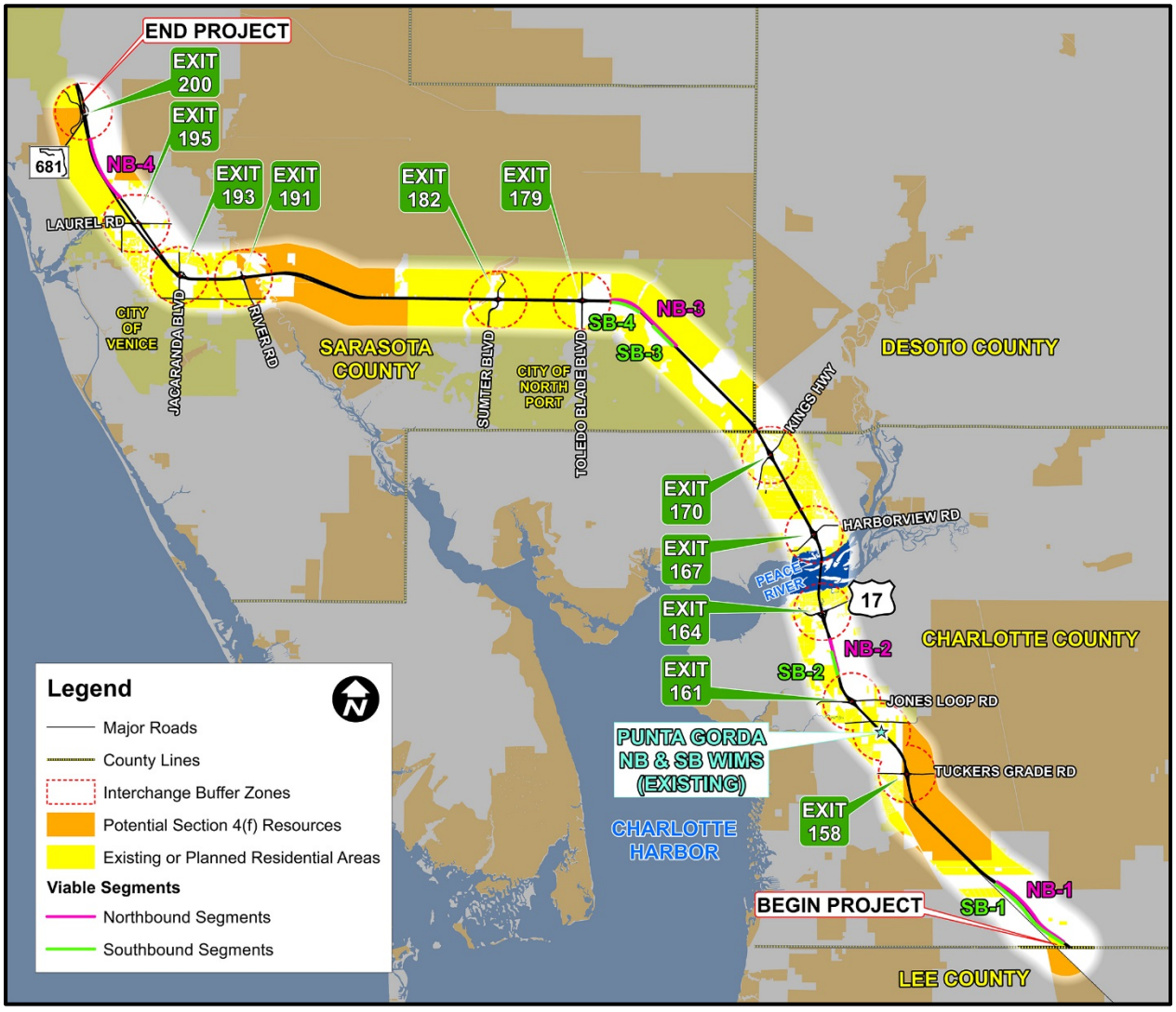
The purpose of this study is to identify the optimal locations of two new rest areas (northbound and southbound) that will replace the recently closed rest area. In April of 2015, the FDOT closed the Jones Loop Road Rest Area at exit 161 in Charlotte County. This facility was an "off-system" rest area that serviced vehicles in both directions of I-75. The closure of this facility increased the distance between existing rest area facilities. The next closest rest area is the Lee County Rest Area, located at exit 131 on Daniels Parkway. However, this site is planned for closure as it is also an "off-system" site. With the planned closure of the Lee County Rest Area, the nearest adjacent rest areas on I-75 are the Hillsborough County Rest Area, located at mile marker 238, and the Collier County Rest Area, located at mile marker 63. The distance between these two rest area facilities is approximately 175 miles. The American Association of State Highway and Transportation Officials (AASHTO) guidelines recommend rest areas should be spaced approximately a one-hour drive between appropriate stopping opportunities. At interstate speeds, this equates to approximately 70 miles. It is important to note that one set of rest areas will not meet the recommended rest area spacing of 70 miles between the stopping opportunities. One of the considerations for the placement of the new rest area facilities will be that they are as equidistant to the existing rest area sites as possible.

1.2 PROJECT DESCRIPTION

To identify the best potential location for the new rest areas along I-75, a three phase evaluation process was conducted. During the first phase, data was collected from a variety of sources to develop a preliminary base map of the corridor's existing conditions within the study limits between the Charlotte/Lee County line and SR 681 in Sarasota County. During the second phase, an initial corridor screening was conducted to locate segments within the corridor with potential for a new rest area site. The third and final phase included a viability screening of the initially identified segments to determine which locations provided the most potential for the new rest area site.

After the first and second phases were conducted, ten viable segments were identified including potential sites at the existing Punta Gorda WIM stations (northbound and southbound). These locations are depicted in **Figure 1-2**. Each of the ten viable segments were then analyzed and evaluated for potential impacts to the 100-year floodplain, wetlands, and listed species habitat in accordance with the site selection criteria for avoidance and minimization of impacts to these environmental features. After the conclusion of the screening, four segments were recommended for further study. These four segments were NB WIMS, NB-2, SB WIMS, and SB-2. The other segments were recommended to be eliminated from further consideration due to their comparatively higher impacts to the natural environment, including wetlands and available natural habitat. A more detailed explanation of site selection can be found in the Site Selection Report in **Appendix A**. It should also be noted that a 'No Build' alternative is still under consideration if mainline I-75 volumes increase drastically due to the urbanization of the corridor.

FIGURE 1-2 VIABLE SITE LOCATION MAP



1.3 STUDY OBJECTIVE

The objective of this memorandum is to develop project traffic volumes for use in testing and analyzing the impact that newly constructed rest areas will have on the I-75 corridor in the vicinity of the selected sites. This technical memorandum includes the development of existing and future traffic forecasts, and operational analysis along the study corridor during the service life of the rest area.

1.3.1 Methodology

The methodology utilized for this analysis is consistent with the FDOT's 'Project Traffic Forecasting Handbook'. The methodology includes:

- The collection and analysis of available traffic count data from the FDOT 'Florida Transportation Information CD (2014)' (**Appendix B**) for the subarea, a detailed review of historical trend analysis at count stations (where available), relevant traffic factor collection and identification, and other relevant data.
- The estimation of travel characteristics and factors along the I-75 corridor. These factors include the Design Hour Factor (K), Directional Factor (D), and the 24-Hour Truck Factor (T_{24}).
- The development of opening and future year traffic volumes based on a combination of a validated regional travel demand model, historical travel trend data, and socio-economic trend data.

Operational analysis was conducted for the preferred alternative rest area sites consisting of ramp merge/diverge and ramp capacity analysis according to the standards defined by the Highway Capacity Manual 2010 (HCM 2010). I-75 mainline capacity was also evaluated using HCM 2010 methodologies.

1.3.2 Project Location and Limits

I-75 is a major north-south interstate that provides connectivity from Miami to the Florida State Line in Hamilton County where it serves as a major connector to the rest of the nation. The study area for this project, after the site selection process was completed, extends roughly 8 miles between Tuckers Grade and US 17 in Charlotte County.

CHAPTER 2

EXISTING CONDITIONS

2.1 EXISTING ROADWAY NETWORK AND TRAFFIC CHARACTERISTICS

FDOT classifies I-75 as a *Rural Principal Arterial – Interstate* from south of Tuckers Grade to Airport Road and as an *Urban Principal Arterial – Interstate* from Airport Road to north of US-17 within the project study subarea. South of the Tuckers Grade interchange, I-75 operates as a 4 lane divided interstate. From the Tuckers Grade interchange to the Jones Loop Road interchange, I-75 operates as a 6 lane divided interstate with two general purpose lanes and one auxiliary lane in each direction. From the Jones Loop Road interchange to the US-17 interchange, I-75 again operates as a 4 lane divided interstate system. From the US-17 interchange north over the Peace River Bridge I-75 operates as a 6 lane divided interstate with two general purpose lanes and one auxiliary lane in each direction. Throughout the subarea, I-75 operates at a posted speed of 70 MPH. Major interchanges within the study area include Tuckers Grade, Jones Loop Road, and US-17.

2.1.1 Traffic Count Data

Count data was collected along ramps at each of the interstate interchanges and along the I-75 mainline from the FDOT 'Florida Transportation Information CD (2014)' (2014 FTI). The data collected included:

- Historical AADT Count Data (including K, D, and T factors)
- Peak Season Factor Category Reports
- Count Station Synopsis Reports

2.1.2 Traffic Factors

This section discusses the traffic characteristics recommended for the development of design traffic for future year conditions. These design factors included Design Hour Factor (K), Directional Distribution Factor (D), Daily Truck Factor (T_{24}), and Peak Hour Factors (PHF). Existing traffic was obtained via count stations along the I-75 study corridor from the 2014 FTI CD. A summary of the raw, unbalanced count data and traffic factors associated with each station can be found in **Table 2-1**.

TABLE 2-1 COLLECTED TRAFFIC CHARACTERISTICS

I-75 Mainline and Ramp Count Stations					
Description (I-75 Mainline)	**FTI ID**	**2014 AADT**	**K**	**D**	**T_{24}**
SR-93/I-75 @ AIRPORT RD OP, PUNTA GORDA	010350	50,624	9.0	52.0	11.9
SR-93/I-75, SOUTHEAST OF NORTH JONES LOOP RD	010034	44,500	9.0	55.3	12.9
Description (Ramps)	**FTI ID**	**2014 AADT**	**K**	**D**	**T_{24}**
NB, ON-RAMP FROM CR762/TUCKERS GRADE X158	017003	3,300	9.0	1.00	11.9
NB, OFF-RAMP TO CR768/N JONES LOOP X161	017011	2,200	9.0	1.00	19.2
NB, ON-RAMP FROM CR768/N JONES LOOP X161	017013	5,600	9.0	1.00	20.4
NB, OFF-RAMP TO SR35/US17 X164	017021	3,700	9.0	1.00	11.9
SB, ON-RAMP FROM SR35/US17 X164	017022	3,500	9.0	1.00	11.9
SB, OFF-RAMP TO CR768/N JONES LOOP X161	017014	5,500	9.0	1.00	15.4
SB, ON-RAMP FROM CR 768/N JONES LOOP X161	017012	2,400	9.0	1.00	17.5
SB, OFF-RAMP TO CR762/TUCKERS GRADE X158	017004	3,000	9.0	1.00	11.9

For the project, the K factor of 9% is based on the 'Transitioning to Urbanized Area' designation for which FDOT recommends a standard K factor of 9.0 percent for freeways, arterials, and highways.

The measured D factors along I-75 within the subarea were 52.0 percent (between Jones Loop Rd and US-17) and 55.3 percent (between Tuckers Grade Rd and Jones Loop Rd). Both of these values are reasonable according to the Project Traffic Forecasting Handbook's recommendations on D factor ranges. Per the recommended ranges, the median D factor for both Rural and Urban Freeways lies around 55.0 percent which is also in line with the collected 55.3 percent. A D factor of 55.0 is recommended for use within the subarea.

After reviewing T_{24} values throughout the subarea, a value of 13.0 percent is recommended along the I-75 mainline. Among the ramps, T_{24} values vary significantly ranging from 11.9 to 20.4 percent. It is recommended to maintain the observed T_{24} values as using a single factor may not accurately represent traffic patterns within the subarea. T_{24} values were rounded up to the nearest whole number for analysis purposes.

Based on the collected count data, the corridor-wide AM peak hour is 7:30-8:30 and the PM peak hour is 4:30 to 5:30.

Based on the review of the historical count stations and collected data, a set of traffic factors has been identified to represent current travel patterns along the I-75 subarea. While changes to the surrounding area may cause variations in travel behaviors over time, these factors should remain reasonable based on observations and data analysis. The recommended traffic design characteristics can be found in **Table 2-2**.

TABLE 2-2 RECOMMENDED TRAFFIC FACTORS

I-75 Mainline and Ramp Recommended Traffic Factors			
Description (I-75 Mainline)	**K**	**D**	**T_{24}**
I-75 Mainline	9.0	55.0	13.0
Description (Ramps)	**K**	**D**	**T_{24}**
`NB, ON-RAMP FROM CR762/TUCKERS GRADE X158	9.0	1.00	12.0
NB, OFF-RAMP TO CR768/N JONES LOOP X161	9.0	1.00	20.0
NB, ON-RAMP FROM CR768/N JONES LOOP X161	9.0	1.00	21.0
NB, OFF-RAMP TO SR35/US17 X164	9.0	1.00	12.0
SB, ON-RAMP FROM SR35/US17 X164	9.0	1.00	12.0
SB, OFF-RAMP TO CR768/N JONES LOOP X161	9.0	1.00	16.0
SB, ON-RAMP FROM CR 768/N JONES LOOP X161	9.0	1.00	18.0
SB, OFF-RAMP TO CR762/TUCKERS GRADE X158	9.0	1.00	12.0

2.2 DEVELOPMENT OF EXISTING TRAFFIC

Based upon the traffic data described previously, existing daily and peak hour volumes were developed. The latest available (2012) hourly count data for the I-75 ramps at Jones Loop Road displayed some inconsistencies which resulted in the use of volumes extrapolated from 2009 volumes, which were the next most recent available hourly count volumes for these ramps. The extrapolation was performed using expected population growth rates obtained from the Bureau of Economic and Business Research (BEBR). **Figure 2-1** shows the balanced existing year (2014) Annual Average Daily Traffic (AADT) volumes along the

I-75 mainline and ramps. **Figure 2-2** shows the AM and PM balanced peak hour volumes along the corridor which were developed based on a review of all available count data. Peak hour volumes were balanced from south to north along I-75. The peak hour mainline volumes south of the Jones Loop Road interchange were developed using an average of three 24-hour counts conducted durint typical weekday conditions. These three counts were obtained from FDOT's 2014 synopsis reports (see **Appendix E**).

FIGURE 2-1 2014 ANNUAL AVERAGE DAILY TRAFFIC

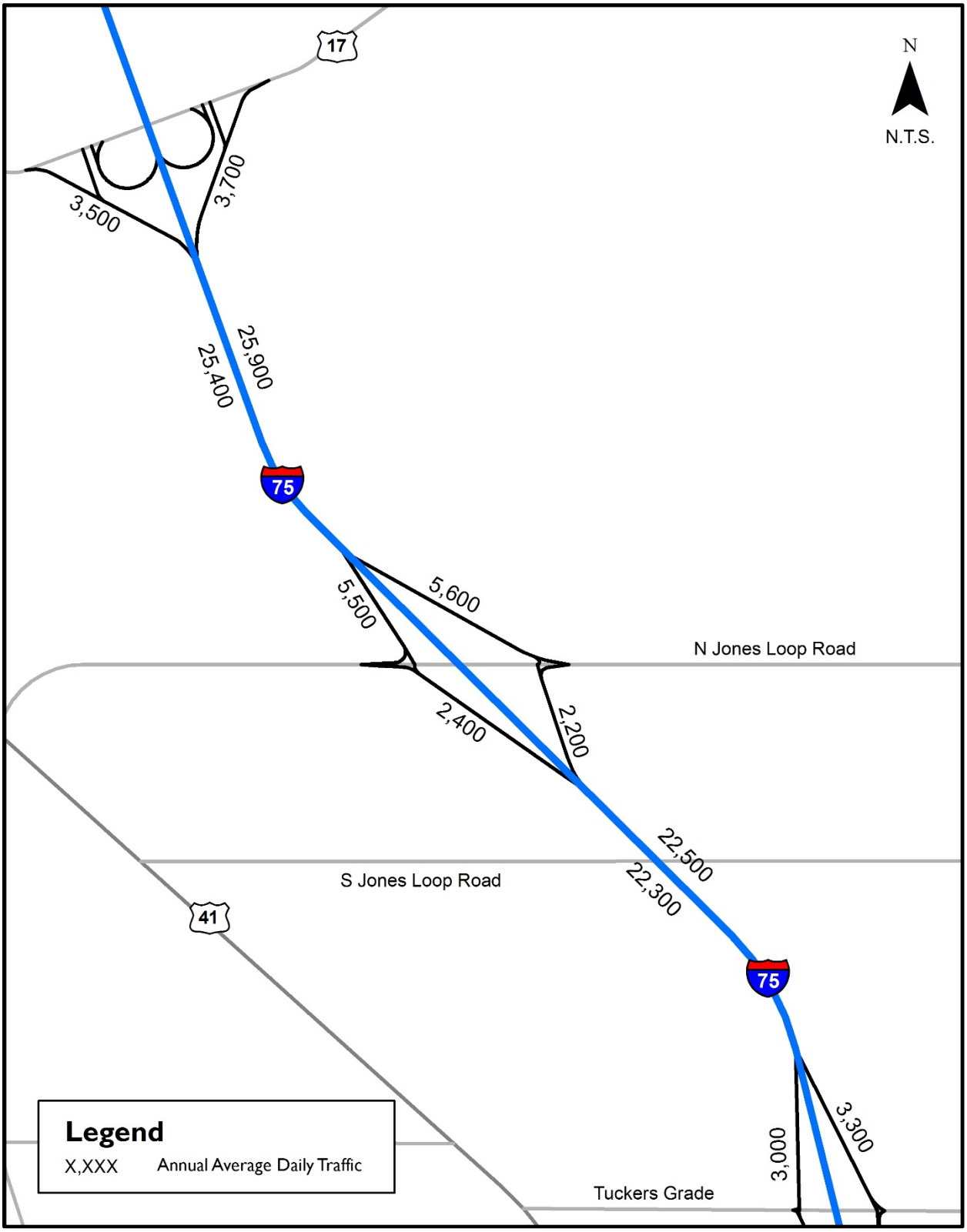
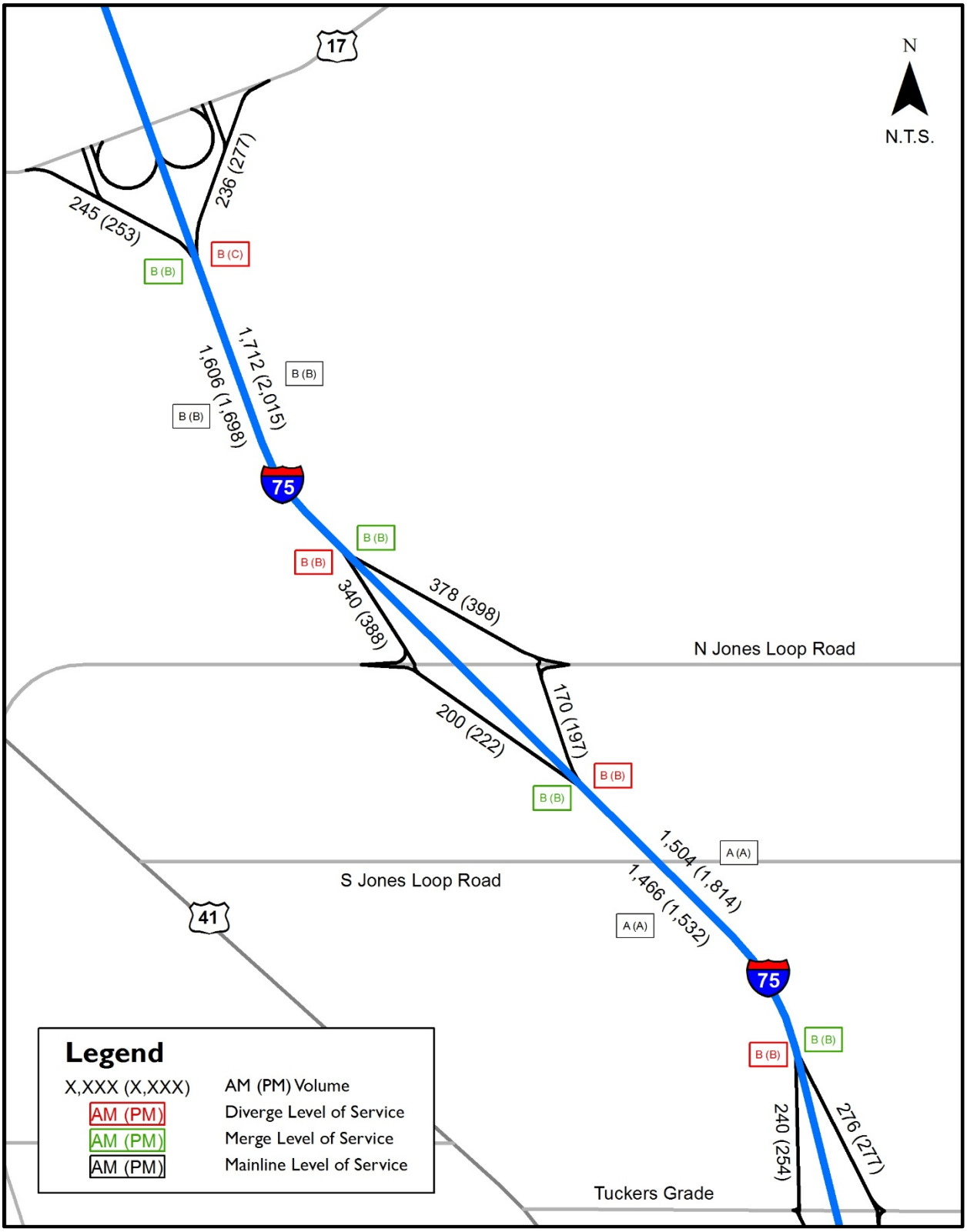


FIGURE 2-2 2014 PEAK HOUR VOLUMES AND LOS



2.3 EXISTING TRAFFIC OPERATIONS

Highway Capacity Software 2010 (HCS) was utilized to analyze ramp merge/diverge locations and mainline level of service (LOS) along the I-75 subarea corridor. FDOT LOS standards for State Highway Systems during peak travel hours are "D" in urbanized areas and "C" in rural/transitioning areas. The results of this analysis can be found in **Table 2-3** and detailed HCS Reports summarizing this analysis can be found in **Appendix C**.

