

## MEMORANDUM

To: Joshua DeVries, AICP – Osceola County

From: Mike Woodward, P.E. – Kimley-Horn and Associates, Inc.

Date: August 14, 2019

Subject: Revised Traffic Analysis Methodology  
Neptune Road PD&E  
PS-18-9905-DG

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Consistent with the scope of services for the Neptune Road Project Development and Environment (PD&E) study, the traffic analysis will be conducted based on methods and procedures described in the Florida Department of Transportation (FDOT) PD&E Manual, the FDOT Traffic Analysis Handbook, and the FDOT Project Traffic Forecasting (PTF) Handbook. This traffic analysis will be documented in the Project Traffic Analysis Report (PTAR).

This revised methodology addresses changes based on comments from FDOT. Upon agreement from the FDOT on this proposed methodology, Kimley-Horn will revise the PTAR as described herein.

A project description and transportation objectives are described in **Appendix A**.

### Proposed Study Area

The study area is illustrated in **Figure 1** and consists of Neptune Road, from Partin Settlement Road to US 192, including the following intersections:

- Partin Settlement Road
- Cross Prairie Parkway
- Henry Partin Road
- Ames Haven Road
- Tohoqua Entrance / Neptune Middle School Entrance
- Sergeant Graham Drive / Commerce Center Drive
- Old Canoe Creek Road
- US 192

Figure 1: Study Area



**Analysis Periods**

Conditions will be analyzed for the following years:

- Existing Conditions: Year 2018
- Opening Year: 2025
- Design Year: 2045

If applicable (i.e., prior to 2045), an analysis of conditions at the year of