TABLE 2-3 EXISTING (2014) OPERATIONAL ANALYSIS

I-75 Mainline and Ramp Existing (2014) Operational Analysis				
Description	**Northbound**		**Southbound**	
I-75 Mainline – Mainline Capacity Analysis	**AM**	**PM**	**AM**	**PM**
I-75 Mainline (From N Jones Loop Rd to US-17)	B	B	B	B
I-75 Mainline (From Tuckers Grade to N Jones Loop Rd)	A	A	A	A
Description	**Directional**			
Ramps – Merge/Diverge Analysis	**AM**		**PM**	
NB, ON-RAMP FROM CR762/TUCKERS GRADE X158	B		B	
NB, OFF-RAMP TO CR768/N JONES LOOP X161	B		B	
NB, ON-RAMP FROM CR768/N JONES LOOP X161	B		B	
NB, OFF-RAMP TO SR35/US17 X164	B		C	
SB, ON-RAMP FROM SR35/US17 X164	B		B	
SB, OFF-RAMP TO CR768/N JONES LOOP X161	B		B	
SB, ON-RAMP FROM CR 768/N JONES LOOP X161	B		B	
SB, OFF-RAMP TO CR762/TUCKERS GRADE X158	B		B	

Existing (2014) operational analyses show that both interstate mainline segments and all merge/diverge locations operate at or above the FDOT standard.

2.4 CRASH ANALYSIS

Crash data for the project subarea was collected using *Signal Four Analytics* software. The extents of the subarea were selected geographically and the results for years 2010-2014 are displayed below in **Table 2-4** and **Table 2-5**. As explained in **Section 2.1**, I-75 is classified as a *Rural Principal Arterial – Interstate* south Airport Road and as an *Urban Principal Arterial – Interstate* north of Airport Road. The crash data was divided into two segments: 1) north of Jones Loop and 2) south of Jones Loop. **Figure 2-3** displays the crash data graphically for the study area.

2.4.1 I-75 North of Jones Loop Road

Crash rate calculations can be found in **Appendix F**. The crash rate along mainline I-75 within the study area was 0.577 per million vehicle miles traveled, less than the statewide average of 0.791 per million vehicle miles among *Interstate Urban* facilities but greater than the statewide average of 0.389 per million vehicle miles among *Interstate Rural* facilities.

2.4.2 I-75 South of Jones Loop Road

The crash rate along mainline I-75 within the study area was 0.468 per million vehicle miles traveled, greater than the statewide average of 0.389 per million vehicle miles among *Interstate Rural* facilities.

TABLE 2-4 CRASHES, BY TYPE

Between US 17 and Jones Loop Rd		
Crash Type	**Number of Occurrences**	**Percentage**
Rear End	48	26.5%
Off Road	42	23.2%
Rollover	26	14.4%
Sideswipe	20	11.0%
Pedestrian	2	1.1%
Left Turn	1	0.6%
Angle	1	0.6%
Animal	1	0.6%
Other	33	18.2%
Unknown	7	3.9%
Total	**181**	**100.0%**
Between Jones Loop Rd and Tuckers Grade		
Crash Type	**Number of Occurrences**	**Percentage**
Rear End	28	22.4%
Off Road	34	27.2%
Rollover	17	13.6%
Sideswipe	10	8.0%
Animal	2	1.6%
Pedestrian	1	0.8%
Other	32	25.6%
Unknown	1	0.8%
Total	**125**	**100.0%**

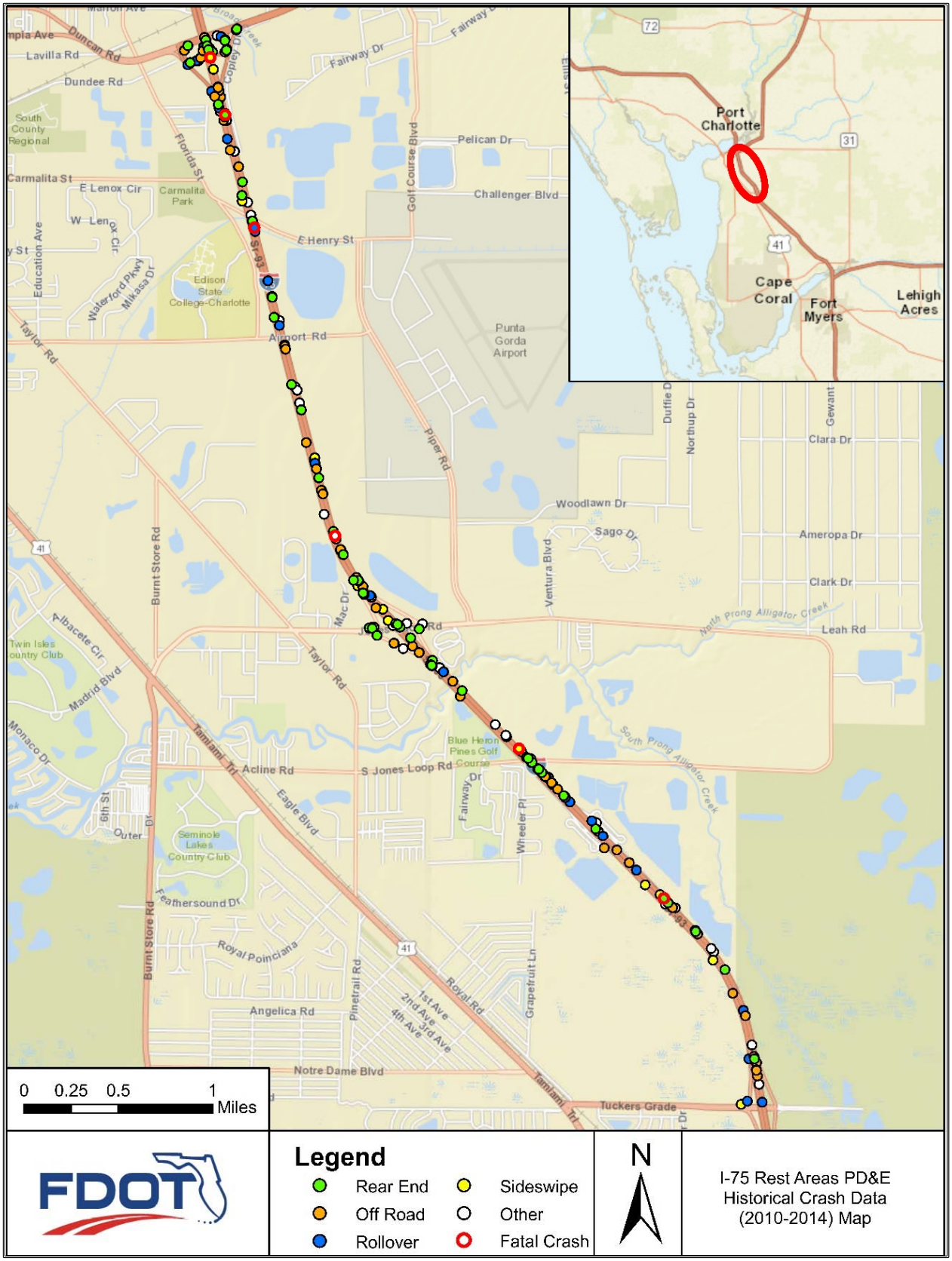
TABLE 2-5 CRASHES, BY YEAR

Between US 17 and Jones Loop Rd			
Year	**Total Crashes**	**Fatal Crashes**	**Injury Crashes**
2010	22	1	18
2011	32	2	19
2012	40	1	27
2013	36	0	12
2014	51	0	17
Between Jones Loop Rd and Tuckers Grade			
Year	**Total Crashes**	**Fatal Crashes**	**Injury Crashes**
2010	19	1	14
2011	25	0	27
2012	40	1	28
2013	25	0	7
2014	16	0	9

2.4.3 Fatal Crashes

As displayed in table 2-5, a total of six fatal crash incidents occurred in the study area between 2010 and 2014. These crashes varied widely in cause and geographic location within the project area. Of the fatal crashes, two were rear end collisions, two sideswipe, one rollover and one pedestrian related. The location of the fatal crashes can be found in **Figure 2-3**.

FIGURE 2-3 CRASH DATA MAP



CHAPTER 3

TRAFFIC FORECASTS

3.1 ANALYSIS YEARS

As previously stated, this study will analyze two horizon years including a 2025 opening year and a 2045 design year. All future year analyses assume that the study area includes six lanes on I-75 throughout the study area in accordance with the Department's plans to widen this portion of I-75 to six lanes throughout this study area (from Tuckers Grade to north of US 17).

3.2 TRAVEL DEMAND FORECASTING

The development of future year traffic projections for the I-75 subarea corridor requires the examination of past growth, an understanding of proposed development within the project subarea, an understanding of the District 1 Regional Planning Model (D1RPM) adopted FSUTMS modeling structure, and roadway characteristics of the corridor. In developing acceptable growth rates and appropriate volume forecasts, various data sources were examined. The following sections summarize the data evaluated and the resulting recommended growth rates for this study. More details on the forecasting procedures are included in the Traffic Forecasting Report (**Appendix D**) which was previously approved by the District.

3.2.1 Trend Analysis

Historical trend analysis was conducted at four count stations along the I-75 mainline. Growth rates were calculated using a least square linear regression method.

The count stations include:

- I-75 Mainline
  - Count Station: 010034 – South of N Jones Loop Rd.
  - Count Station: 010036 – South of Harborview Rd.
  - Count Station: 010037 – South of Kings Highway
  - Count Station: 010350 – South of US 17 (at Airport Rd)

Based upon the trend analysis found in **Table 3-1**, annual growth rates along I-75 range from 1.00 percent to 1.61 percent with an average of 1.24 percent. These growth rates were obtained by calculating a trend line equation based upon the existing historical data and only where count stations contained a history of ten or more years.

TABLE 3-1 2014 FTI COUNT STATION HISTORICAL ANALYSIS

Count Station Details			Trend Line Characteristics			Annual
ID	Description	Records	Slope	Intercept	R^2	Growth Rate
010034	South of N Jones Loop Rd.	16	502.2	(966,395)	0.24	1.32%
010036	South of Harborview Rd.	16	746.3	(1,446,342)	0.39	1.61%
010037	South of Kings Highway	16	446.3	(849,829)	0.28	1.04%
010350	South of US17 (at Airport Rd)	15	438.1	(832,360)	0.29	1.00%
Subarea Average						1.24%

3.2.2 FSUTMS Model

The most current version of the District 1 Regional Planning Model (D1RPM) Florida Standard Urban Transportation Model Structure (FSUTMS) was used to obtain future traffic forecasts for the I-75 subarea corridor. The updated model strucuture has a base validation year of 2010 and a horizon year of 2040. The base year model was reviewed to confirm its accuracy and reasonableness. Model growth rates were

calculated by comparing horizon year model values to base year volumes. Annual growth rates along the I-75 subarea corridor range from 2.09 percent to 2.89 percent with an average of 2.44 percent. A summary of these findings can be found in **Table 3-2**.

TABLE 3-2 D1RPM TRAFFIC GROWTH RATES

I-75 Segments	2010 Model Data			2040 Model Data			Annual Growth Rate
	NB	SB	Bi-Dir	NB	SB	Bi-Dir	
Bayshore Rd. To Tuckers Grade	18,481	18,503	36,984	31,910	31,753	63,663	2.40%
Tuckers Grade to Jones Loop Rd.	18,945	19,113	38,058	34,946	36,140	71,086	2.89%
Jones Loop Rd. to US 17	21,601	22,124	43,725	36,692	38,301	74,993	2.38%
US 17 to Harborview Rd.	26,051	26,791	52,842	41,843	44,147	85,990	2.09%
Subarea Average							2.44%

3.2.3 Population Estimates

An additional check for reasonableness of travel forecasting is the population projection data provided by the FDOT and Bureau of Economic and Business Research (BEBR) located at the University of Florida. Due to the nature and length of our study corridor, population forecasts were analyzed for Sarasota, Charlotte and Lee Counties. This analysis makes use of the most recent data which was released in January 2016.

TABLE 3-3 BEBR POPULATION FORECASTS

County	Low			Medium			High		
	2015	2045	AGR	2015	2045	AGR	2015	2045	AGR
Sarasota	392,090	397,200	0.04%	392,090	489,300	0.83%	392,090	584,700	1.64%
Charlotte	167,141	167,900	0.02%	167,141	216,000	0.97%	167,141	265,900	1.97%
Lee	665,845	862,300	0.98%	665,845	1,114,500	2.25%	665,845	1,366,300	3.51%
Average			**0.35%**			**1.35%**			**2.37%**

While **Table 3-3** shows Low, Medium and High population projections, Low and High are simply for comparative purposes. For this analysis, the Medium population projection was used to provide a conservative base line for comparison of growth rates. Based on the results, the Medium population estimates from 2015 to 2045 show annual growth rates for Sarasota, Charlotte, and Lee Counties of 0.83 percent, 0.97 percent, and 2.25 percent, respectively, with an average of 1.35 percent.

3.2.4 Conclusions and Growth Rate Recommendation

After a review of multiple data sources including the D1RPM, Historical Trend Data, and BEBR population forecasts, a range of growth rates have been calculated using different data sets. Four different forecasting options (two options are based on the D1RPM) were identified for this analysis:

1. Average Historic Trend Line Growth Rate
2. Three County Average BEBR Medium Forecast Growth Rate
3. Average Travel Demand Model Growth Rate
4. 2014 FTI Count to 2040 Travel Demand Model Volume Growth Rate

As the only continuous count location in the subarea, the count station between Jones Loop Road and US 17 (FTI Count Station 010350) has been used to illustrate these four methods, along with an average of the four (Option 5). The results of this comparison can be found in **Table 3-4**.

TABLE 3-4 SUBAREA GROWTH RATE COMPARISONS (LOCATION: FTI COUNT STATION 010350)

Option	Growth Rate Applications 2014 AADT: 50,624	AADT Calculations AGR	 2045
1	Average Historic Trend Line Growth Rate	1.24%	70,100
2	Three County Average BEBR Medium Forecast Growth Rate	1.35%	71,800
3	Average Travel Demand Model Growth Rate	2.44%	88,900
4	2014 FTI Count to 2040 Travel Demand Model Volume Growth Rate	1.34%	71,600
5	Average of Options 1-4	1.59%	75,600

The annual growth rates obtained from the various sources presented above range from 1.24% to 2.44% (with an average of 1.59%) as shown in **Table 3-4**. As a conservative approach, with special consideration given to the D1RPM model forecast, a project growth rate of 2.0% is recommended for traffic forecasting conducted as part of this PD&E Study. A growth rate of 2.0% produces a design year AADT volume of approximately 83,000 vehicles per day on I-75 between Jones Loop Road and US 17.

The recommended growth rate will be applied to existing traffic volumes to develop future design year 2045 demand volumes for use in the evaluation of potential rest area sites along I-75.

3.3 DEVELOPMENT OF FUTURE TRAFFIC

The growth rates were applied to the I-75 mainline and ramps to obtain opening year 2025 and design year 2045 mainline and ramp AADTs. **Table 3-5** shows the opening year and design year AADTs. 2025 AADT forecasts are shown in **Figure 3-1** and 2045 AADT forecasts are shown in **Figure 3-2**.

Future 'No Build' and 'Build' condition future peak hour traffic has been developed by utilizing the aforemention and recommended design factors. Peak direction is northbound in the AM and southbound in the PM; AADT is converted to DDHV by utilizing the recommended K of 9.0 percent and D of 55.0 percent. The future peak hour volumes are provided and analyzed in Section 4. Additional documentation for the development of design hour volumes is included in **Appendix E**.

TABLE 3-5 FUTURE YEAR 2025 AND 2045 AADTS

Facility	Location to Interchange	2025 AADT	2045 AADT
I-75 Mainline	From Tuckers Grade to N Jones Loop Rd	54,700	72,600
	From N Jones Loop Rd to US 17	62,600	83,100
NB Ramps	Tuckers Grade On-Ramp	3,900	5,100
	N Jones Loop Off-Ramp	2,800	3,750
	N Jones Loop On-Ramp	6,750	9,000
	US-17 Off-Ramp	4,400	5,850
SB Ramps	US 17 On-Ramp	4,400	5,850
	N Jones Loop Off-Ramp	6,750	9,000
	N Jones Loop On-Ramp	2,800	3,750
	Tuckers Grade Off-Ramp	3,900	5,100

FIGURE 3-1 2025 ANNUAL AVERAGE DAILY TRAFFIC

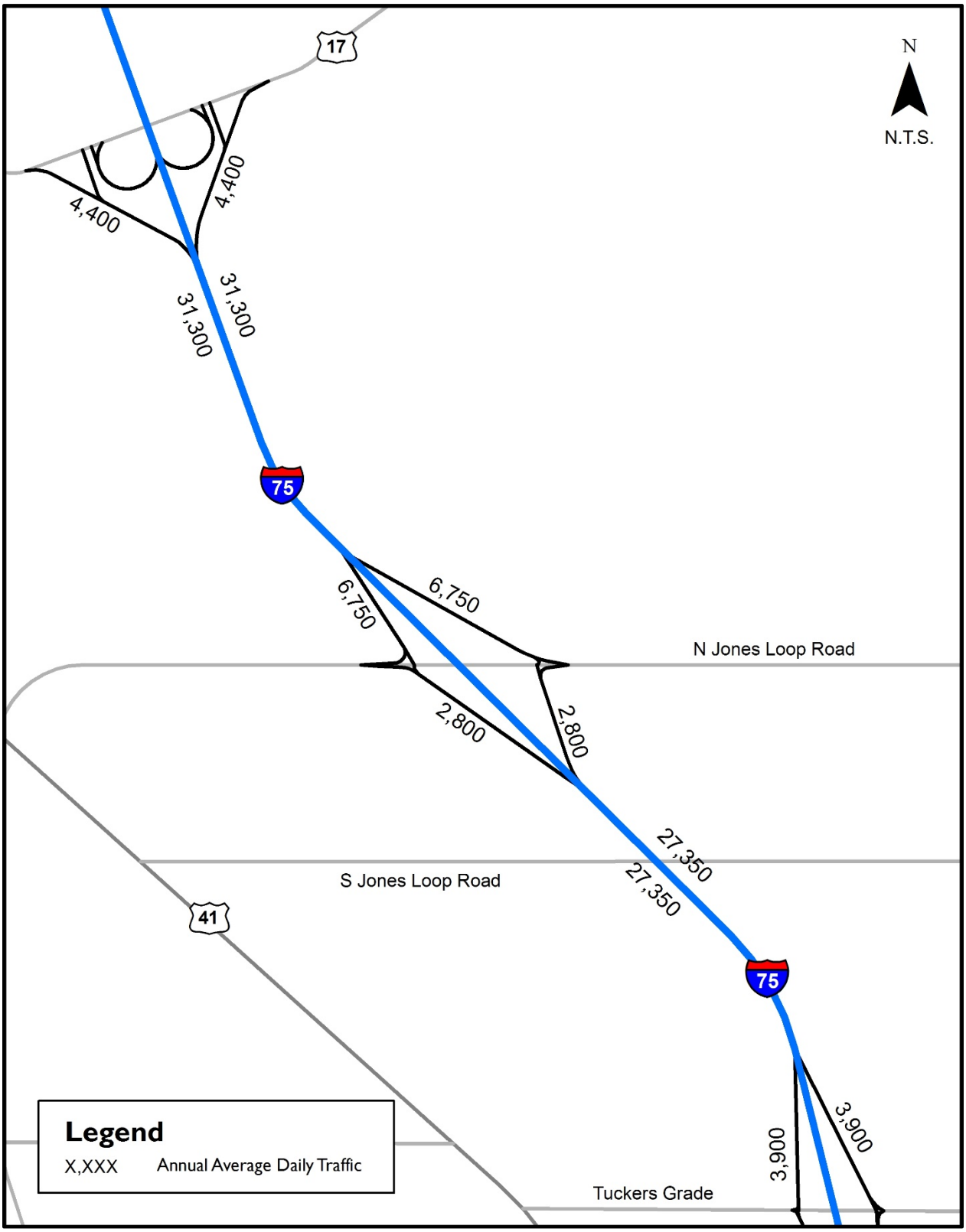
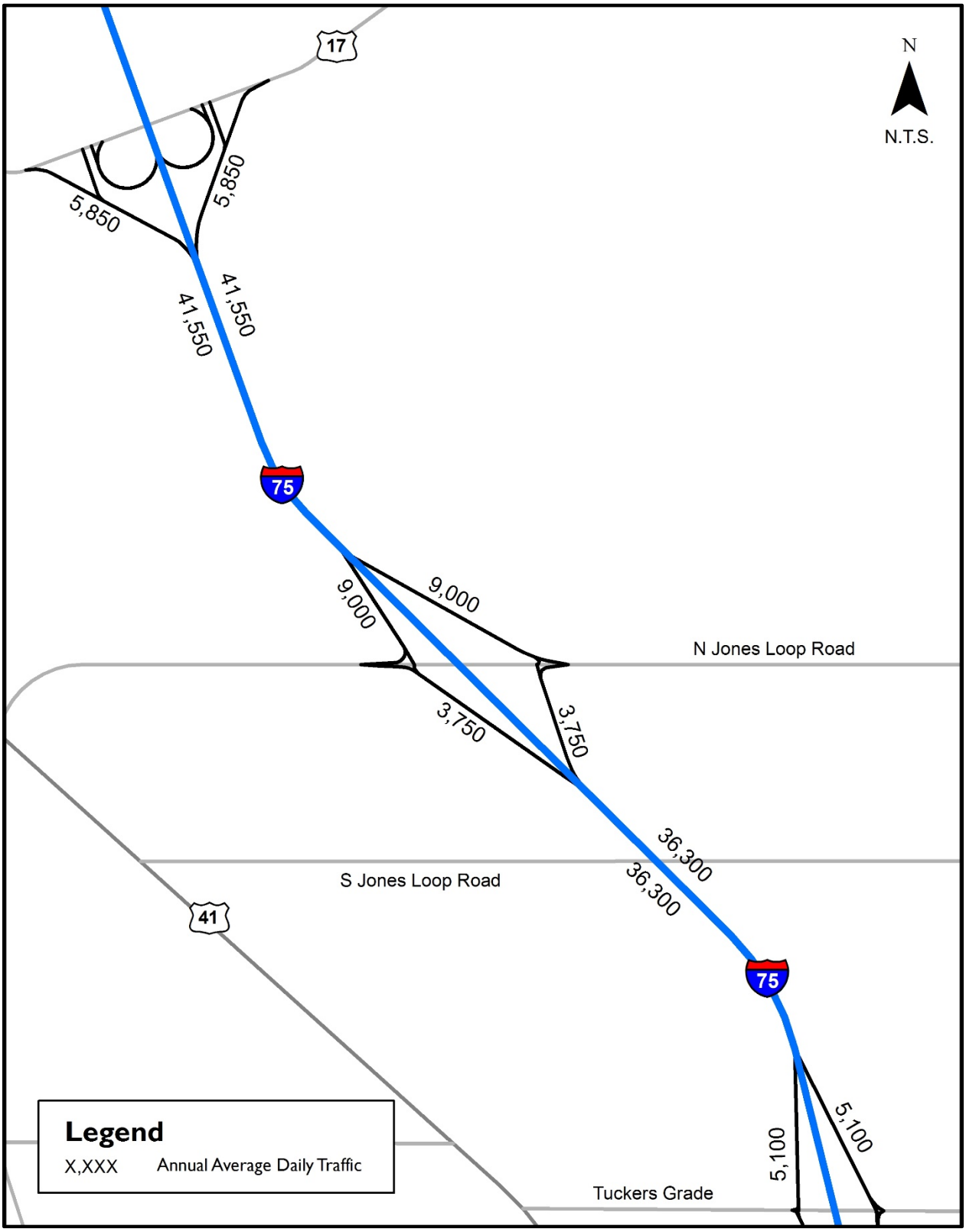


FIGURE 3-2 2045 ANNUAL AVERAGE DAILY TRAFFIC



CHAPTER 4

FUTURE YEAR CONDITIONS

4.1 FUTURE AADT AND DESIGN HOUR VOLUMES

The preferred alternative rest area sites were determined after the 10-day comment period following the public meeting. Based on feedback from the public and stakeholders, two preferred alternatives were identified: NB-2B and SB-2. The preferred alternative sites are within the previously identified viable segments. The WIMS alternatives were eliminated because they were the most costly due to constraints required by the Motor Carriers Size and Weight (MCSAW). Alternative NB-2 was eliminated from consideration because Alternative NB-2B was less expensive and had fewer impacts to floodplains.

The rest area design hour ramp volumes were developed using the FDOT Rest Area Facilities Computation Form. The preferred northbound and southbound rest area sites were identified as NB-2B and SB-2. The Rest Area Facilities Computation Forms for the preferred rest area sites can be found in **Appendix E**. The following sections include the operational analysis for the preferred alternative rest area sites only.

The aforementioned K and D design factors were utilized and applied to both the 2025 opening year and the 2045 design year AADT volumes to develop peak hour volumes. The calculated and balanced AM and PM peak hour volumes are presented in **Figure 4-1** and **Figure 4-2**, respectively.

FIGURE 4-1 2025 PEAK HOUR TRAFFIC

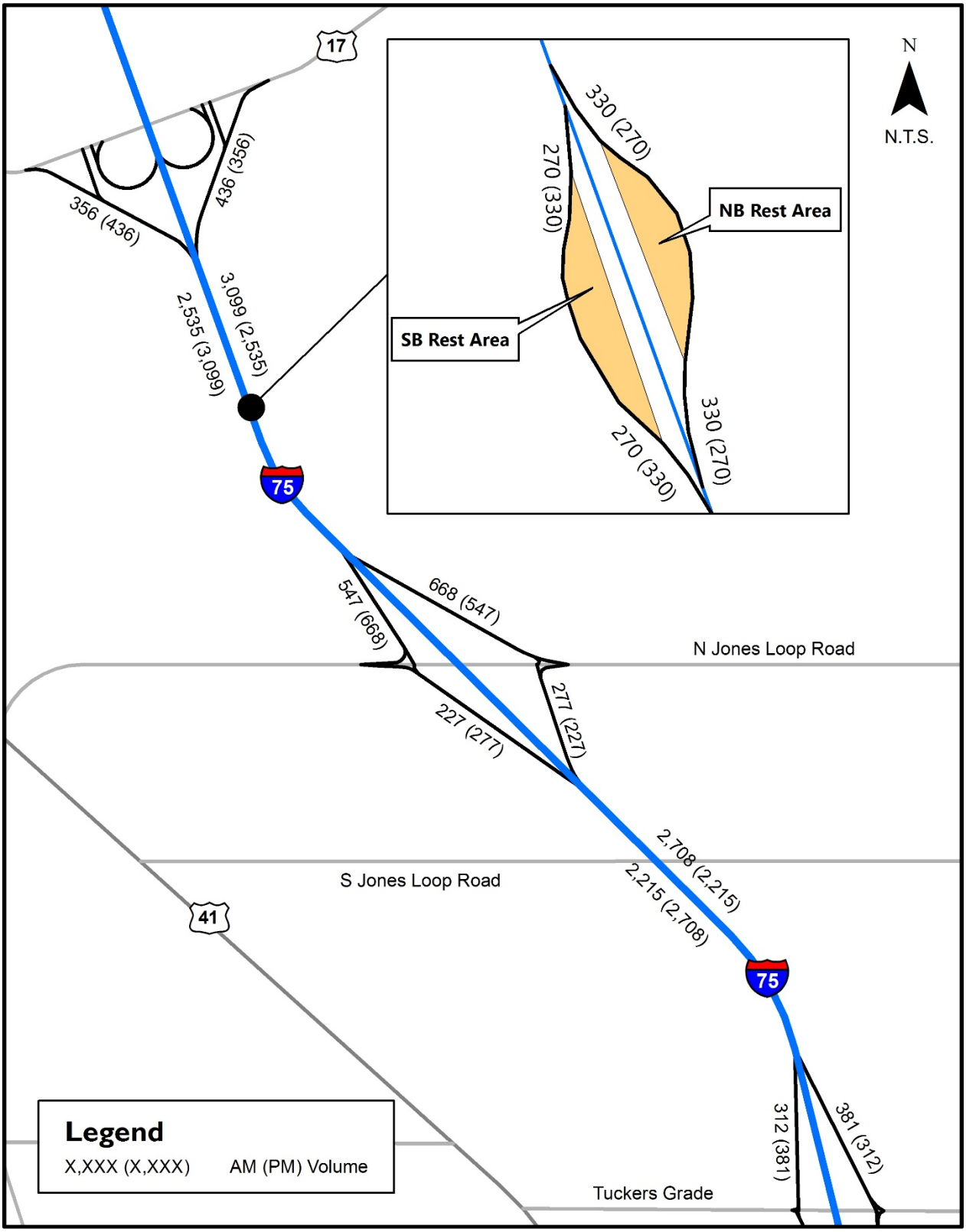
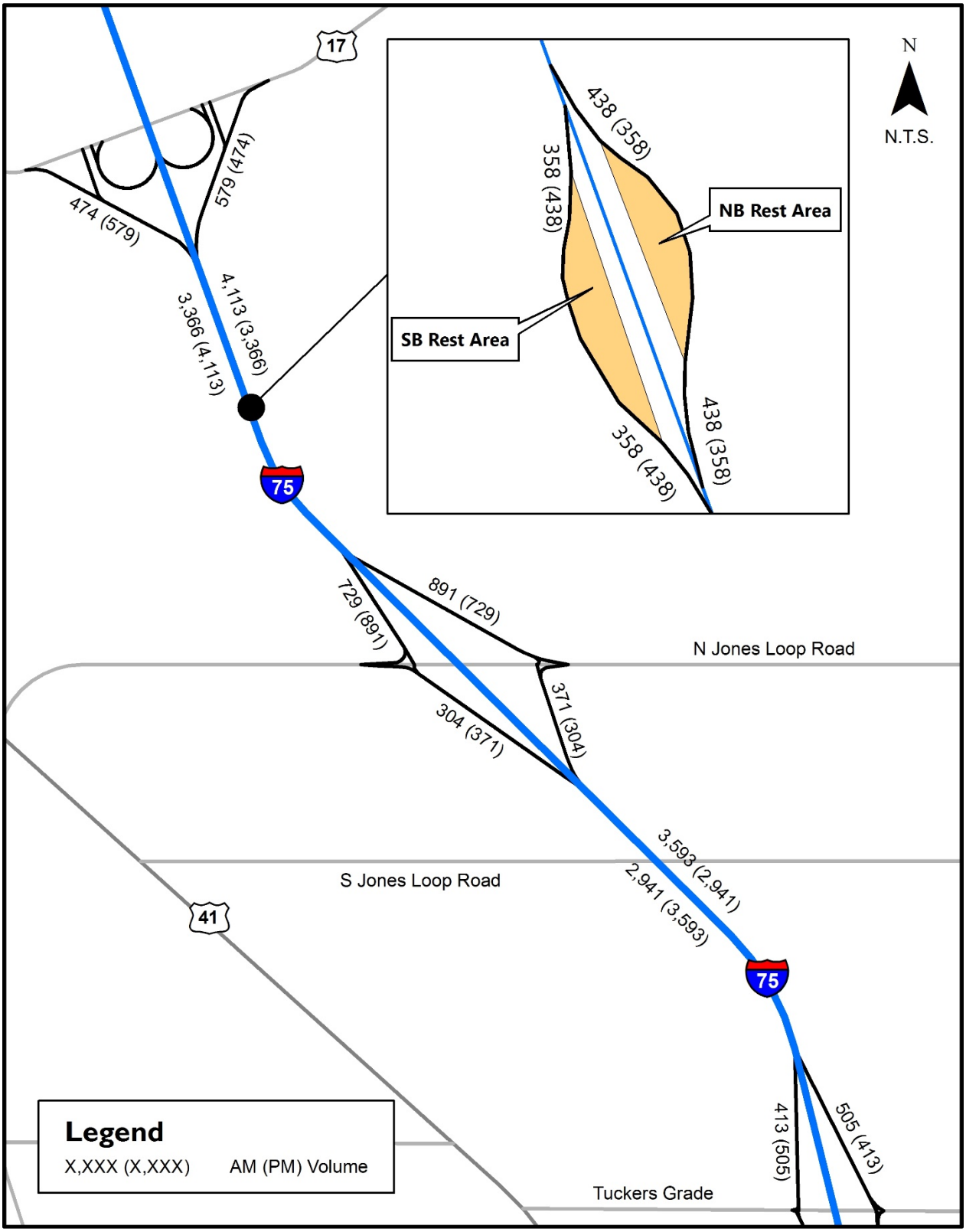


FIGURE 4-2 2045 PEAK HOUR TRAFFIC



4.2 FUTURE YEAR (2045) TRAFFIC OPERATIONS

As part of this study, future year analysis was conducted at the proposed rest area ramps as well as along mainline I-75 and nearby interchange ramps to assess their effectiveness in meeting the future travel demand on the study corridor.

4.2.1 Design Year (2045) Mainline Operational Analysis

The I-75 mainline segment analysis was performed using HCS 2010 for the Build condition which includes three general use lanes in each direction from Tuckers Grade to US 17. The results for the design year are shown below in **Table 4-1**.

TABLE 4-1: 2045 I-75 MAINLINE SEGMENT ANALYSIS

Interstate Segment	AM		PM	
	Density (pc/ln/mi)	LOS	Density (pc/ln/mi)	LOS
NB I-75 north of Jones Loop	21.1	C	17.1	B
SB I-75 north of Jones Loop	17.1	B	21.1	C
NB I-75 south of Jones Loop	18.3	C	14.9	B
SB I-75 south of Jones Loop	14.9	B	18.3	C

4.2.2 Design Year (2045) Ramp Operational Analysis

Design Year merge and diverge analyses were conducted for the I-75 on- and off-ramps and are summarized in **Table 4-2**.

TABLE 4-2: 2045 I-75 RAMP OPERATIONAL ANALYSIS

Ramp	AM				PM			
	Volume	v/c Ratio	Density (pc/ln/m)	LOS	Volume	v/c Ratio	Density (pc/ln/mi)	LOS
NB I-75 On-Ramp from Tuckers Grade	505	0.24	21.8	C	413	0.20	18.3	B
NB Off-Ramp to Jones Loop	371	0.19	24.1	C	304	0.15	20.5	C
NB On-Ramp from Jones Loop	891	0.42	25.2	D	729	0.35	20.7	C
NB Off-Ramp to US17	579	0.29	28.1	D	474	0.24	24.1	C
SB I-75 On-Ramp from US17	474	0.23	20.0	C	579	0.28	24.1	C
SB I-75 Off-Ramp to Jones Loop	729	0.36	21.5	C	891	0.45	25.6	C
SB I-75 On-Ramp from Jones Loop	304	0.14	15.6	B	371	0.18	19.1	B
SB I-75 Off-Ramp to Tuckers Grade	413	0.21	16.4	B	505	0.25	25.1	C

4.2.3 Design Year (2045) I-75 Rest Area Ramp Operational Analysis

According to Chapter 13 'Ramp Merge and Diverge Segments' of the HCM 2010, accurately analyzing the diverge and merge areas of the rest areas themselves cannot be conducted using HCS because the merge and diverge segments are more than 1,500 feet downstream and upstream, respectively, from the approximate tip of the gore. However, the diverge and merge areas were analyzed conservatively using the maximum 1,500 feet allowed by HCS. Further analysis was conducted by comparing ramp volume to ramp capacity. The operational analysis for the rest area ramps in the design year is summarized in **Table 4-3**.

Potential traffic weaving for I-75 segments between the proposed rest area ramps and adjacent interchange ramps was evaluated, but due to the sufficient distance between proposed adjacent ramp gore points (at least 3,300 feet), a detailed HCM weave analysis was not conducted.

TABLE 4-3: 2045 I-75 REST AREA RAMP OPERATIONAL ANALYSIS

		AM					PM				
Ramp	**Capacity**	**Volume**	**Ramp v/c**	**Capacity Exceeded (v/c>1)?**	**Density (pc/ln/m)**	**LOS**	**Volume**	**Ramp v/c**	**Capacity Exceeded (v/c>1)?**	**Density (pc/ln/m)**	**LOS**
NB On-Ramp	2100	438	0.21	NO	18.4	B	358	0.17	NO	14.4	B
SB On-Ramp	2100	358	0.17	NO	14.4	B	438	0.21	NO	18.4	B
NB Off-Ramp	2000	438	0.22	NO	16.0	B	358	0.18	NO	12.1	B
SB Off-Ramp	2000	358	0.18	NO	12.1	B	438	0.22	NO	16.0	B

The rest area ramps are expected to function at an acceptable level of service in the design year.

4.3 OPENING YEAR (2025) TRAFFIC OPERATIONS

As part of this study, opening year analysis was conducted at the proposed rest area ramps as well as along mainline I-75 and nearby interchange ramps to assess their effectiveness in meeting the future travel demand on the study corridor.

4.3.1 Opening Year (2025) I-75 Mainline Operational Analysis

The I-75 mainline segment analysis was performed using HCS 2010 for the Build condition which includes three general use lanes in each direction from Tuckers Grade to US 17. The results for the opening year are shown in **Table 4-1**.

TABLE 4-4: 2025 I-75 MAINLINE SEGMENT ANALYSIS

Interstate Segment	AM		PM	
	Density (pc/ln/mi)	LOS	Density (pc/ln/mi)	LOS
NB I-75 north of Jones Loop	15.7	B	12.9	B
SB I-75 north of Jones Loop	12.9	B	15.7	B
NB I-75 south of Jones Loop	13.8	B	11.3	B
SB I-75 south of Jones Loop	11.3	B	13.8	B

4.3.2 Opening Year (2025) I-75 Ramp Operational Analysis

Opening year merge and diverge analyses were conducted for the I-75 on- and off-ramps and are summarized in **Table 4-5**.

TABLE 4-5: 2025 I-75 RAMP OPERATIONAL ANALYSIS

Ramp	AM				PM			
	Volume	v/c Ratio	Density (pc/ln/mi)	LOS	Volume	v/c Ratio	Density (pc/ln/mi)	LOS
NB I-75 On-Ramp from Tuckers Grade	381	0.18	17.0	B	312	0.15	14.4	B
NB Off-Ramp to Jones Loop	277	0.14	19.2	B	227	0.11	16.3	B
NB On-Ramp from Jones Loop	668	0.32	19.1	B	547	0.26	15.7	B
NB Off-Ramp to US17	436	0.22	22.6	C	356	0.18	19.3	B
SB I-75 On-Ramp from US17	356	0.17	15.4	B	436	0.21	18.5	B
SB I-75 Off-Ramp to Jones Loop	547	0.27	16.5	B	668	0.33	19.9	B
SB I-75 On-Ramp from Jones Loop	227	0.11	11.7	B	277	0.13	14.3	B
SB I-75 Off-Ramp to Tuckers Grade	312	0.16	17.2	B	381	0.19	20.1	C

4.3.3 Opening Year (2025) I-75 Rest Area Ramp Operational Analysis

According to Chapter 13 'Ramp Merge and Diverge Segments' of the HCM 2010, accurately analyzing the diverge and merge areas of the rest areas themselves cannot be conducted using HCS because the merge and diverge segments are more than 1,500 feet downstream and upstream, respectively, from the approximate tip of the gore. However, the diverge and merge areas were analyzed conservatively using the maximum 1,500 feet allowed by HCS. Further analysis was conducted by comparing ramp volume to ramp capacity. The operational analysis for the rest area ramps in the opening year is summarized in **Table 4-5**.

Potential traffic weaving for I-75 segments between the proposed rest area ramps and adjacent interchange ramps was evaluated, but due to the sufficient distance between proposed adjacent ramp gore points (at least 3,300 feet), a detailed HCM weave analysis was not conducted.

TABLE 4-6: 2025 I-75 REST AREA RAMP OPERATIONAL ANALYSIS

		AM					PM				
Ramp	**Capacity**	**Volume**	**Ramp v/c**	**Capacity Exceeded (v/c>1)?**	**Density (pc/ln/m)**	**LOS**	**Volume**	**Ramp v/c**	**Capacity Exceeded (v/c>1)?**	**Density (pc/ln/m)**	**LOS**
NB On-Ramp	2100	330	0.16	NO	12.9	B	270	0.13	NO	9.9	A
SB On-Ramp	2100	270	0.13	NO	9.9	A	330	0.16	NO	12.9	B
NB Off-Ramp	2000	330	0.17	NO	10.6	B	270	0.14	NO	7.3	A
SB Off-Ramp	2000	270	0.14	NO	7.3	A	330	0.17	NO	10.6	B

The rest area ramps are expected to function at an acceptable level of service in the opening year.

CHAPTER 5

SUMMARY

5.1 SUMMARY

The FDOT is conducting a PD&E Study to identify sites for the placement of one northbound and one southbound rest area facility along I-75 in Charlotte and/or Sarasota County. The objective of this memorandum is to develop project traffic volumes for use in testing and analyzing the impact that newly constructed rest areas will have on the I-75 corridor in the vicinity of the selected sites. The viable site locations were identified and refined using a variety of selection criteria.

Utilizing traffic count data and traffic factors collected from the FDOT 2014 FTI, existing traffic was developed for the I-75 corridor. A recommended growth rate was developed utilizing trend analysis and travel demand modeling via the D1RPM model and was previously approved by the Department. This growth rate was applied to the I-75 mainline and ramps to obtain opening year 2025 and design year 2045 mainline and ramp AADTs.

The calculated AADT volumes were used to calculate opening year and design year peak hour volumes. Operational analysis was conducted for mainline I-75, interchange ramps and the proposed rest area ramps to assess their effectiveness in meeting the future travel demand on the study corridor. Based on this analysis, the mainline, interchange ramps, and proposed rest area ramps are expected to operate at an acceptable Level of Service in the design year 2045.

APPENDIX A – Site Selection Report

(Provided under separate cover)

APPENDIX B – Traffic Count Data

(Provided in electronic format only)

APPENDIX C – HCS Analysis

(Provided in electronic format only)

APPENDIX D – Traffic Forecasting Report

I-75 REST AREAS PROJECT DEVELOPMENT AND ENVIRONMENT (PD&E) STUDY

SARASOTA AND CHARLOTTE COUNTIES

TRAFFIC FORECASTING REPORT

FINANCIAL PROJECT NO.: 436602-1-22-01

MAY 2016

FDOT

I-75 REST AREAS PROJECT DEVELOPMENT AND ENVIRONMENT (PD&E) STUDY

SARASOTA AND CHARLOTTE COUNTIES

TRAFFIC FORECASTING REPORT

FINANCIAL PROJECT NO.: 436602-1-22-01

MAY 2016

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FDOT

I-75 Rest Areas PD&E Study
SARASOTA and CHARLOTTE COUNTIES
May 2016

Traffic Forecasting Report

Introduction

The Florida Department of Transportation (FDOT) is conducting a Project Development and Environment (PD&E) Study to identify sites for the placement of one northbound (NB) and one southbound (SB) rest area facility along I-75. The study limits extend from the Charlotte/Lee County line northward to the interchange at SR 681 in Sarasota County. The total study corridor length is approximately 51 miles (22 miles in Charlotte County and 29 miles in Sarasota County). There is a very small portion (approximately 0.214 miles) of I-75 located in DeSoto County between Charlotte County and Sarasota County.

A site selection process was conducted early in the PD&E Study phase. The Final Site Selection Report (dated March 2016) documents the initial screening process that narrowed the viable sites down to a more focused geographic area. Following the site selection process, the remaining viable segments of I-75 are located between US 17 and Tuckers Grade in Charlotte County. The other potential sites were eliminated from further consideration primarily due to their comparatively higher impacts to the natural environment, including wetlands and available natural habitat.

This memorandum outlines the travel demand forecasting methodology used in the review of the FDOT District 1 Regional Planning Model (D1RPM) as well as the development of traffic growth rates for the I-75 Rest Areas PD&E Study. This study will evaluate the addition of a Rest Area facility on I-75 between the interchanges at Tuckers Grade and US 17 in Charlotte County. The purpose of this document is to present the data and make a recommendation for the project traffic growth rate. A design year of 2045 has been identified for this study.

1.0 Travel Demand Model Analysis

1.1 Review of Existing Travel Demand Model

This study utilized the recently adopted FDOT District 1 Regional Planning Model (D1RPM). The D1RPM is a regional travel demand model developed and maintained by the Florida Department of Transportation, District 1. The D1RPM is the primary travel demand forecasting tool used to support the Long Range Transportation Plan updates of the Metropolitan/Transportation Planning Organizations located within District 1. The D1RPM includes all 12 counties within District 1 and includes a 2010 Base Year and a 2040 Forecast Year. Although the D1RPM is a time of day model including four distinct time periods, only the daily volumes produced by the model were reviewed and analyzed in this study.

1.1.1 Review of Base Year Model Assignments

A review of the D1RPM 2010 base year model was conducted to assess whether the model is replicating travel patterns in the I-75 study corridor at a reasonable and acceptable level. The results of this evaluation served as the basis for determining the necessity and scale of a study corridor validation. The primary measure used for this evaluation was model volume/count ratios. Counts coded into the D1RPM were verified by the 2010 FDOT Florida Transportation Information (FTI)

database and were the primary inputs used to evaluate the base year model. D1RPM Peak Season Weekday Average Daily Traffic (PSWADT) values were converted to AADTs using a Model Output Conversion Factor (MOCF) of 0.91 as specified in the 2010 FDOT FTI and in the D1RPM. Model AADTs were then compared to actual 2010 counts.

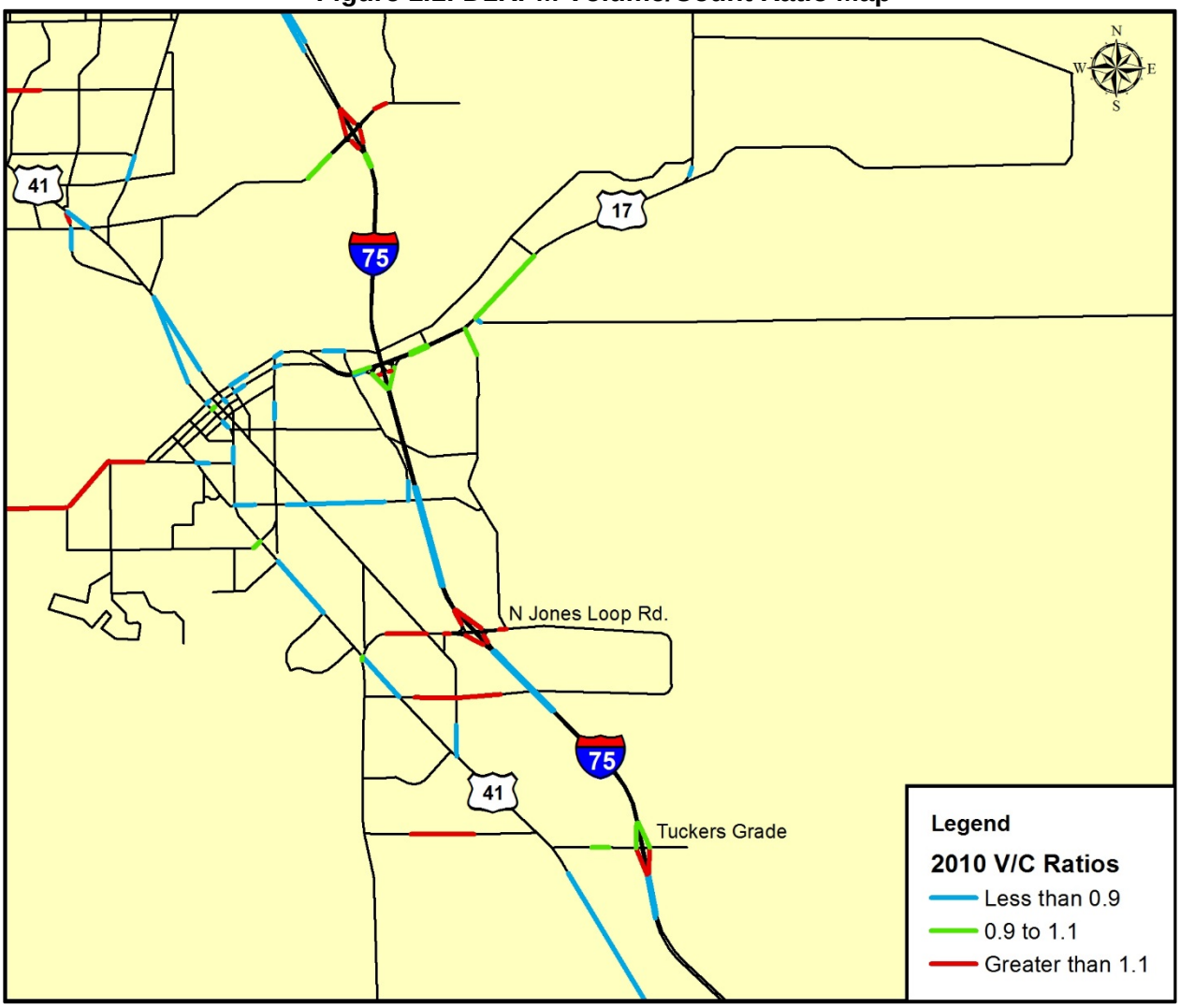
Initial review of the 2010 D1RPM confirmed that the I-75 study corridor is characterized by model volumes that are considerably lower than associated counts that have been collected in the corridor as illustrated in Table 1.1. Volume-to-Count Ratios on I-75 between Bayshore Road (SR 78) and Harborview Road range from 0.84 to 0.92. For comparison, the FDOT Project Traffic Forecasting Handbook recommends a model AADT threshold within 7% of the associated count for limited access facilities.

Table 1.1: 2010 D1RPM Model Performance

	2010	Model Data					V/C
I-75 Segments	**AADT**	**NB**	**SB**	**Bi-Dir**	**MOCF**	**AADT**	**Ratio**
Bayshore Rd. To Tuckers Grade	38,500	18,481	18,503	36,984	0.91	33,655	0.87
Tuckers Grade to Jones Loop Rd.	40,500	18,945	19,113	38,058	0.91	34,633	0.86
Jones Loop Rd. to US 17	47,289	21,601	22,124	43,725	0.91	39,790	0.84
US 17 to Harborview Rd.	52,500	26,051	26,791	52,842	0.91	48,086	0.92
Subarea Average							0.87

In order to ascertain the reason for the low volume/count ratios on I-75, a more detailed review of the model project area was conducted. Evaluation of the network coding of I-75 did not reveal any obvious issues or inconsistencies. Investigation of the performance of the US 41 corridor, which serves as the only nearby major parallel facility to I-75, was conducted as well. As illustrated in Figure 1.1, US 41 also experiences low volume/count ratios as depicted by the blue segments in the graphic. The 2010 model plot showing PSWADT volumes is included as an attachment.

Figure 1.1: D1RPM Volume/Count Ratio Map



1.2 Subarea Model Analysis

For this study, FDOT standard measures of travel demand assignment validation were used to compare the assigned daily model volumes to observed 24-hour traffic counts along the I-75 corridor.

Based on the results of the D1RPM review, it was determined that while the model volumes along the I-75 corridor are low, they can be considered reasonable. Therefore, it is recommended to proceed using the released version of the D1RPM in lieu of conducting a model subarea validation for the following reasons:

- Typical subarea validation procedures would not remedy the low volume/count ratios occurring on major north/south routes in the study area. More significant adjustments to the model structure would likely be needed and would not be appropriate in this case.
- Forecast traffic generated by the D1RPM is being used only for the purpose of developing a model growth rate that will support the development of 2045 traffic in the study corridor.
- This study is not evaluating future highway/interstate alternatives. Rather, forecast traffic volumes are being used to determine overall corridor demand which will further determine

the scale and parking needs of future rest areas as well as future ramp merge/diverge operations.

It should be noted, however, that while no adjustments have been made to the base network, it is understood that the growth rate obtained from the model may be more aggressive than other sources if the horizon year model forecast is assumed to be accurate. Thus, the growth rate derived from this process will serve as one of several data points used in the development of a growth rate for this study.

1.3 Growth Rate Determination

In order to calculate growth rates to be used in the development of future volumes, several data sources were evaluated including model volumes, historical count records and socioeconomic data.

1.3.1 Model Growth Rate

The D1RPM was used to calculate annual traffic growth rates for the I-75 study corridor. Daily model volumes from the 2010 Base and 2040 Cost Feasible model runs were compared for this calculation. The results for various I-75 segments are shown in Table 1.2. The 2040 model plot showing PSWADT volumes is included as an attachment.

Table 1.2: D1RPM Traffic Growth Rates

I-75 Segments	2010 Model Data			2040 Model Data			Annual Growth Rate
	NB	SB	Bi-Dir	NB	SB	Bi-Dir	
Bayshore Rd. To Tuckers Grade	18,481	18,503	36,984	31,910	31,753	63,663	2.40%
Tuckers Grade to Jones Loop Rd.	18,945	19,113	38,058	34,946	36,140	71,086	2.89%
Jones Loop Rd. to US 17	21,601	22,124	43,725	36,692	38,301	74,993	2.38%
US 17 to Harborview Rd.	26,051	26,791	52,842	41,843	44,147	85,990	2.09%
Subarea Average							2.44%

1.3.2 Socioeconomic Data

Socioeconomic (SE) data used as an input to the D1RPM was reviewed to assess projected employment growth. Model Base Year 2010 and Future Year 2040 employment data contained in the SE data was analyzed for those Traffic Analysis Zones (TAZ) located in Sarasota, Charlotte, and Lee Counties. The projected employment growth is summarized in Table 1.3.

Table 1.3: 2010-2040 D1RPM SE Data Growth

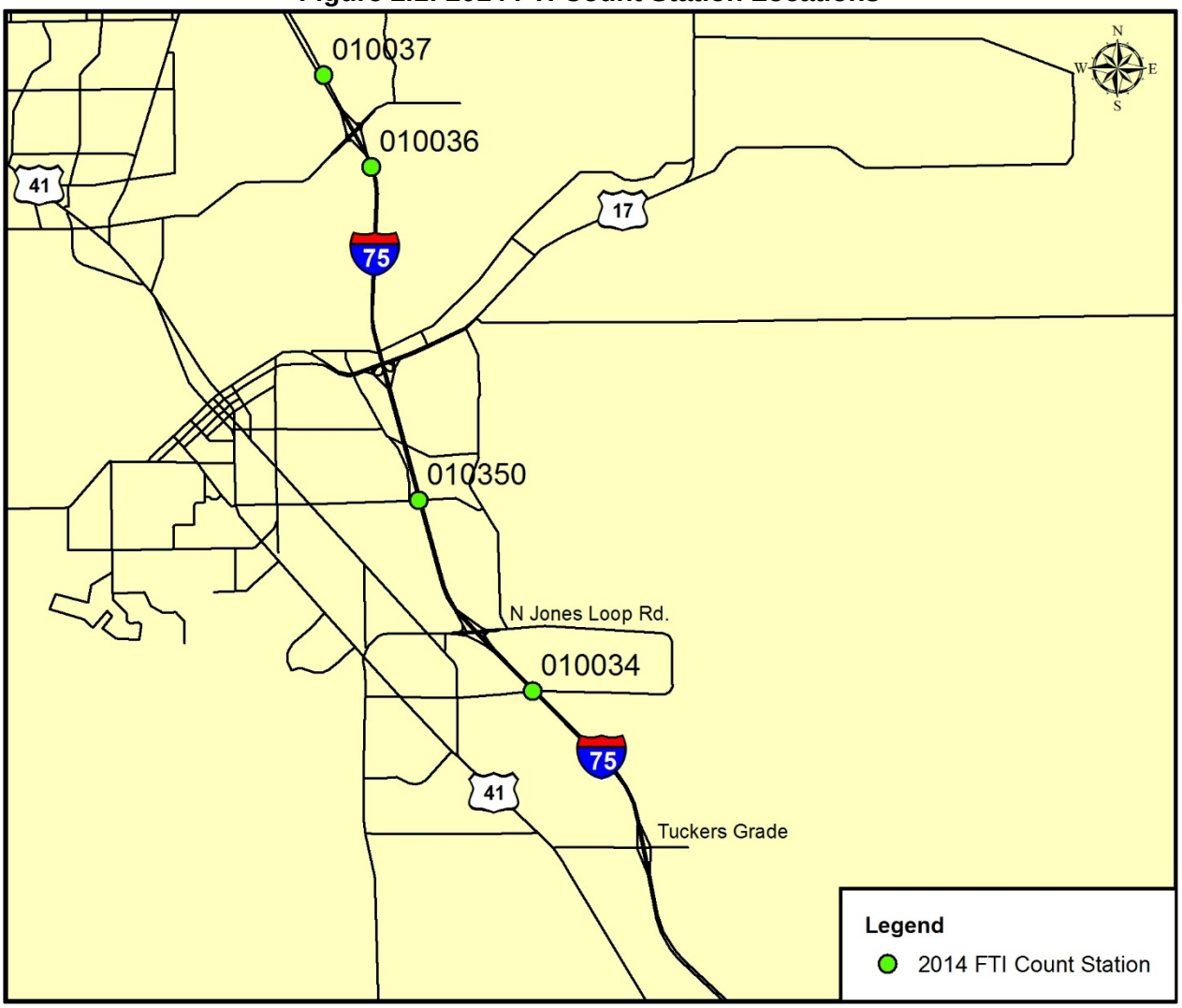
County	Employment		
	2010	2040	AGR
Sarasota	212,623	267,713	0.86%
Charlotte	64,728	86,227	1.11%
Lee	283,431	488,328	2.41%
Combined	560,782	842,268	1.67%

2.0 Historical Trend Analysis

2.1 Identification of Count Locations within the Study Area

This study utilized the 2014 FTI Database of traffic count data to identify specific locations within the study area to be included in the historical trend analysis. Due to the focus of the study, count stations for this analysis were limited to only I-75 and only those stations with more than 5 years of annual count data. Of the five count locations within the subarea, only one had 5 or fewer years of count data. This station (Count Site ID: 010055) was omitted due to the low number of data points. The remaining four count locations included at least 16 years of data and are shown in Figure 2.1.

Figure 2.1: 2014 FTI Count Station Locations



2.2 Historic Traffic Growth Rates

Historic count data was collected and plotted over time to develop a trend line based upon the data points. This trend line was then used to obtain a growth rate based upon the "best fit line" equation. Along with this analysis, an R^2 value was also calculated to provide context to the variance in the data. As shown in Table 2.1, the R^2 values are fairly low. According to the Project Traffic Forecasting Handbook, "Generally speaking, only growth with an R^2 value greater than or equal to 75% should be considered when determining growth factors with trends." Therefore, the growth rates obtained from historical trends are not considered to be particularly accurate for the purpose of projecting future volumes.

The results of the historic trend analysis (shown in Table 2.1) show that growth rates range from 1.00% to 1.61% with an average rate of 1.24%.

Table 2.1: 2014 FTI Count Station Historical Analysis

Count Station Details			Trend Line Characteristics			Annual
ID	Description	Records	Slope	Intercept	R^2	Growth Rate
010034	South of N Jones Loop Rd.	16	502.2	(966,395)	0.24	1.32%
010036	South of Harborview Rd.	16	746.3	(1,446,342)	0.39	1.61%
010037	South of Kings Highway	16	446.3	(849,829)	0.28	1.04%
010350	South of US17 (at Airport Rd)	15	438.1	(832,360)	0.29	1.00%
Subarea Average						1.24%

2.3 BEBR Population Forecasts

The Bureau of Economic and Business Research (BEBR) located at the University of Florida provides detailed population forecasts for each county in the state of Florida. This resource is often used as a barometer for growth rates to ensure that traffic trends observed in the previous two methodologies are in line with population forecasts conducted by economists. The most recent set of population forecasts was released in January 2016 with a horizon year of 2045. To provide additional context to the growth rates already developed, BEBR population forecasts for Sarasota, Charlotte, and Lee Counties from 2015 to 2045 will serve as the final data source for the development of project traffic growth rates for this study. The results are summarized below in Table 2.2. The three-county average medium population forecast is 1.35% per year.

Table 2.2: BEBR Population Forecasts

	Low			Medium			High		
County	2015	2045	AGR	2015	2045	AGR	2015	2045	AGR
Sarasota	392,090	397,200	0.04%	392,090	489,300	0.83%	392,090	584,700	1.64%
Charlotte	167,141	167,900	0.02%	167,141	216,000	0.97%	167,141	265,900	1.97%
Lee	665,845	862,300	0.98%	665,845	1,114,500	2.25%	665,845	1,366,300	3.51%
Average			**0.35%**			**1.35%**			**2.37%**

3.0 Conclusions

After a review of multiple data sources including the D1RPM, Historical Trend Data, and BEBR population forecasts, a range of growth rates have been calculated using different data sets. Four different forecasting Options (two Options are based on the D1RPM) are presented graphically below for comparison in Figure 3.1. As the only continuous count location in the subarea, the count station between Jones Loop Road and US 17 (FTI Count Station 010350) will be used to illustrate these four methods, along with an average of the four (Option 5).

3.0.1 Summary of Growth Rate Options and Recommendations:

- Option 1: The average historic trend growth rate obtained from the "best fit" trend line analysis conducted for the subarea. The average historic trend line growth rate applied to 2014 AADT from Site 010350 results in the following design year AADT:

$$2045\ AADT = 2014\ AADT + 2014\ AADT * \ Average\ Trend\ Growth\ Rate\ per\ year * 31\ years$$
$$2045\ AADT = (50{,}624) + (50{,}624) * 1.24\% * 31\ years = 70{,}100$$

- Option 2: The growth rate calculated from the average Medium BEBR population forecast of Lee, Charlotte, and Sarasota Counties applied to the 2014 AADT results in the following design year AADT:

$$2045\ AADT = 2014\ AADT + 2014\ AADT * \ Average\ Medium\ BEBR\ Growth\ Rate * 31\ years$$
$$2045\ AADT = (50{,}624) + (50{,}624) * 1.35\% * 31\ years = 71{,}800$$

- Option 3: The average subarea growth rate calculated by comparing base year (2010) D1RPM model volumes and future year (2040) D1RPM model forecasts. The average D1RPM model growth rate applied to 2014 AADT results in the following design year AADT:

$$2045\ AADT = 2014\ AADT + 2014\ AADT * \ Average\ TDM\ Growth\ Rate * 31\ years$$
$$2045\ AADT = (50{,}624) + (50{,}624) * 2.44\% * 31\ years = 88{,}900$$

- Option 4: The growth rate calculated by comparing the actual 2014 AADT to the 2040 D1RPM model forecast (using a MOCF of 0.91). The resulting growth rate applied to 2014 AADT from Site 010350 results in the following design year AADT:

$$\frac{2040\ TDM\ AADT - 2014\ AADT}{(2014\ AADT * 26\ Years)} = Annual\ Growth\ Rate$$

$$\frac{(74{,}993 * .91) - 50{,}624}{(50{,}624 * 26\ Years)} = 1.34\%$$

$$2045\ AADT = 2014\ AADT + 2014\ AADT * \ Count - to - Model\ Growth\ Rate * 31\ years$$
$$2045\ AADT = (50{,}624) + (50{,}624) * 1.34\% * 31\ years = 71{,}600$$

- Option 5 (Average of Options 1-4): An average of the 2045 AADT values obtained from the previous four Options was calculated. Then, a growth rate was calculated by comparing the average 2045 AADT value to the actual 2014 AADT:

$$Average\ 2045\ AADT = \frac{70{,}200 + 71{,}800 + 88{,}900 + 71{,}600}{4} = 75{,}600$$

$$\frac{2045\ Average\ AADT - 2014\ AADT}{(2014\ AADT * 31\ Years)} = Annual\ Growth\ Rate$$

$$\frac{75{,}600 - 50{,}624}{(50{,}624 * 31\ Years)} = 1.59\%$$

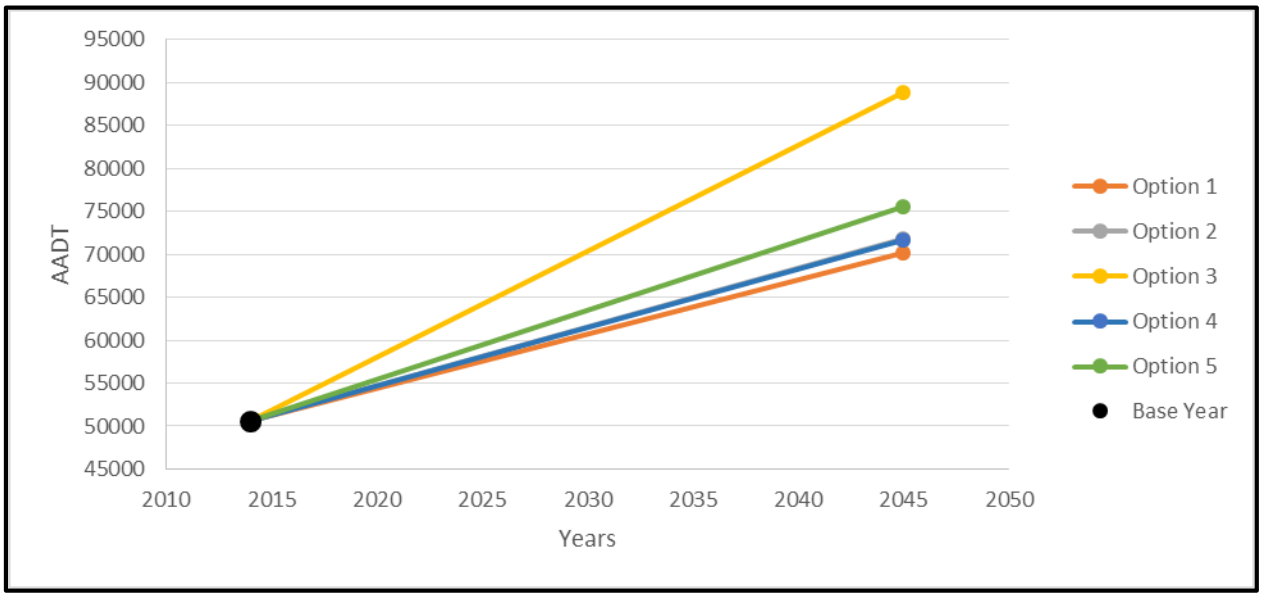
Table 3.1 summarizes the growth rates and resulting 2045 AADT volumes for I-75 based on the Options presented above.

Table 3.1: Subarea Growth Rate Comparisons (Location: FTI Count Station 010350)

Option	Growth Rate Applications 2014 AADT: 50,624	AADT Calculations AGR	 2045
1	Average Historic Trend Line Growth Rate	1.24%	70,100
2	Three County Average BEBR Medium Forecast Growth Rate	1.35%	71,800
3	Average Travel Demand Model Growth Rate	2.44%	88,900
4	2014 FTI Count to 2040 Travel Demand Model Volume Growth Rate	1.34%	71,600
5	Average of Options 1-4	1.59%	75,600

The five Options described above are shown graphically for the I-75 segment between Jones Loop Road and US 17 in Figure 3.1.

Figure 3.1: Growth Rate Comparison Graph (I-75 Location: FTI Count Station 10350)



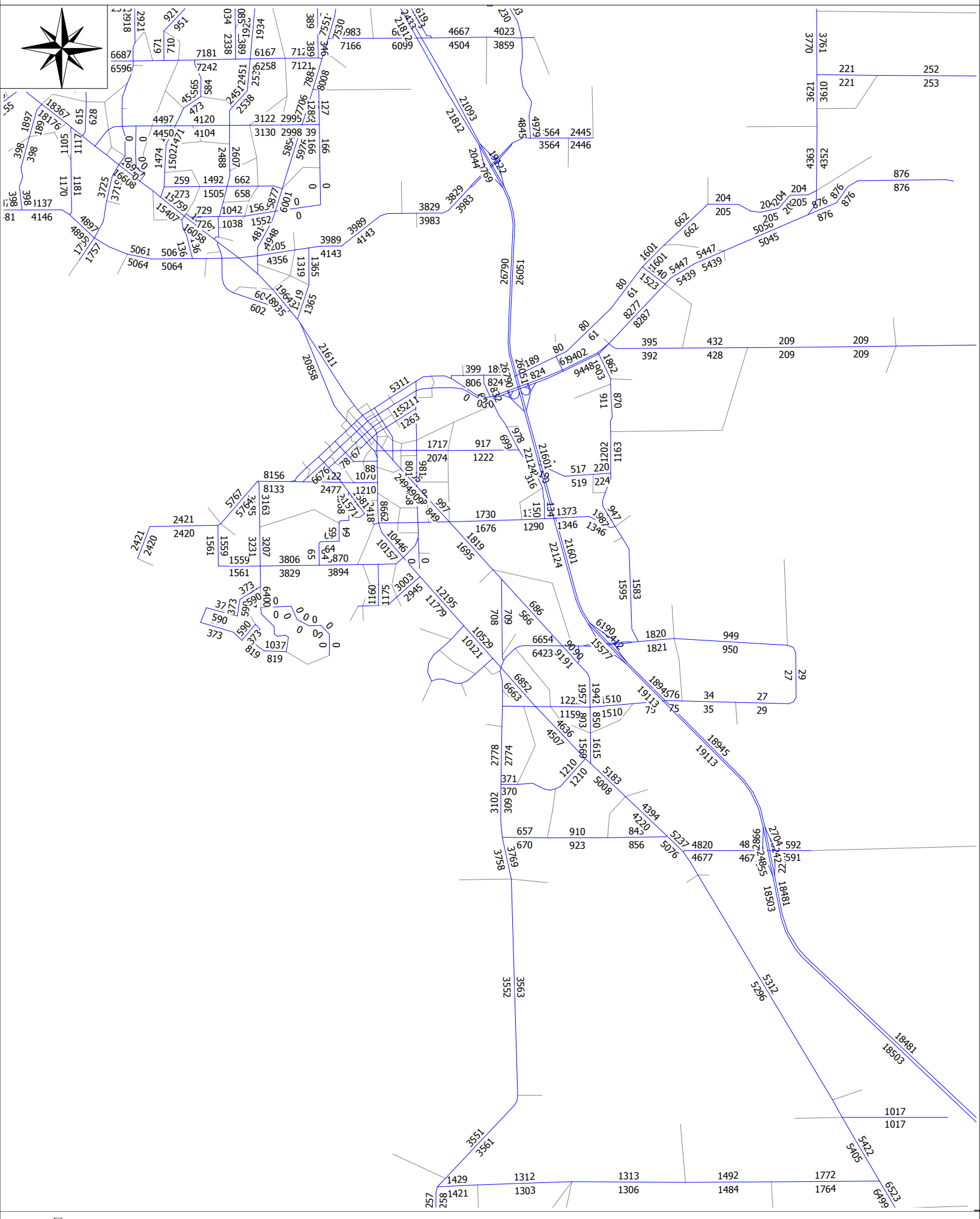
The annual growth rates obtained from the various sources presented above range from 1.24% to 2.44% (with an average of 1.59%) as shown in Table 3.1. As a conservative approach, with special consideration given to the D1RPM model forecast, a project growth rate of **2.0%** is recommended for traffic forecasting conducted as part of this PD&E Study. A growth rate of 2.0% produces a design year AADT volume of 82,000 vehicles per day on I-75 between Jones Loop Road and US 17.

The recommended growth rate will be applied to existing traffic volumes to develop future design year 2045 demand volumes for use in the evaluation of potential rest area sites along I-75.

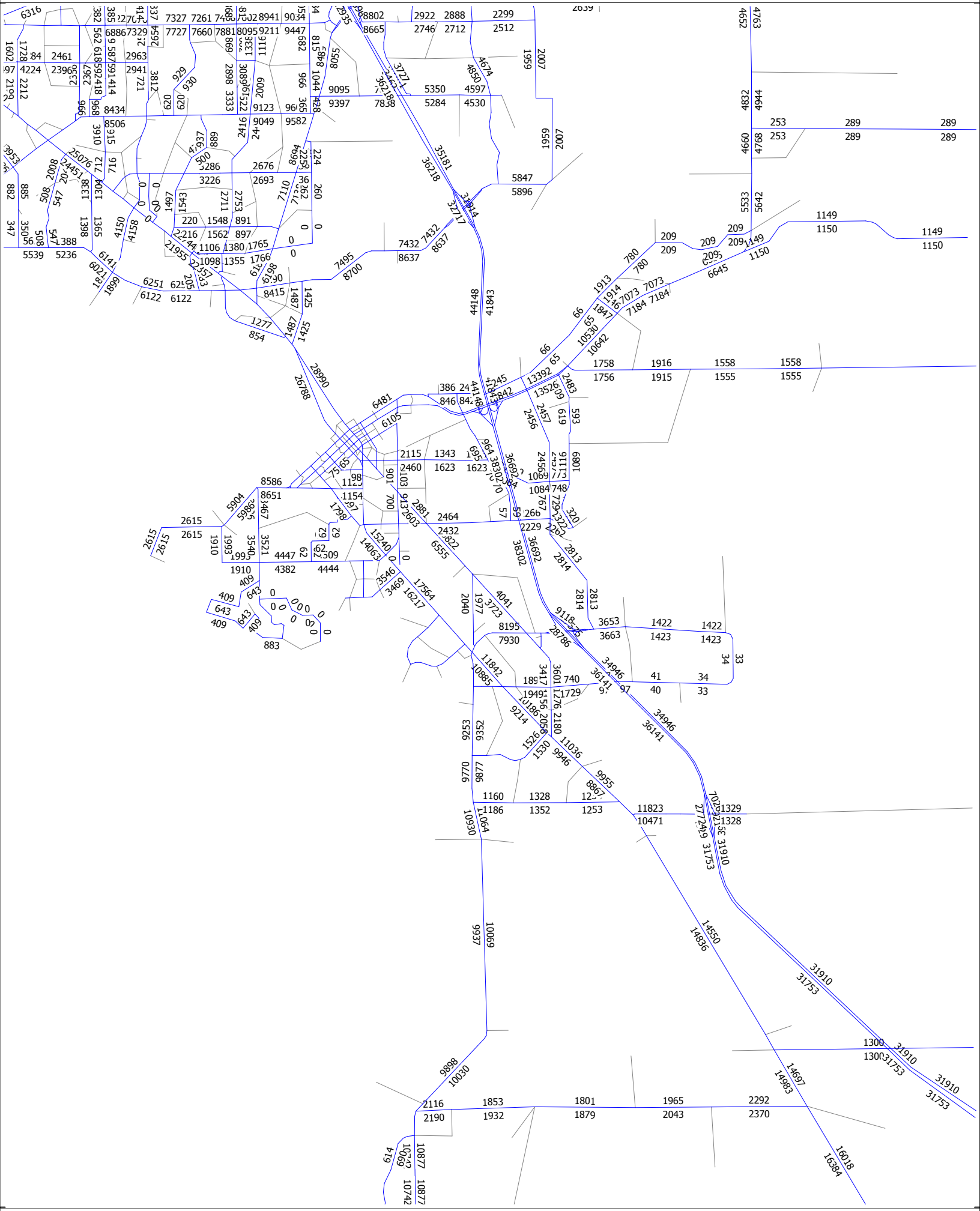
Attachment 1

D1RPM Model Plots

D1RPM 2010A PSWADT



D1RPM 2040CF PSWADT



Attachment 2

Historical Count Data and Trend Analysis

Florida Department of Transportation
Transportation Statistics Office
2014 Historical AADT Report

County: 01 - CHARLOTTE

Site: 0034 - SR 93/I 75, SOUTHEAST OF NORTH JONES LOOP RD/CR 768

Year	AADT	Direction 1	Direction 2	*K Factor	D Factor	T Factor
2014	44500 C	N 22500	S 22000	9.00	55.30	12.90
2013	44500 C	N 22500	S 22000	9.00	55.10	12.50
2012	41500 F	N 21000	S 20500	9.00	54.80	12.90
2011	41500 C	N 21000	S 20500	9.00	54.80	12.90
2010	40500 C	N 20500	S 20000	9.99	52.92	14.00
2009	40000 C	N 19500	S 20500	9.99	55.53	15.00
2008	43000 C	N 21500	S 21500	10.06	55.49	17.20
2007	43500 C	N 21500	S 22000	9.49	52.79	18.20
2006	46500 C	N 23000	S 23500	9.60	51.72	19.90
2005	44000 C	N 21500	S 22500	9.60	51.40	14.30
2004	44500 C	N 23000	S 21500	9.60	51.90	14.30
2003	41000 C	N 20500	S 20500	11.30	55.40	18.30
2002	47500 C	N 25000	S 22500	10.90	55.80	5.80
2001	34500 C	N 17500	S 17000	10.20	55.00	19.80
2000	28500 C	N 13500	S 15000	10.10	61.10	17.80
1999	35000 C	N 18000	S 17000	10.10	61.00	17.90

AADT Flags: C = Computed; E = Manual Estimate; F = First Year Estimate
S = Second Year Estimate; T = Third Year Estimate; F = Fourth Year Estimate
V = Fifth Year Estimate; 6 = Sixth Year Estimate; X = Unknown
*K Factor: Starting with Year 2011 is StandardK, Prior years are K30 values

Florida Department of Transportation
Transportation Statistics Office
2014 Historical AADT Report

County: 01 - CHARLOTTE

Site: 0350 - SR-93/I-75,@AIRPORT RD OP,PUNTA GORDA,CHARLOTTE CO

Year	AADT	Direction 1	Direction 2	*K Factor	D Factor	T Factor
2014	50624 C	N 25182	S 25442	9.00	52.00	11.90
2013	48201 C	N 24010	S 24191	9.00	52.00	12.00
2012	46362 C	N 23082	S 23280	9.00	52.00	11.80
2011	46665 C	N 23213	S 23452	9.00	52.50	11.80
2010	47289 C	N 23585	S 23704	10.19	53.32	11.60
2009	46398 C	N 23265	S 23133	10.39	53.87	11.60
2008	46440 C	N 23164	S 23276	10.33	55.16	12.10
2007	50636 C	N 25146	S 25490	9.49	52.79	13.70
2006	51520 C	N 25703	S 25817	9.64	52.44	14.00
2005	51000 F	N	S	9.60	51.90	15.60
2004	49605 C	N 24592	S 25013	9.60	51.90	14.80
2003	44202 C	N 21868	S 22334	10.40	52.80	12.50
2002	44477 C	N 22326	S 22151	10.90	55.80	5.80
2001	41594 C	N 20636	S 20958	10.40	52.80	5.90
2000	38484 C	N 19084	S 19400	9.90	57.50	8.70

AADT Flags: C = Computed; E = Manual Estimate; F = First Year Estimate
S = Second Year Estimate; T = Third Year Estimate; F = Fourth Year Estimate
V = Fifth Year Estimate; 6 = Sixth Year Estimate; X = Unknown
*K Factor: Starting with Year 2011 is StandardK, Prior years are K30 values

FLORIDA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION STATISTICS OFFICE
2014 HISTORICAL AADT REPORT

COUNTY: 01 - CHARLOTTE

SITE: 0036 - SR 93/I 75, 0.4 MI SE OF HARBOR VIEW ROAD/CR 776

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2014	57500 C	N 28500	S 29000	9.00	55.30	12.50
2013	53500 C	N 26000	S 27500	9.00	55.10	13.30
2012	54000 C	N 26500	S 27500	9.00	54.80	12.40
2011	51000 C	N 25500	S 25500	9.00	54.80	13.60
2010	52500 C	N 26500	S 26000	9.99	52.92	13.00
2009	49500 C	N 24500	S 25000	9.99	55.53	14.20
2008	51000 C	N 25000	S 26000	10.06	55.49	18.90
2007	54000 C	N 26500	S 27500	9.49	52.79	19.90
2006	59000 C	N 29000	S 30000	9.60	51.72	16.00
2005	60000 C	N 29000	S 31000	9.60	51.40	16.00
2004	56000 C	N 28000	S 28000	9.60	51.90	16.00
2003	46500 F	N 23500	S 23000	11.30	55.40	21.50
2002	44500 C	N 22500	S 22000	10.90	55.80	5.80
2001	44000 C	N 21500	S 22500	10.20	55.00	21.50
2000	43000 C	N 20500	S 22500	10.10	61.10	17.60
1999	42500 C	N 21500	S 21000	10.10	61.00	17.40

AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE
S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; F = FOURTH YEAR ESTIMATE
V = FIFTH YEAR ESTIMATE; 6 = SIXTH YEAR ESTIMATE; X = UNKNOWN
*K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

FLORIDA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION STATISTICS OFFICE
2014 HISTORICAL AADT REPORT

COUNTY: 01 - CHARLOTTE

SITE: 0037 - SR 93/I 75, SOUTHEAST OF KINGS HIGHWAY/CR 769

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2014	50500 C	N 25500	S 25000	9.00	55.30	15.80
2013	46500 C	N 23000	S 23500	9.00	55.10	15.80
2012	45000 C	N 22500	S 22500	9.00	54.80	14.80
2011	45000 C	N 22500	S 22500	9.00	54.80	13.20
2010	46000 C	N 23000	S 23000	9.99	52.92	14.70
2009	44500 C	N 22000	S 22500	9.99	55.53	16.40
2008	46500 C	N 23500	S 23000	10.06	55.49	18.80
2007	48500 C	N 24000	S 24500	9.49	52.79	20.40
2006	51000 C	N 25000	S 26000	9.60	51.72	22.20
2005	51500 C	N 25500	S 26000	9.60	51.40	16.00
2004	48500 C	N 25000	S 23500	9.60	51.90	16.00
2003	45500 C	N 22000	S 23500	9.60	52.60	19.50
2002	45000 F	N 22000	S 23000	9.80	53.80	5.80
2001	42000 C	N 20500	S 21500	10.20	55.00	19.70
2000	37500 C	N 17500	S 20000	10.10	61.10	21.90
1999	38000 C	N 19000	S 19000	10.10	61.00	18.80

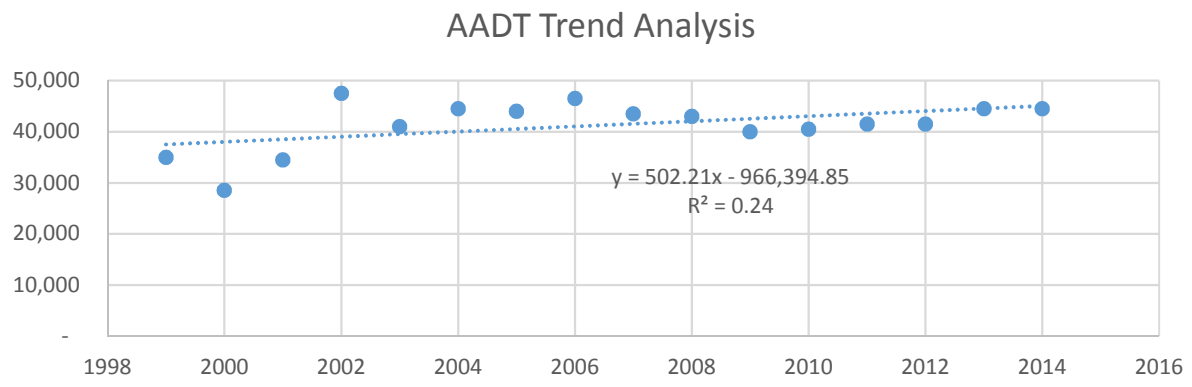
AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE
S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; F = FOURTH YEAR ESTIMATE
V = FIFTH YEAR ESTIMATE; 6 = SIXTH YEAR ESTIMATE; X = UNKNOWN
*K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

County: *01 - CHARLOTTE*

Site: *0034 - SR 93/I 75, SOUTHEAST OF NORTH JONES LOOP RD/CR 768*

FTI Count Station Historical Trend Data

Year	AADT		Direction 1		Direction 2		K Factor	D Factor	T Factor	Trend AADT
2014	44,500	*C*	*N*	22,500	*S*	22,000	9.0	55.30	12.9	45,048
2013	44,500	*C*	*N*	22,500	*S*	22,000	9.0	55.10	12.5	44,546
2012	41,500	*F*	*N*	21,000	*S*	20,500	9.0	54.80	12.9	44,043
2011	41,500	*C*	*N*	21,000	*S*	20,500	9.0	54.80	12.9	43,541
2010	40,500	*C*	*N*	20,500	*S*	20,000	10.0	52.92	14	43,039
2009	40,000	*C*	*N*	19,500	*S*	20,500	10.0	55.53	15	42,537
2008	43,000	*C*	*N*	21,500	*S*	21,500	10.1	55.49	17.2	42,035
2007	43,500	*C*	*N*	21,500	*S*	22,000	9.5	52.79	18.2	41,532
2006	46,500	*C*	*N*	23,000	*S*	23,500	9.6	51.72	19.9	41,030
2005	44,000	*C*	*N*	21,500	*S*	22,500	9.6	51.40	14.3	40,528
2004	44,500	*C*	*N*	23,000	*S*	21,500	9.6	51.90	14.3	40,026
2003	41,000	*C*	*N*	20,500	*S*	20,500	11.3	55.40	18.3	39,524
2002	47,500	*C*	*N*	25,000	*S*	22,500	10.9	55.80	5.8	39,021
2001	34,500	*C*	*N*	17,500	*S*	17,000	10.2	55.00	19.8	38,519
2000	28,500	*C*	*N*	13,500	*S*	15,000	10.1	61.10	17.8	38,017
1999	35,000	*C*	*N*	18,000	*S*	17,000	10.1	61.00	17.9	37,515
AVG	41,000		**Base Year**				***2014***	**Horizon Year**		***2045***

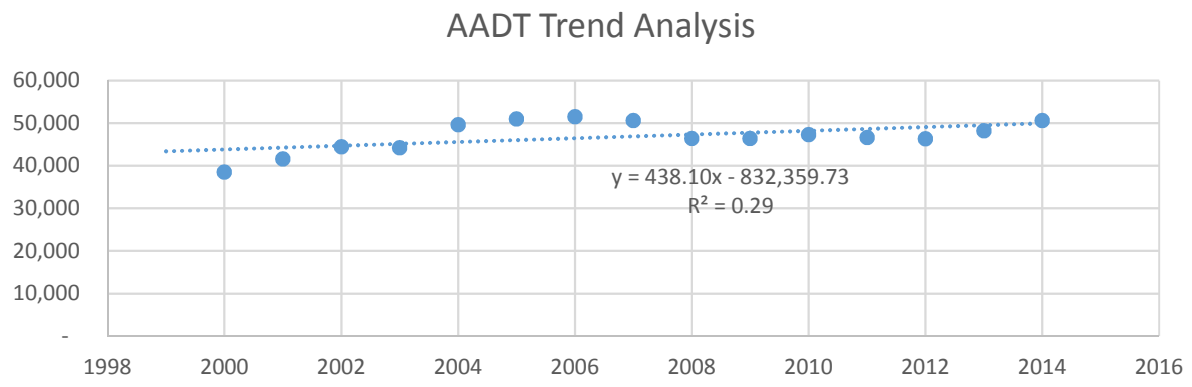


County: *01 - CHARLOTTE*

Site: *0350 - SR-93/I-75, @AIRPORT RD OP, PUNTA GORDA, CHARLOTTE CO*

FTI Count Station Historical Trend Data

Year	AADT	Direction 1	Direction 2	K Factor	D Factor	T Factor	Trend AADT
2014	50,624 *C*	*N* 25,182	*S* 25,442	9.0	52.00	11.9	49,966
2013	48,201 *C*	*N* 24,010	*S* 24,191	9.0	52.00	12	49,528
2012	46,362 *C*	*N* 23,082	*S* 23,280	9.0	52.00	11.8	49,090
2011	46,665 *C*	*N* 23,213	*S* 23,452	9.0	52.50	11.8	48,652
2010	47,289 *C*	*N* 23,585	*S* 23,704	10.2	53.32	11.6	48,214
2009	46,398 *C*	*N* 23,265	*S* 23,133	10.4	53.87	11.6	47,776
2008	46,440 *C*	*N* 23,164	*S* 23,276	10.3	55.16	12.1	47,338
2007	50,636 *C*	*N* 25,146	*S* 25,490	9.5	52.79	13.7	46,900
2006	51,520 *C*	*N* 25,703	*S* 25,817	9.6	52.44	14	46,462
2005	51,000 *F*	*N*	*S*	9.6	51.90	15.6	46,024
2004	49,605 *C*	*N* 24,592	*S* 25,013	9.6	51.90	14.8	45,586
2003	44,202 *C*	*N* 21,868	*S* 22,334	10.4	52.80	12.5	45,147
2002	44,477 *C*	*N* 22,326	*S* 22,151	10.9	55.80	5.8	44,709
2001	41,594 *C*	*N* 20,636	*S* 20,958	10.4	52.80	5.9	44,271
2000	38,484 *C*	*N* 19,084	*S* 19,400	9.9	57.50	8.7	43,833
1999							-
AVG	47,000	**Base Year**		***2014***	**Horizon Year**		***2045***

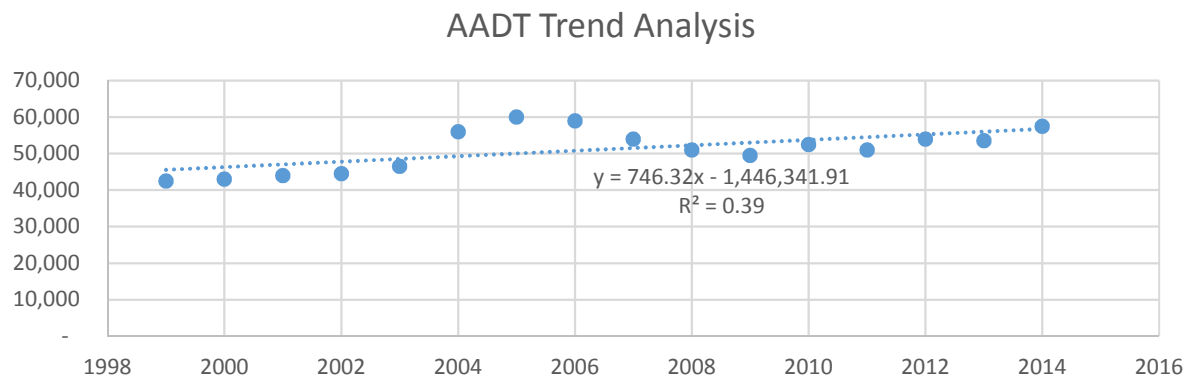


County: *01 - CHARLOTTE*

Site: *0036 - SR 93/I 75, 0.4 MI SE OF HARBOR VIEW ROAD/CR 776*

FTI Count Station Historical Trend Data

Year	AADT		Direction 1		Direction 2		K Factor	D Factor	T Factor	Trend AADT
2014	57,500	*C*	*N*	28,500	*S*	29,000	9.0	55.30	12.5	56,754
2013	53,500	*C*	*N*	26,000	*S*	27,500	9.0	55.10	13.3	56,007
2012	54,000	*C*	*N*	26,500	*S*	27,500	9.0	54.80	12.4	55,261
2011	51,000	*C*	*N*	25,500	*S*	25,500	9.0	54.80	13.6	54,515
2010	52,500	*C*	*N*	26,500	*S*	26,000	10.0	52.92	13	53,768
2009	49,500	*C*	*N*	24,500	*S*	25,000	10.0	55.53	14.2	53,022
2008	51,000	*C*	*N*	25,000	*S*	26,000	10.1	55.49	18.9	52,276
2007	54,000	*C*	*N*	26,500	*S*	27,500	9.5	52.79	19.9	51,529
2006	59,000	*C*	*N*	29,000	*S*	30,000	9.6	51.72	16	50,783
2005	60,000	*C*	*N*	29,000	*S*	31,000	9.6	51.40	16	50,037
2004	56,000	*C*	*N*	28,000	*S*	28,000	9.6	51.90	16	49,290
2003	46,500	*F*	*N*	23,500	*S*	23,000	11.3	55.40	21.5	48,544
2002	44,500	*C*	*N*	22,500	*S*	22,000	10.9	55.80	5.8	47,798
2001	44,000	*C*	*N*	21,500	*S*	22,500	10.2	55.00	21.5	47,051
2000	43,000	*C*	*N*	20,500	*S*	22,500	10.1	61.10	17.6	46,305
1999	42,500	*C*	*N*	21,500	*S*	21,000	10.1	61.00	17.4	45,559
AVG	51,000		**Base Year**				***2014***	**Horizon Year**		***2045***

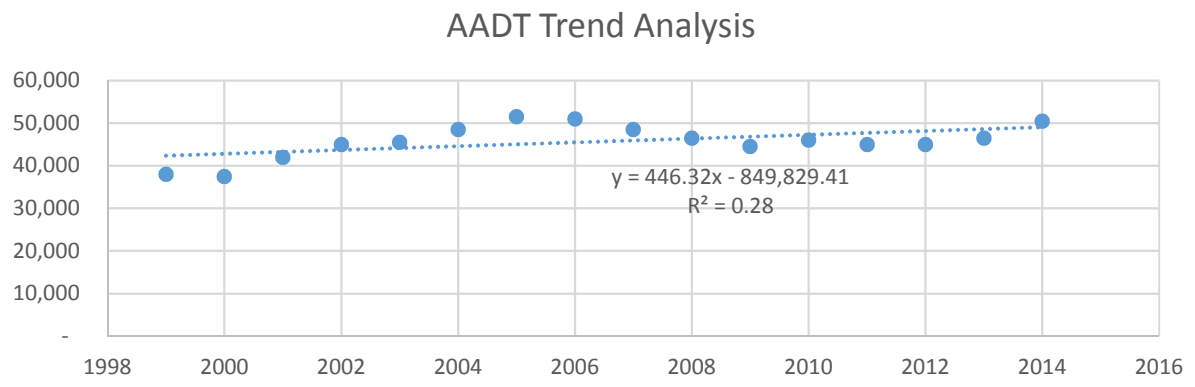


County: *01 - CHARLOTTE*

Site: *0037 - SR 93/I75, SOUTHEAST OF KINGS HIGHWAY/CR 769*

FTI Count Station Historical Trend Data

Year	AADT		Direction 1		Direction 2		K Factor	D Factor	T Factor	Trend AADT
2014	50,500	C	N	25,500	S	25,000	9.0	55.30	15.8	49,066
2013	46,500	C	N	23,000	S	23,500	9.0	55.10	15.8	48,620
2012	45,000	C	N	22,500	S	22,500	9.0	54.80	14.8	48,174
2011	45,000	C	N	22,500	S	22,500	9.0	54.80	13.2	47,727
2010	46,000	C	N	23,000	S	23,000	10.0	52.92	14.7	47,281
2009	44,500	C	N	22,000	S	22,500	10.0	55.53	16.4	46,835
2008	46,500	C	N	23,500	S	23,000	10.1	55.49	18.8	46,388
2007	48,500	C	N	24,000	S	24,500	9.5	52.79	20.4	45,942
2006	51,000	C	N	25,000	S	26,000	9.6	51.72	22.2	45,496
2005	51,500	C	N	25,500	S	26,000	9.6	51.40	16	45,049
2004	48,500	C	N	25,000	S	23,500	9.6	51.90	16	44,603
2003	45,500	C	N	22,000	S	23,500	9.6	52.60	19.5	44,157
2002	45,000	F	N	22,000	S	23,000	9.8	53.80	5.8	43,710
2001	42,000	C	N	20,500	S	21,500	10.2	55.00	19.7	43,264
2000	37,500	C	N	17,500	S	20,000	10.1	61.10	21.9	42,818
1999	38,000	C	N	19,000	S	19,000	10.1	61.00	18.8	42,371
AVG	46,000		**Base Year**				***2014***	**Horizon Year**		***2045***



Trend Line Volumes

Site	Description	Slope	Intercept	R^2	2000	2007	Growth Rate
10034	South of N Jones Loop Rd.	502.2	-966,395	0.24	38005	41520	1.32%
10036	South of Harbor View Rd.	746.3	-1,446,342	0.39	46258	51482	1.61%
10037	South of Kings Highway	446.3	-849,829	0.28	42771	45895	1.04%
10350	At Airport Rd.	438.1	-832,360	0.29	43840	46907	1.00%
						Average	1.24%

Attachment 3

BEBR Population Forecast Data

College of Liberal Arts and Sciences
Bureau of Economic and Business Research

BEBR

Florida Population Studies

Volume 49, Bulletin 174, January 2016

Projections of Florida Population by County, 2020–2045, with Estimates for 2015

Stefan Rayer, Population Program Director
Ying Wang, Research Demographer

The Bureau of Economic and Business Research (BEBR) has been making population projections for Florida and its counties since the 1970s. This report presents our most recent set of projections and describes the methodology used to construct those projections. To account for uncertainty regarding future population growth, we publish three series of projections. We believe the medium series is the most likely to provide accurate forecasts in most circumstances, but the low and high series provide an indication of the uncertainty surrounding the medium series. It should be noted that these projections refer solely to permanent residents of Florida; they do not include tourists or seasonal residents.

State projections

The starting point for the state-level projections was the 2010 census count by age and sex as reported by the U.S. Census Bureau. Projections were made in five-year intervals using a cohort-component methodology in which births, deaths, and migration were projected separately for each age/sex group. We applied three different sets of assumptions to provide low, medium, and high series of projections. Although the low and high series do not provide absolute bounds on future population growth, they offer a reasonable range in which Florida's future population is likely to fall.

Survival rates were applied to each age/sex group to project future deaths in the population. These rates were based on Florida Life Tables for 2009–2011, using mortality data published by the Office of Vital Statistics in the Florida Department of Health. The survival rates were adjusted upward in 2020, 2025, 2030, 2035, and 2040 to account for projected increases in life expectancy. These adjustments were based on projected increases in survival rates released by the U.S. Census Bureau. We used the same mortality assumptions for all three series of projections because there is much less uncertainty regarding future changes in mortality rates than is true for migration and fertility rates.

Domestic migration rates by age and sex were based on data from Public Use Microdata Sample (PUMS) files from the 2009–2013 American Community Survey (ACS). Since migration estimates from the ACS cover a one-year period, we developed a methodology for converting one-year data into five-year data. Using PUMS files, IRS migration records, and 1990 and 2000 census data, we developed a set of conversion factors and applied them to the 2009–2013 PUMS data. The conversion process raised the one-year migration estimates by a factor of 3.4 for in-migration and by 3.0 for out-migration. We calculated in-migration rates by dividing the number of persons moving to Florida from other states by the 2011 population of the United States (minus Florida) and calculated out-migration rates by dividing the number of persons leaving Florida by Florida's 2011 population. In both instances, rates were calculated separately for males and females for each five-year age group up to 85+.

These in- and out-migration rates were weighted to account for recent changes in Florida's population growth rates and to provide alternative scenarios regarding future growth. For each of the three series, projections of domestic in-migration were made by applying weighted in-migration rates to the projected

population of the United States (minus Florida), using the most recent set of national projections produced by the U.S. Census Bureau. Projections of out-migration were made by applying weighted out-migration rates to the Florida population.

For the medium projection series, the in-migration weights were 1.17 for 2015–2020, 1.12 for 2020–2025, 1.09 for 2025–2030, and 1.08 thereafter; the out-migration weight was 0.92 for each projection interval. For the high series, the in-migration weights were 1.41 for 2015–2020, 1.25 for 2020–2025, and 1.2 thereafter; the out-migration weight was 0.8 for each projection interval. For the low projection series, the in-migration weight was 0.94 for each projection interval, while the out-migration weight was 1.05 for each projection interval.

Projections of foreign immigration were also based on data from the 2009–2013 PUMS files. We converted one-year migration data to five-year data by multiplying them by 4.2. For the medium projection series, foreign immigration was projected to be 25,000 above the 2009–2013 level in 2015–2020; it was raised by an additional 25,000 in each projection interval thereafter. For the high series, foreign immigration was projected to be 50,000 above the 2009–2013 level in 2015–2020; it was raised by an additional 50,000 in each projection interval thereafter. For the low series, foreign immigration was projected to remain at the 2009–2013 level in each projection interval. Foreign emigration was assumed to equal 22.5% of foreign immigration for each series of projections. The distribution of foreign immigrants by age and sex was based on the patterns observed between 2009 and 2013.

Projections were made in five-year intervals, with each projection serving as the base for the following projection. Projected in-migration for each five-year interval was added to the survived Florida population at the end of the interval and projected out-migration was subtracted, giving a projection of the population age five and older. Births were projected by applying age-specific birth rates to the projected female population by age, and the population less than age five was projected by summing births over a five-year period and adjusting for child mortality. The underlying birth rates were based on Florida birth data for 2009–2011 and imply a total fertility rate of 1.9 births per woman. These rates were adjusted to make them consistent with recent trends. For all three projection series, birth rates were reduced by 3.5% from 2009–2011 levels for 2015–2020, by 2% for 2020–25, and by 0.5% for 2025–2030; they were held at 2009–2011 levels thereafter.

As a final step, the medium projection of total population in 2020 was adjusted to be consistent with the state population forecast for 2020 produced by the State of Florida's Demographic Estimating Conference held December 1, 2015. None of the projections after 2020 had any further adjustments.

County projections

The cohort-component method is a good way to make population projections at the state level, but is not necessarily the best way to make projections at the county level. Many counties in Florida are so small that the number of persons in each age-sex category is inadequate for making reliable cohort-component projections, given the lack of detailed small-area data. Even more important, county growth patterns are so volatile that a single technique based on data from a single time period may provide misleading results. We believe more useful projections of total population can be made by using several different techniques and historical base periods.

For counties, we started with the population estimate constructed by BEBR for April 1, 2015. We made projections for each county in five-year increments using four different techniques:

1. Linear – the population will change by the same number of persons in each future year as the average annual change during the base period.

2. Exponential – the population will change at the same percentage rate in each future year as the average annual rate during the base period.

3. Share-of-growth – each county's share of state population growth in the future will be the same as its share during the base period.

4. Shift-share – each county's share of the state population will change by the same annual amount in the future as the average annual change during the base period.

For the linear and share-of-growth techniques we used base periods of five, ten, and fifteen years (2010–2015, 2005–2015, and 2000–2015), yielding three sets of projections for each technique. For the

exponential and shift-share techniques we used base periods of ten and twenty years (2005–2015 and 1995–2015), yielding two sets of projections for each technique.

This methodology produced ten projections for each county for each projection year (2020, 2025, 2030, 2035, 2040 and 2045). From these, we calculated four averages: one using all ten projections, one that excluded the highest and lowest projections, one that excluded the two highest and two lowest projections, and one that excluded the three highest and three lowest projections. Based on the results of previous research, we designated the last of the four averages (AVE-4) as the default technique for each county. We evaluated the resulting projections by comparing them with historical population trends and with the level of population growth projected for the state as a whole. For counties in which AVE-4 did not provide reasonable projections, we selected the technique producing projections that fit most closely with our evaluation criteria.

For 64 counties we selected AVE-4, the average in which the three highest and three lowest projections were excluded. For Monroe County, we selected an average of projections made with the share-of-growth technique with a base period of five years and the exponential technique with a base period of twenty years; for Putnam County, we selected an average of projections made with the exponential technique with base periods of ten and twenty years; and for Sumter County, we selected the linear technique with a base period of ten years. Projections for all counties were adjusted to make projected changes for counties consistent with the total population change implied by the state projections.

We also made adjustments in several counties to account for changes in institutional populations such as university students and prison inmates. Adjustments were made only in counties in which institutional populations account for a large proportion of total population or where changes in the institutional population have been substantially different than changes in the rest of the population. In the present set of projections, adjustments were made for Alachua, Baker, Bradford, Calhoun, Columbia, DeSoto, Dixie, Franklin, Gadsden, Gilchrist, Glades, Gulf, Hamilton, Hardee, Holmes, Jackson, Jefferson, Lafayette, Leon, Liberty, Madison, Okeechobee, Santa Rosa, Sumter, Suwannee, Taylor, Union, Wakulla, Walton, and Washington counties.

Range of county projections

The techniques described above were used to construct the medium series of county projections. This is the series we believe will generally provide the most accurate forecasts of future population change. We also constructed low and high projections to provide an indication of the uncertainty surrounding the medium county projections. The low and high projections were based on analyses of past population forecast errors for counties in Florida, broken down by population size and growth rate. They indicate the range into which approximately three-quarters of future county populations will fall, if the future distribution of forecast errors is similar to the past distribution.

The range between the low and high projections varies according to a county's population size in 2015 (less than 30,000; 30,000 to 199,999; and 200,000 or more), rate of population growth between 2005 and 2015 (less than 7.5%; 7.5–15%; 15–30%; and 30% or more), and the length of the projection horizon (on average, projection errors grow with the length of the projection horizon). Our studies have found that the distribution of absolute percent errors tends to remain fairly stable over time, leading us to believe that the low and high projections provide a reasonable range of errors for most counties. It must be emphasized, however, that the actual future population of any given county could be above the high projection or below the low projection.

For the medium series of projections, the sum of the county projections equals the state projection for each year (except for slight differences due to rounding). For the low and high series, however, the sum of the county projections does not equal the state projection. The sum of the low projections for counties is lower than the state's low projection and the sum of the high projections for counties is higher than the state's high projection. This occurs because potential variation around the medium projection is greater for counties than for the state as a whole.

Acknowledgement

Funding for these projections was provided by the Florida Legislature.

Projections of Florida Population by County, 2020–2045, with Estimates for 2015

County and State	Estimates April 1, 2015	Projections, April 1 2020	2025	2030	2035	2040	2045
ALACHUA	254,893						
Low		254,500	255,800	257,300	258,400	259,000	258,700
Medium		267,700	279,300	289,500	299,600	309,400	318,500
High		279,800	299,300	318,600	338,800	359,700	380,800
BAKER	27,017						
Low		27,000	27,100	27,100	27,000	26,800	26,300
Medium		29,000	30,600	32,000	33,300	34,500	35,500
High		30,900	33,700	36,500	39,300	42,100	44,900
BAY	173,310						
Low		172,200	172,800	173,200	172,700	172,000	170,400
Medium		183,100	191,900	199,400	206,200	213,200	219,400
High		193,100	208,300	223,300	238,300	254,200	270,000
BRADFORD	27,310						
Low		26,400	25,900	25,400	24,800	24,200	23,500
Medium		28,000	28,600	29,000	29,300	29,600	29,900
High		29,600	31,200	32,700	34,100	35,500	36,900
BREVARD	561,714						
Low		569,800	579,000	585,500	587,800	586,800	586,000
Medium		593,500	621,000	641,200	657,400	670,400	684,100
High		614,000	656,700	695,200	730,700	763,700	798,500
BROWARD	1,827,367						
Low		1,839,200	1,857,100	1,874,500	1,887,500	1,889,000	1,884,700
Medium		1,914,500	1,989,800	2,052,400	2,111,700	2,158,100	2,200,500
High		1,982,200	2,106,300	2,225,800	2,346,200	2,458,300	2,568,000
CALHOUN	14,549						
Low		14,100	13,900	13,700	13,400	13,100	12,800
Medium		15,000	15,300	15,600	15,900	16,100	16,300
High		15,800	16,700	17,600	18,500	19,300	20,100
CHARLOTTE	167,141						
Low		167,400	169,000	170,000	169,800	169,100	167,900
Medium		178,200	187,900	195,900	202,700	209,600	216,000
High		187,800	203,700	219,300	234,300	249,900	265,900
CITRUS	141,501						
Low		141,800	143,300	144,700	145,400	145,100	144,200
Medium		149,300	156,200	162,100	167,500	171,700	175,500
High		155,900	167,500	178,900	190,100	200,700	211,000
CLAY	201,277						
Low		210,300	220,700	230,500	238,600	244,400	247,700
Medium		224,900	247,200	267,800	287,100	304,700	320,300
High		235,900	266,100	297,100	329,100	361,200	392,400
COLLIER	343,802						
Low		358,400	373,300	386,500	396,500	403,900	409,700
Medium		378,700	409,900	436,800	460,900	482,700	503,900
High		394,000	436,700	478,600	519,900	561,000	603,100
COLUMBIA	68,163						
Low		68,100	68,600	69,000	69,200	69,100	68,800
Medium		71,600	74,700	77,300	79,700	81,800	83,700
High		74,800	80,100	85,300	90,500	95,600	100,600
DESOTO	34,777						
Low		33,900	33,400	33,100	32,500	32,000	31,400
Medium		35,600	36,300	36,900	37,400	37,800	38,300
High		37,300	39,100	40,900	42,500	44,200	46,000
DIXIE	16,468						
Low		16,300	16,300	16,200	16,100	15,900	15,600
Medium		17,400	18,000	18,600	19,000	19,500	19,900
High		18,300	19,600	20,900	22,100	23,400	24,600

Projections of Florida Population by County, 2020–2045, with Estimates for 2015 (continued)

County and State	Estimates April 1, 2015	Projections, April 1 2020	2025	2030	2035	2040	2045
DUVAL	905,574						
Low		911,400	922,500	935,200	942,400	945,700	945,900
Medium		959,600	1,008,300	1,053,600	1,093,200	1,129,800	1,164,600
High		1,002,000	1,079,100	1,158,000	1,235,700	1,313,500	1,392,600
ESCAMBIA	306,944						
Low		302,500	300,400	299,100	296,000	292,100	289,200
Medium		314,200	321,100	326,800	330,500	333,600	337,900
High		326,100	340,800	355,100	368,000	380,200	394,100
FLAGLER	101,353						
Low		109,400	118,400	126,800	133,500	137,200	139,200
Medium		120,100	138,300	155,600	172,200	185,900	199,100
High		127,700	151,500	176,900	203,600	229,200	255,400
FRANKLIN	11,840						
Low		11,300	11,000	10,700	10,400	10,100	9,700
Medium		12,000	12,100	12,200	12,300	12,300	12,400
High		12,700	13,300	13,800	14,300	14,800	15,300
GADSDEN	48,315						
Low		46,900	46,100	45,400	44,800	43,900	42,900
Medium		49,200	50,000	50,700	51,400	51,900	52,200
High		51,500	53,800	56,200	58,500	60,700	62,700
GILCHRIST	16,839						
Low		16,700	16,700	16,800	16,700	16,600	16,400
Medium		17,700	18,500	19,200	19,800	20,400	20,800
High		18,700	20,100	21,600	23,000	24,400	25,800
GLADES	12,853						
Low		12,600	12,400	12,300	12,100	11,900	11,700
Medium		13,300	13,700	14,100	14,400	14,600	14,900
High		14,100	15,000	15,800	16,700	17,600	18,500
GULF	16,346						
Low		15,800	15,400	15,100	14,700	14,300	14,000
Medium		16,700	17,000	17,200	17,400	17,600	17,800
High		17,700	18,600	19,400	20,200	21,100	22,000
HAMILTON	14,630						
Low		14,200	14,000	13,900	13,800	13,600	13,300
Medium		15,100	15,500	15,900	16,300	16,600	16,900
High		15,900	16,900	17,900	18,900	20,000	20,900
HARDEE	27,645						
Low		26,300	25,400	24,700	23,900	23,000	22,000
Medium		27,900	28,000	28,100	28,200	28,200	28,100
High		29,500	30,600	31,700	32,900	33,800	34,700
HENDRY	38,096						
Low		37,300	36,800	36,300	35,700	35,200	34,600
Medium		39,100	39,900	40,600	41,000	41,600	42,200
High		41,000	43,000	44,900	46,700	48,700	50,700
HERNANDO	176,819						
Low		181,400	187,500	193,200	197,600	201,000	202,900
Medium		193,600	209,300	223,400	236,700	249,200	260,800
High		203,500	226,100	249,100	272,700	297,000	321,400
HIGHLANDS	100,748						
Low		100,600	101,300	102,000	102,200	101,600	100,600
Medium		105,800	110,400	114,300	117,700	120,200	122,500
High		110,600	118,500	126,100	133,700	140,600	147,300
HILLSBOROUGH	1,325,563						
Low		1,372,300	1,425,600	1,474,400	1,510,600	1,535,900	1,544,300
Medium		1,466,000	1,594,000	1,710,200	1,815,800	1,913,800	1,998,000
High		1,539,300	1,718,300	1,900,500	2,083,800	2,269,400	2,446,800

Projections of Florida Population by County, 2020–2045, with Estimates for 2015 (continued)

County and State	Estimates April 1, 2015	Projections, April 1 2020	2025	2030	2035	2040	2045
HOLMES	19,902						
Low		19,100	18,600	18,100	17,600	17,000	16,400
Medium		20,300	20,500	20,700	20,800	20,900	20,900
High		21,400	22,400	23,300	24,200	25,000	25,800
INDIAN RIVER	143,326						
Low		145,700	149,300	152,700	155,100	156,700	157,200
Medium		155,300	166,400	176,300	185,600	194,200	202,200
High		163,400	180,000	196,900	214,000	231,500	249,100
JACKSON	50,458						
Low		48,800	47,700	46,700	45,600	44,500	43,500
Medium		51,100	51,700	52,100	52,300	52,700	53,000
High		53,600	55,800	57,700	59,600	61,600	63,700
JEFFERSON	14,519						
Low		14,000	13,700	13,400	13,000	12,600	12,200
Medium		14,800	15,100	15,200	15,400	15,500	15,500
High		15,700	16,500	17,200	17,900	18,600	19,200
LAFAYETTE	8,664						
Low		8,500	8,500	8,400	8,400	8,300	8,100
Medium		9,100	9,600	9,900	10,300	10,600	11,000
High		9,700	10,500	11,300	12,100	13,000	13,900
LAKE	316,569						
Low		333,000	351,500	368,900	383,700	395,700	402,300
Medium		356,300	394,000	428,800	462,000	493,300	520,100
High		373,500	423,600	475,500	529,300	584,700	637,500
LEE	665,845						
Low		705,000	748,300	789,300	823,000	846,400	862,300
Medium		754,800	839,500	918,300	991,200	1,055,000	1,114,500
High		790,800	901,900	1,017,400	1,135,300	1,250,600	1,366,300
LEON	284,443						
Low		286,400	289,600	292,200	293,000	293,100	292,300
Medium		301,500	316,500	328,900	339,700	350,200	360,000
High		314,800	338,700	361,800	384,200	407,100	430,400
LEVY	40,448						
Low		40,400	40,700	41,000	41,000	41,000	40,700
Medium		42,500	44,300	45,900	47,200	48,500	49,600
High		44,400	47,600	50,600	53,700	56,700	59,600
LIBERTY	8,698						
Low		8,600	8,600	8,600	8,600	8,500	8,400
Medium		9,200	9,700	10,200	10,600	11,000	11,400
High		9,800	10,700	11,600	12,500	13,400	14,400
MADISON	19,200						
Low		18,200	17,600	17,100	16,500	16,000	15,400
Medium		19,300	19,400	19,500	19,500	19,600	19,700
High		20,500	21,200	22,000	22,700	23,500	24,300
MANATEE	349,334						
Low		361,100	374,500	385,800	393,400	398,800	402,800
Medium		385,700	418,700	447,200	472,700	496,900	520,900
High		405,000	451,400	497,300	542,700	589,300	638,100
MARION	341,205						
Low		352,600	365,600	378,000	388,300	396,800	403,000
Medium		372,300	401,100	427,100	451,400	474,400	495,600
High		387,700	427,600	468,000	509,100	551,200	593,300
MARTIN	150,062						
Low		150,800	152,000	153,100	153,400	153,100	151,900
Medium		158,700	165,600	171,400	176,600	181,100	184,900
High		165,800	177,700	189,200	200,600	211,700	222,200

Projections of Florida Population by County, 2020–2045, with Estimates for 2015 (continued)

County and State	Estimates April 1, 2015	Projections, April 1 2020	2025	2030	2035	2040	2045
MIAMI-DADE	2,653,934						
Low		2,687,900	2,738,100	2,797,100	2,838,100	2,865,100	2,884,700
Medium		2,832,000	2,996,000	3,155,300	3,294,700	3,423,600	3,550,000
High		2,955,300	3,202,800	3,463,600	3,721,300	3,979,700	4,246,900
MONROE	74,206						
Low		71,000	68,900	67,000	65,000	63,000	61,000
Medium		74,400	74,500	74,600	74,600	74,500	74,400
High		78,100	80,500	82,800	85,000	87,200	89,300
NASSAU	76,536						
Low		78,300	80,900	83,300	85,000	86,000	86,000
Medium		84,500	92,000	98,900	105,300	111,300	116,500
High		89,600	100,500	111,800	123,400	135,300	146,800
OKALOOSA	191,898						
Low		191,300	191,700	191,600	190,600	188,900	187,100
Medium		201,200	208,700	214,300	219,200	223,500	227,800
High		210,300	224,100	236,800	249,200	261,300	273,800
OKEECHOBEE	40,052						
Low		39,500	39,100	38,600	38,000	37,300	36,500
Medium		41,500	42,500	43,000	43,600	44,100	44,500
High		43,500	45,700	47,700	49,700	51,600	53,400
ORANGE	1,252,396						
Low		1,315,800	1,384,700	1,446,100	1,495,100	1,530,900	1,549,700
Medium		1,407,600	1,551,400	1,679,700	1,799,100	1,908,000	2,004,000
High		1,475,900	1,669,000	1,864,000	2,062,500	2,262,100	2,455,400
OSCEOLA	308,327						
Low		338,800	372,300	401,800	421,400	434,900	444,800
Medium		368,200	427,900	481,600	525,700	566,300	605,800
High		387,700	461,900	537,900	609,700	681,200	755,600
PALM BEACH	1,378,417						
Low		1,397,500	1,421,500	1,441,500	1,452,100	1,454,900	1,452,800
Medium		1,472,600	1,554,900	1,624,000	1,684,400	1,738,100	1,789,000
High		1,536,500	1,662,700	1,785,000	1,904,100	2,020,900	2,138,900
PASCO	487,588						
Low		505,700	527,300	547,400	563,700	576,800	585,600
Medium		540,400	590,000	635,300	678,100	718,900	757,100
High		567,300	635,600	705,600	777,700	852,300	927,800
PINELLAS	944,971						
Low		921,900	906,500	891,900	874,800	860,200	845,100
Medium		956,500	967,100	972,500	975,700	982,200	987,900
High		993,600	1,028,200	1,059,100	1,087,400	1,119,400	1,151,500
POLK	633,052						
Low		649,700	671,700	691,900	707,800	718,000	720,800
Medium		693,400	750,500	802,100	850,700	894,600	932,600
High		728,700	809,600	891,900	976,400	1,060,900	1,142,000
PUTNAM	72,756						
Low		69,900	68,000	66,500	65,000	63,500	62,000
Medium		73,200	73,700	74,200	74,600	75,100	75,500
High		76,900	79,500	82,300	85,000	87,800	90,700
ST. JOHNS	213,566						
Low		233,500	254,600	273,000	285,300	293,900	300,600
Medium		253,600	292,200	326,900	355,800	382,700	409,300
High		267,200	315,800	365,500	412,800	460,400	510,600
ST. LUCIE	287,749						
Low		302,400	320,100	336,700	350,700	360,400	366,700
Medium		323,500	359,000	391,500	422,400	449,300	474,000
High		339,200	385,900	434,000	483,800	532,600	580,900

Projections of Florida Population by County, 2020–2045, with Estimates for 2015 (continued)

County and State	Estimates April 1, 2015	Projections, April 1					
		2020	2025	2030	2035	2040	2045
SANTA ROSA	162,925						
Low		167,400	172,900	177,500	180,600	182,800	184,300
Medium		178,700	192,900	205,100	216,100	226,600	236,800
High		187,800	208,500	228,900	249,200	270,100	291,800
SARASOTA	392,090						
Low		395,000	399,500	403,200	403,000	400,300	397,200
Medium		415,900	436,600	453,900	467,000	478,100	489,300
High		434,300	467,300	499,200	528,400	556,100	584,700
SEMINOLE	442,903						
Low		450,200	458,900	466,200	470,400	472,000	471,500
Medium		474,500	502,100	525,400	545,800	563,900	580,600
High		494,900	536,800	577,300	616,800	655,600	694,200
SUMTER	115,657						
Low		128,100	141,100	152,800	162,400	170,000	175,500
Medium		141,000	165,200	187,900	209,600	230,500	250,700
High		149,500	180,500	213,200	247,700	283,900	322,000
SUWANNEE	44,452						
Low		44,200	44,400	44,600	44,500	44,300	43,800
Medium		47,000	49,300	51,300	53,200	54,800	56,300
High		49,600	53,500	57,500	61,400	65,400	69,300
TAYLOR	22,824						
Low		22,000	21,600	21,300	21,000	20,500	20,000
Medium		23,400	23,900	24,400	24,800	25,100	25,400
High		24,700	26,100	27,400	28,800	30,100	31,400
UNION	15,918						
Low		15,400	15,200	15,000	14,800	14,500	14,200
Medium		16,600	17,200	17,700	18,200	18,700	19,100
High		17,700	18,900	20,200	21,500	22,800	24,200
VOLUSIA	510,494						
Low		514,600	520,000	524,500	524,300	523,500	521,300
Medium		535,800	557,300	574,100	585,900	598,000	608,700
High		554,600	589,800	622,800	651,700	681,200	710,300
WAKULLA	31,283						
Low		31,500	32,000	32,400	32,700	32,900	32,800
Medium		33,500	35,600	37,400	39,100	40,700	42,200
High		35,300	38,600	41,800	45,200	48,600	52,000
WALTON	60,687						
Low		64,000	67,600	70,900	73,400	74,700	75,400
Medium		69,300	77,200	84,400	91,100	96,700	102,100
High		73,200	84,000	95,200	106,600	117,600	128,700
WASHINGTON	24,975						
Low		24,400	24,200	24,000	23,600	23,100	22,500
Medium		25,900	26,800	27,400	27,900	28,300	28,700
High		27,400	29,200	30,900	32,400	33,900	35,400
FLORIDA	19,815,183						
Low		20,726,400	21,588,200	22,364,100	23,027,000	23,596,600	24,097,600
Medium		21,372,200	22,799,500	24,071,000	25,212,400	26,252,100	27,217,600
High		22,028,800	23,908,700	25,614,700	27,204,800	28,694,700	30,113,600

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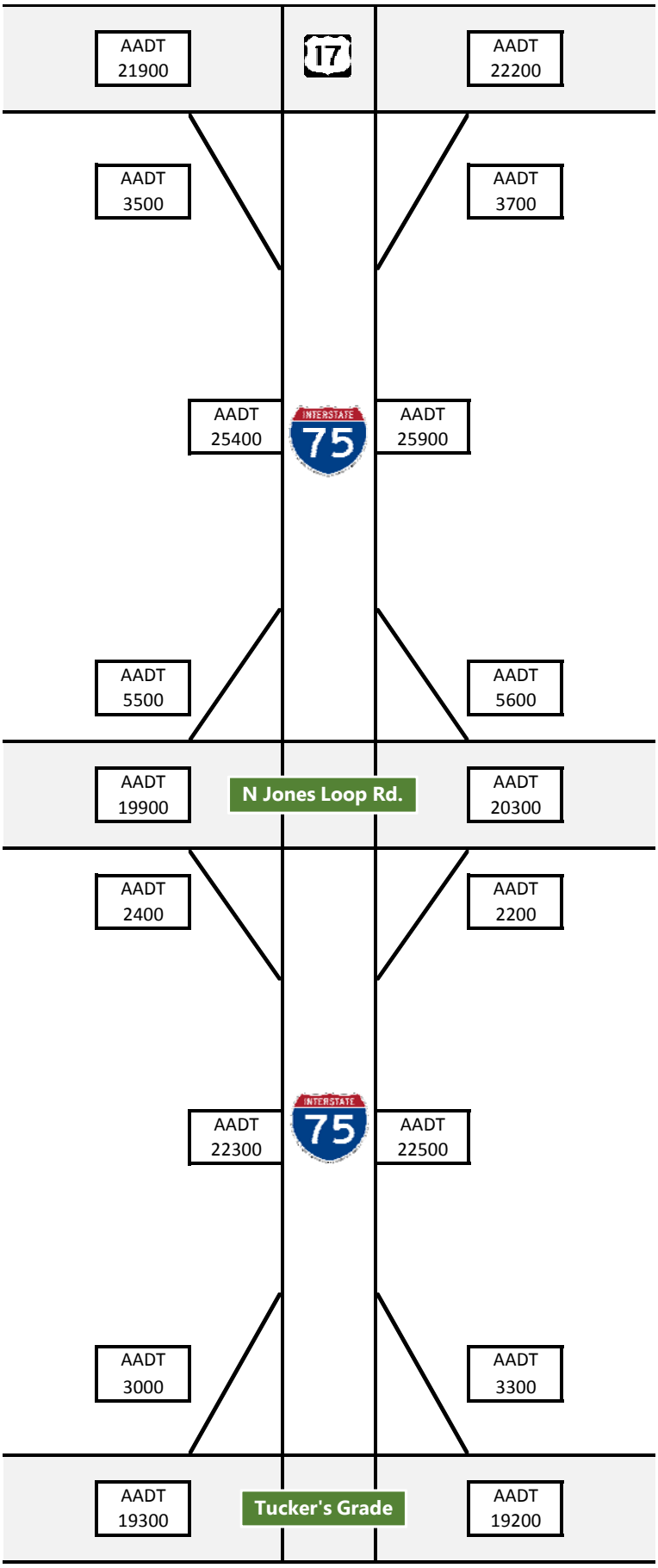
APPENDIX E – Traffic Development Documentation

Existing (2014) AADTs



010034 - I-75, SE of N JLR	4-22-2014 Tuesday						10-28-2014 Tuesday						6-4-2014 Wednesday						Varied AVERAGE					
Start Time	15 Minute Volume (NB/EB)	15 Minute Volume (SB/WB)	15 Minute Volume (BI-DIR)	Hourly Volume (NB/EB)	Hourly Volume (SB/WB)	Hourly Volume (BI-DIR)	15 Minute Volume (NB/EB)	15 Minute Volume (SB/WB)	15 Minute Volume (BI-DIR)	Hourly Volume (NB/EB)	Hourly Volume (SB/WB)	Hourly Volume (BI-DIR)	15 Minute Volume (NB/EB)	15 Minute Volume (SB/WB)	15 Minute Volume (BI-DIR)	Hourly Volume (NB/EB)	Hourly Volume (SB/WB)	Hourly Volume (BI-DIR)	15 Minute Volume (NB/EB)	15 Minute Volume (SB/WB)	15 Minute Volume (BI-DIR)	Hourly Volume (NB/EB)	Hourly Volume (SB/WB)	Hourly Volume (BI-DIR)
AM																								
7:00 AM	353	385	738	1380	1451	2831	265	312	577	1018	1147	2165	271	332	603	959	1097	2056	296	343	639	1119	1232	2351
7:15 AM	336	466	802	1395	1597	2992	275	352	627	1038	1227	2265	259	372	631	1029	1218	2247	290	397	687	1154	1347	2501
7:30 AM	452	451	903	1480	1693	3173	330	351	681	1117	1310	2427	327	358	685	1121	1318	2439	370	387	756	1239	1440	2680
7:45 AM	458	445	903	1599	1747	3346	326	331	657	1196	1346	2542	338	325	663	1195	1387	2582	374	367	741	1330	1493	2823
8:00 AM	508	446	954	1754	1808	3562	331	308	639	1262	1342	2604	309	319	628	1233	1374	2607	383	358	740	1416	1508	2924
8:15 AM	477	416	893	1895	1758	3653	336	309	645	1323	1299	2622	320	338	658	1294	1340	2634	378	354	732	1504	1466	2970
8:30 AM	492	423	915	1935	1730	3665	332	315	647	1325	1263	2588	311	313	624	1278	1295	2573	378	350	729	1513	1429	2942
8:45 AM	575	410	985	2052	1695	3747	370	311	681	1369	1243	2612	296	289	585	1236	1259	2495	414	337	750	1552	1399	2951
9:00 AM	449	297	746	1993	1546	3539	306	332	638	1344	1267	2611	288	330	618	1215	1270	2485	348	320	667	1517	1361	2878
9:15 AM	500	304	804	2016	1434	3450	296	353	649	1304	1311	2615	304	318	622	1199	1250	2449	367	325	692	1506	1332	2838
9:30 AM	436	286	722	1960	1297	3257	313	358	671	1285	1354	2639	324	319	643	1212	1256	2468	358	321	679	1486	1302	2788
9:45 AM	493	341	834	1878	1228	3106	331	344	675	1246	1387	2633	287	328	615	1203	1295	2498	370	338	708	1442	1303	2746
MD																								
10:00 AM	438	561	999	1867	1492	3359	327	360	687	1267	1415	2682	276	286	562	1191	1251	2442	347	402	749	1442	1386	2828
10:15 AM	456	718	1174	1823	1906	3729	310	324	634	1281	1386	2667	304	338	642	1191	1271	2462	357	460	817	1432	1521	2953
10:30 AM	516	737	1253	1903	2357	4260	296	337	633	1264	1365	2629	280	295	575	1147	1247	2394	364	456	820	1438	1656	3094
10:45 AM	464	524	988	1874	2540	4414	352	310	662	1285	1331	2616	282	331	613	1142	1250	2392	366	388	754	1434	1707	3141
11:00 AM	470	469	939	1906	2448	4354	269	326	595	1227	1297	2524	317	317	634	1183	1281	2464	352	371	723	1439	1675	3114
11:15 AM	468	434	902	1918	2164	4082	321	340	661	1238	1313	2551	288	309	597	1167	1252	2419	359	361	720	1441	1576	3017
11:30 AM	449	426	875	1851	1853	3704	323	332	655	1265	1308	2573	340	302	642	1227	1259	2486	371	353	724	1448	1473	2921
11:45 AM	459	430	889	1846	1759	3605	330	366	696	1243	1364	2607	289	292	581	1234	1220	2454	359	363	722	1441	1448	2889
12:00 PM	449	385	834	1825	1675	3500	346	328	674	1320	1366	2686	302	328	630	1219	1231	2450	366	347	713	1455	1424	2879
12:15 PM	434	405	839	1791	1646	3437	331	333	664	1330	1359	2689	308	294	602	1239	1216	2455	358	344	702	1453	1407	2860
12:30 PM	430	402	832	1772	1622	3394	312	349	661	1319	1376	2695	323	286	609	1222	1200	2422	355	346	701	1438	1399	2837
12:45 PM	501	351	852	1814	1543	3357	284	310	594	1273	1320	2593	339	281	620	1272	1189	2461	375	314	689	1453	1351	2804
1:00 PM	463	386	849	1828	1544	3372	342	337	679	1269	1329	2598	325	299	624	1295	1160	2455	377	341	717	1464	1344	2808
1:15 PM	450	422	872	1844	1561	3405	324	332	656	1262	1328	2590	340	282	622	1327	1148	2475	371	345	717	1478	1346	2823
1:30 PM	456	404	860	1870	1563	3433	343	355	698	1293	1334	2627	324	322	646	1328	1184	2512	374	360	735	1497	1360	2857
1:45 PM	423	402	825	1792	1614	3406	308	351	659	1317	1375	2692	348	298	646	1337	1201	2538	360	350	710	1482	1397	2879
2:00 PM	442	376	818	1771	1604	3375	342	316	658	1317	1354	2671	340	280	620	1352	1182	2534	375	324	699	1480	1380	2860
2:15 PM	435	432	867	1756	1614	3370	366	349	715	1359	1371	2730	337	310	647	1349	1210	2559	379	364	743	1488	1398	2886
2:30 PM	437	361	798	1737	1571	3308	344	337	681	1360	1353	2713	370	334	704	1395	1222	2617	384	344	728	1497	1382	2879
2:45 PM	437	359	796	1751	1528	3279	373	314	687	1425	1316	2741	376	291	667	1423	1215	2638	395	321	717	1533	1353	2886
3:00 PM	385	367	752	1694	1519	3213	347	349	696	1430	1349	2779	375	359	734	1458	1294	2752	369	358	727	1527	1387	2915
3:15 PM	450	412	862	1709	1499	3208	350	307	657	1414	1307	2721	325	317	642	1446	1301	2747	375	345	720	1523	1369	2892
3:30 PM	452	419	871	1724	1557	3281	371	341	712	1441	1311	2752	359	316	675	1435	1283	2718	394	359	753	1533	1384	2917
3:45 PM	493	365	858	1780	1563	3343	400	385	785	1468	1382	2850	386	340	726	1445	1332	2777	426	363	790	1564	1426	2990
PM																								
4:00 PM	544	454	998	1939	1650	3589	390	376	766	1511	1409	2920	445	411	856	1515	1384	2899	460	414	873	1655	1481	3136
4:15 PM	538	454	992	2027	1692	3719	439	309	748	1600	1411	3011	393	401	794	1583	1468	3051	457	388	845	1737	1524	3260
4:30 PM	534	444	978	2109	1717	3826	417	372	789	1646	1442	3088	339	337	676	1563	1489	3052	430	384	814	1773	1549	3322
4:45 PM	526	487	1013	2142	1839	3981	413	335	748	1659	1392	3051	390	322	712	1567	1471	3038	443	381	824	1789	1567	3357
5:00 PM	551	457	1008	2149	1842	3991	430	361	791	1699	1377	3076	396	333	729	1518	1393	2911	459	384	843	1789	1537	3326
5:15 PM	596	453	1049	2207	1841	4048	452	342	794	1712	1410	3122	398	354	752	1523	1346	2869	482	383	865	1814	1532	3346
5:30 PM	486	403	889	2159	1800	3959	409	296	705	1704	1334	3038	408	329	737	1592	1338	2930	434	343	777	1818	1491	3309
5:45 PM	498	382	880	2131	1695	3826	377	298	675	1668	1297	2965	374	295	669	1576	1311	2887	416	325	741	1792	1434	3226
6:00 PM	483	354	837	2063	1592	3655	345	301	646	1583	1237	2820	369	313	682	1549	1291	2840	399	323	722	1732	1373	3105
6:15 PM	403	345	748	1870	1484	3354	345	248	593	1476	1143	2619	314	255	569	1465	1192	2657	354	283	637	1604	1273	2877
6:30 PM	370	273	643	1754	1354	3108	298	229	527	1365	1076	2441	301	231	532	1358	1094	2452	323	244	567	1492	1175	2667
6:45 PM	323	248	571	1579	1220	2799	246	215	461	1234	993	2227	252	218	470	1236	1017	2253	274	227	501	1350	1077	2426
NT																								
7:00 PM	305	243	548	1401	1109	2510	192	207	399	1081	899	1980	211	198	409	1078	902	1980	236	216	452	1187	970	2157
7:15 PM	292	194	486	1290	958	2248	210	175	385	946	826	1772	196	183	379	960	830	1790	233	184	417	1065	871	1937
7:30 PM	252	199	451	1172	884	2056	177	180	357	825	777	1602	218	193	411	877	792	1669	216	191	406	958	818	1776
7:45 PM	259	173	432	1108	809	1917	194	154	348	773	716	1489	163	178	341	788	752	1540	205	168	374	890	759	1649
8:00 PM	275	194	469	1078	760	1838	184	158	342	765	667	1432	175	146	321	752	700	1452	211	166	377	865	709	1574
8:15 PM	224	180	404	1010	746	1756	160	169	329	715	661	1376	142	157	299	698	674	1372	175	169	344	808	694	1501
8:30 PM	209	177	386	967	724	1691	167	135	302	705	616	1321	144	143	287	624	624	1248	173	152	325	765	655	1420
8:45 PM	213	139	352	921	690	1611	149	121	270	660	583	1243	143	143	286	604	589	1193	168	134	303	728	621	1349
9:00 PM	164	144	308	810	640	1450	165	120	285	641	545	1186	133	128	261	562	571	1133	154	131	285	671	585	1256
9:15 PM	207	148	355	793	608	1401	130	156	286	611	532	1143	122	106	228	542	520	1062	153	137	290	649	553	1202
9:30 PM	158	116	274	742	547	1289	140	111	251	584	508	1092	131	109	240	529	486	1015	143	112	255	618	514	1132
9:45 PM	158	174	332	687	582	1269	129	88	217	564	475	1039	123	117	240	509	460	969	137	126	263	587	506	1092
10:00 PM	156	132	288	679	570	1249	108	105	213	507	460	967	99	86	185	475	418	893	121	108	229	554	483	1036
10:15 PM	156	117	273	628	539	1167	117	88	205	494	392	886	73	85	158	426	397	823	115	97	212	516	443	959
10:30 PM	123	109	232	593	532	1125	67	97	164	421	378	799	88	86	174	383	374	757	93	97	190	466	428	894
10:45 PM	92	105	197	527	463	990	66	74	140	358	364	722	61	84	145	321	341	662	73	88	161	402	389	791
11:00 PM	84	96	180	455	427	882	57	61	118	307	320	627	102	76	178	324	331	655	81	78	159	362	359	721
11:15 PM	83	98	181	382	408	790	55	73	128	245	305	550	72	76	148	323	322	645	70	82	152	317	345	662
11:30 PM	96	118	214	355	417	772	59	65	124	237	273	510	55	56	111	290	292	582	70	80	150	294	327	621
11:45 PM	81	80	161	344	392	736	67	56	123	238	255	493	59	51	110	288	259	547	69	62	131	290	302	592
12:00 AM	67	64	131	327	360	687	57	49	106	238	243	481	41	54	95	227	237	464	55	56	111	264	280	544
12:15 AM	61	82	143	305	344	649	40	48	88	223	218	441	47	39	86	202	200	402	49	56	106	243	254	497
12:30 AM	71	76	147	280	302	582	32	40	72	196	193	389	51	42	93	198	186	384	51	53	104	225	227	452
12:45 AM	59	51	110	258	273	531	46	41	87	175	178	353	48	32	80	187	167	354	51	41	92	207	206	413
1:00 AM	43	60	103	234	269	503	38	53	91	156	182	338	45	27	72	191	140	331	42	47	89	194	197	391
1:15 AM	56	71	127	229	258	487	34	56	90	150	190	340	30	30	60	174	131	305	40	52	92	184	193	377
1:30 AM	61	33	94	219	215	434	42	33	75	160	183	343	30	20	50	153	109	262	44	29	73	177	169	346
1:45 AM	66	37	103	226	201	427	20	39	59	134	181	315	26	30	56	131	107	238	37	35	73	164	163	327
2:00 AM	33	33	66	216	174	390	29	29	58	125	157	282	27	24	51	113	104	217	30	29	58	151	145	296
2:15 AM	48	56	104	208	159	367	31	35	66	122	136	258	21	16	37	104	90	194	33	36	69	145	128	273
2:30 AM	57	30	87	204	156	360	26	39	65	106	142	248	17	32	49	91	102	193	33	34	67	134	133	267
2:45 AM	46	68	114	184	187	371	33	54	87	119	157	276	30	30	60	95	102	197	36	51	87	133	149	281
3:00 AM	41	76	117	192	230	422	22	47	69	112	175	287	28	27	55	96	105	201	30	50	80	133	170	303
3:15 AM	43	81	124	187	255	442	28	49	77	109	189	298	32	39	71	107	128	235	34	56	91	134	191	325
3:30 AM	55	80	135	185	305	490	50	63	113	133	213	346	32	33	65	122	129	251	46	59	104	147	216	362
3:45 AM	66	74	140	205	311	516	26	61	87	126	220	346	34	36	70	126	135	261	42	57	99	152	222	374
4:00 AM	71	84	155	235	319	554	36	70	106	140	243	383	35	55	90	133	163	296	47	70	117	169	242	411
4:15 AM	79	144	223	271	382	653	53	79	132	165	273	438	47	58	105	148	182	330	60	94	153	195	279	474
4:30 AM	97	147	244	313	449	762	57	90	147	172	300	472	51	75	126	167	224	391	68	104	172	217	324	542
4:45 AM	99	140	239	346	515	861	55	69	124	201	308	509	56	65	121	189	253	442	70	91	161	245	359	604
5:00 AM	107	167	274	382	598	980	65	100	165	230	338	568	71	83	154	225	281	506	81	117	198	279	406	685
5:15 AM	153	197	350	456	651	1107	106	121	227	283	380	663	92	112	204	270	335	605	117	143	260	336	455	792
5:30 AM	181	195	376	540	699	1239	113	155	268	339	445	784	121	134	255	340	394	734	138	161	300	406	513	919
5:45 AM	223	235	458	664	794	1458	148	161	309	432	537	969	161	132	293	445	461	906	177	176	353	514	597	1111
6:00 AM	258	270	528	815	897	1712	168	239	407	535	676	1211	144	190	334	518	568	1086	190	233	423	623	714	1336
6:15 AM	321	320	641	983	1020	2003	255	272	527	684	827	1511	189	251	440	615	707	1322	255	281	536	761	851	1612
6:30 AM	367	355	722	1169	1180	2349	251	268	519	822	940	1762	235	258	493	729	831	1560	284	294	578	907	984	1890
6:45 AM	339	391	730	1285	1336	2621	247	295	542	921	1074	1995	264	256	520	832	955	1787	283	314	597	1013	1122	2134
TOTAL VOLUMES	DAY 1 RAW TOTAL VOLUME			DAY 1 ADJ VOLUME (SEA + AXLE)			DAY 2 RAW TOTAL VOLUME			DAY 2 ADJ VOLUME (SEA + AXLE)			DAY 3 RAW TOTAL VOLUME			DAY 3 ADJ VOLUME (SEA + AXLE)			AVERAGE RAW TOTAL VOLUME			AVERAGE ADJ VOLUME (SEA + AXLE)		
AM [7:00AM-10:00AM]	5,529	4,670	10,199	5,529	4,670	10,199	3,811	3,976	7,787	3,811	3,976	7,787	3,634	3,941	7,575	3,634	3,941	7,575	4,325	4,196	8,520	4,325	4,196	8,520
MD [10:00AM-4:00PM]	10,857	10,547	21,404	10,857	10,547	21,404	8,011	8,088	16,099	8,011	8,088	16,099	7,853	7,407	15,260	7,853	7,407	15,260	8,907	8,681	17,588	8,907	8,681	17,588
PM [4:00PM-7:00PM]	5,852	4,754	10,606	5,852	4,754	10,606	4,561	3,682	8,243	4,561	3,682	8,243	4,379	3,799	8,178	4,379	3,799	8,178	4,931	4,078	9,009	4,931	4,078	9,009
NT [7:00PM-7:00AM]	6,755	6,553	13,308	6,755	6,553	13,308	4,701	5,048	9,749	4,701	5,048	9,749	4,515	4,581	9,096	4,515	4,581	9,096	5,324	5,394	10,718	5,324	5,394	10,718
ALL DAY	28,993	26,524	55,517	28,993	26,524	55,517	21,084	20,794	41,878	21,084	20,794	41,878	20,381	19,728	40,109	20,381	19,728	40,109	23,486	22,349	45,835	23,486	22,349	45,835
PEAK INFORMATION	MAX PEAK 15 MINUTE VOLUME			PEAK HOUR ROW			PEAK 15 MINUTE VOLUME			PEAK HOUR ROW			PEAK 15 MINUTE VOLUME			PEAK HOUR ROW			PEAK 15 MINUTE VOLUME			PEAK HOUR ROW		
AM [7:00AM-10:00AM]	575	466	985	11	8	11	370	358	681	11	15	14	338	372	685	9	7	9	414	397	756	11	8	9
MD [10:00AM-4:00PM]	516	737	1,253	22	20	20	400	360	785	40	17	40	376	359	734	37	40	40	426	460	820	40	20	20
PM [4:00PM-7:00PM]	596	487	1,049	47	46	47	452	385	794	47	44	47	408	411	856	48	44	44	482	414	873	48	45	45
NT [7:00PM-7:00AM]	403	391	730	55	102	102	345	295	542	55	102	102	314	258	569	55	102	55	354	314	637	55	102	55
PEAK HOUR VOLUME	PEAK HOUR CHARACTERISTICS						PEAK HOUR CHARACTERISTICS						PEAK HOUR CHARACTERISTICS						PEAK HOUR CHARACTERISTICS					
RAW AM PEAK HR	575	466	985	2,052	1,695	3,747	370	358	681	1,285	1,354	2,639	338	372	685	1,294	1,340	2,634	414	397	756	1,504	1,466	2970
ADJ AM PEAK HR	*575*	*466*	*985*	*2,052*	*1,695*	*3,747*	*370*	*358*	*681*	*1,285*	*1,354*	*2,639*	*338*	*372*	*685*	*1,294*	*1,340*	*2,634*	*414*	*397*	*756*	*1,504*	*1,466*	*2970*
RAW MD PEAK HR	516	737	1,253	1,874	2,540	4,414	400	360	785	1,468	1,382	2,850	376	359	734	1,445	1,332	2,777	426	460	820	1,434	1,707	3141
ADJ MD PEAK HR	*516*	*737*	*1,253*	*1,874*	*2,540*	*4,414*	*400*	*360*	*785*	*1,468*	*1,382*	*2,850*	*376*	*359*	*734*	*1,445*	*1,332*	*2,777*	*426*	*460*	*820*	*1,434*	*1,707*	*3141*
RAW PM PEAK HR	596	487	1,049	2,207	1,841	4,048	452	385	794	1,712	1,410	3,122	408	411	856	1,563	1,489	3,052	482	414	873	1,789	1,567	3357
ADJ PM PEAK HR	*596*	*487*	*1,049*	*2,207*	*1,841*	*4,048*	*452*	*385*	*794*	*1,712*	*1,410*	*3,122*	*408*	*411*	*856*	*1,563*	*1,489*	*3,052*	*482*	*414*	*873*	*1,789*	*1,567*	*3357*
RAW NT PEAK HR	403	391	730	1,285	1,336	2,621	345	295	542	921	1,074	1,995	314	258	569	1,078	902	1,980	354	314	637	1,187	970	2157
ADJ NT PEAK HR	*403*	*391*	*730*	*1,285*	*1,336*	*2,621*	*345*	*295*	*542*	*921*	*1,074*	*1,995*	*314*	*258*	*569*	*1,078*	*902*	*1,980*	*354*	*314*	*637*	*1,187*	*970*	*2157*
	PEAK HOUR START TIME			PEAK HOUR FACTOR			PEAK HOUR START TIME			PEAK HOUR FACTOR			PEAK HOUR START TIME			PEAK HOUR FACTOR			PEAK HOUR START TIME			PEAK HOUR FACTOR		
AM [7:00AM-10:00AM]	8:00 AM	7:15 AM	8:00 AM	0.89	0.91	0.95	8:00 AM	9:00 AM	8:45 AM	0.87	0.95	0.97	7:30 AM	7:00 AM	7:30 AM	0.96	0.90	0.96	8:00 AM	7:15 AM	7:30 AM	0.91	0.92	0.98
MD [10:00AM-4:00PM]	10:30 AM	10:00 AM	10:00 AM	0.91	0.86	0.88	3:00 PM	9:15 AM	3:00 PM	0.92	0.96	0.91	2:15 PM	3:00 PM	3:00 PM	0.96	0.93	0.95	3:00 PM	10:00 AM	10:00 AM	0.84	0.93	0.96
PM [4:00PM-7:00PM]	4:30 PM	4:15 PM	4:30 PM	0.93	0.95	0.96	4:30 PM	3:45 PM	4:30 PM	0.95	0.92	0.98	4:45 PM	3:45 PM	3:45 PM	0.96	0.91	0.89	4:45 PM	4:00 PM	4:00 PM	0.93	0.95	0.96
NT [7:00PM-7:00AM]	6:15 PM	6:00 AM	6:00 AM	0.80	0.85	0.90	6:15 PM	6:00 AM	6:00 AM	0.67	0.91	0.92	6:15 PM	6:00 AM	6:15 PM	0.86	0.87	0.87	6:15 PM	6:00 AM	6:15 PM	0.84	0.77	0.85
PEAK HOUR VOLUME	Manual?	No																						

PEAK HOUR START TIME	TRUE	USED
AM	7:30 AM	7:30 AM
MD	10:00 AM	10:00 AM
PM	4:00 PM	4:00 PM
NT	6:15 PM	6:15 PM

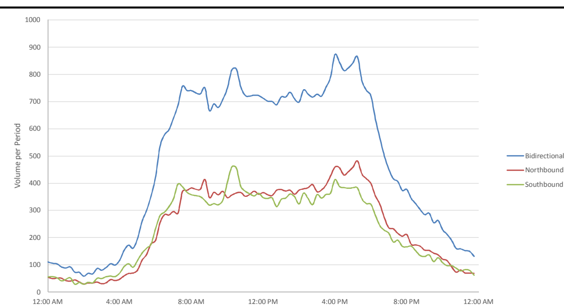
TIME PERIOD ADJUSTED (YES/NO)

AM MD

PEAK HOUR FACTOR	TRUE	USED
AM	0.98	0.98
MD	0.96	0.96
PM	0.96	0.96
NT	0.85	0.85

PM NT

TEMPORAL DISTRIBUTION



RESULTS

AADT		*PEAK HOUR CHARACTERISTICS*			
NB/EB	23000	AM PEAK HOUR	7:30 AM	AM PEAK HOUR VOLUME	2970
SB/WB	22000	PM PEAK HOUR	4:00 PM	PM PEAK HOUR VOLUME	3357
TOTAL	46000	D Factor	55.0%	K Factor	7.32%

GENERAL INFORMATION

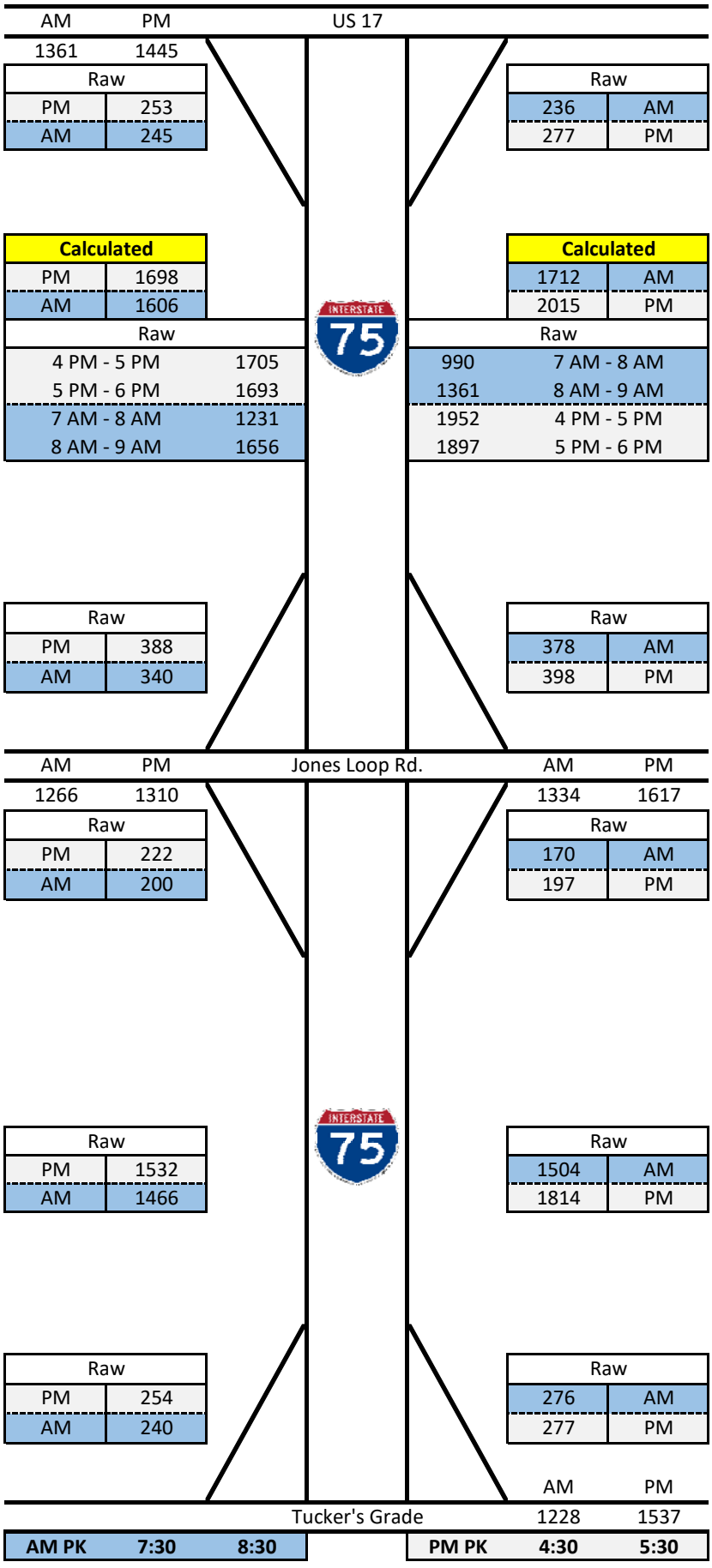
Source: Tube count data provided by FTI

Analyst: Joseph Samus

Date: 3/21/2016

RS&H

Existing (2014) AM and PM Volumes from FTI Hourly Count Data



I-75 Rest Areas (Charlotte and Sarasota County) - Traffic Volume Database

Description	2014 AADT	2025 Raw	2025 AADT Balanced	D-Factor	AM NB	AM NB 2025 Balanced	AM SB	AM SB 2025 Balanced	PM NB	PM NB 2025 Balanced	PM SB	PM SB 2025 Balanced	2045 AADT	2045 AADT	AM NB	AM NB 2045 Balanced	AM SB	AM SB 2045 Balanced	PM NB	PM NB 2045 Balanced	PM SB	PM SB 2045 Balanced
ML I-75 North of Study Area	44100	53800	53800	55.00%	2663	2663	2179	2179	2179	2179	2663	2663	71400	71400	3534	3534	2892	2892	2892	2892	3534	3534
SB On Ramp (EB/WB US 17 to SB I-75)	3500	4300	4300										5700	5700								0
NB Off Ramp (NB I-75 to EB/WB US 17)	3700	4500	4500										6000	6000								0
Ramp Pair (South of US 17)	7200	8800	8800	55.00%	436	436	356	356	356	356	436	436	11700	11700	579	579	474	474	474	474	579	579
ML I-75 From US 17 to Jones Loop Rd.	51300	62600	62600	55.00%	3099	3099	2535	2535	2535	2535	3099	3099	83100	83100	4113	4113	3366	3366	3366	3366	4113	4113
SB Off Ramp (SB I-75 to EB/WB Jones Loop Rd.)	5500	6700	6700										8900	8900								0
NB On Ramp (EB/WB Jones Loop Rd. to NB I-75)	5600	6800	6800										9100	9100								0
Ramp Pair (North of Jones Loop Rd.)	11100	13500	13500	55.00%	668	668	547	547	547	547	668	668	18000	18000	891	891	729	729	729	729	891	891
ML I-75 Between N Jones Loop Rd. Ramps	40200	49000	49100	55.00%	2430	2431	1989	1988	1989	1988	2430	2431	65100	65100	3222	3222	2637	2637	2637	2637	3222	3222
SB On Ramp (EB/WB N Jones Loop Rd. to SB I-75)	2400	2900	2900										3900	3900								0
NB Off Ramp (NB I-75 to EB/WB N Jones Loop Rd.)	2200	2700	2700										3600	3600								0
Ramp Pair (South of Jones Loop Rd.)	4600	5600	5600	55.00%	277	277	227	227	227	227	277	277	7500	7500	371	371	304	304	304	304	371	371
ML I-75 From N Jones Loop Rd. to Tucker's Grade	44800	54700	54700	55.00%	2708	2708	2215	2215	2215	2215	2708	2708	72600	72600	3594	3593	2940	2941	2940	2941	3594	3593
SB Off Ramp (SB I-75 to EB/WB Tucker's Grade	3000	3700	3700										4900	4900								0
NB On Ramp (EB/WB Tucker's Grade to NB I-75)	3300	4000	4000										5300	5300								0
Ramp Pair (North of Tucker's Grade)	6300	7700	7700	55.00%	381	381	312	312	312	312	381	381	10200	10200	505	505	413	413	413	413	505	505
ML I-75 South of Study Area	38500	47000	46900	55.00%	2322	2327	1899	1903	1899	1903	2322	2327	62400	62400	3089	3088	2527	2528	2527	2528	3089	3088

Rest Area Facilities Computation Form

NB-2/SB-2 - LOCATED SOUTH OF US-17

A =	**83,100**	20 Year ADT (Allow for local commuter Traffic)	D =	**0.550**	Directional distribuion of Design Hourly Volume (Generally 0.6)
K =	**0.09**	Ratio of Design Hourly Volume to ADT (Generally 0.135)	T =	**0.130**	Ratio of overall traffic represented by Trucks & Recreational Vehicles (RV's) (Generally 0.25)

		Insert Factor	*Total*
B = Hourly Directional Traffic (Design Hourly Volume, DHV)		B = A x K x D =	B = 4,113
C = Traffic Compositon, Peak Hourly Volume			
C1 = Cars (100% - T =	87 %)	87 % x B =	C1 = 3,579
C2 = Trucks & RV's (T =	13 %)	13 % x B =	C2 = 535
TOTAL of Cars, Trucks, and RV's		C1 + C2 = C =	C = 4,113
D = Vehicles stopping at Rest Area, Peak Hourly volume			
D1 = Cars			
(a) At rest area near commercial or recreation facilities	5 %	10.3 % x C1 =	D1 = 369
(b) At rest area near typical rural route	10 %		
(c) At welcome centers	15 %		
D2 = Trucks & RV's	12.9 %*	12.9 % x C2 =	D2 = 69
TOTAL of Cars, Truck, and RV's		D1 + D2 = Do =	Do = 438
E = Parking Spaces, Peak Hourly Volume			
E1 = Cars			
(a) Rest Areas - 15-20 min. avg. stop (0.25-0.33 hrs)		0.31 x D1 =	E1 = 112
(b) Welcome Centers - 20-30 min. avg. stop (0.33-0.50 hrs)			
E2 = Trucks & RV's - 30 min. avg. stop (0.50 hrs)		0.5 x D2 =	E2 = 34
F = Persons per hour using comfort facilites, Peak Hour Volumes		2.25 x Do =	F = 985
G = Toilet and Urinal Fixtures		0.04 x F =	G = 39
(a) Men, Each Direction (2.5 min. avg. use)		0.5 x G =	Men = 20
(b) Women, Each Direction (3.25 min. avg. use)		0.75 X G =	Women = 30

* Note: A value of 12.9% was used for trucks/RVs stopping at rest area to compensate for the usage of a relatively high daily truck percentage of T=13%. This rest area facility computation is meant to represent peak hour operations, which generally experience lower overall truck percentages compared to the daily truck percentage.

APPENDIX F – Crash Rate Calculations

I-75 Segment	Rd Crashes (C)	Traffic Volume (V)	Years of Data (N)	Legnth of Segment (L)	Crash Rate (R)
Between US 17 and N Jones Loop Rd	181	51300	5	3.35	0.577103268
Between N Jones Loop Rd and Tuckers Grade Blvd	125	44800	5	3.27	0.467542804

Equation (Source: FHWA)

$$R = \frac{C * 1{,}000{,}000}{V * 365 * N * L}$$

Key

R = Roadway Departure crash rate for road segment expressed as crashes per 1million vehicle miles traveled

C = Total number of roadway departure crashes in the study period

V = Traffic volumes using Average Annual Daily Traffic (AADT) volumes

N = Number of years of data

L = Length of roadway segments in miles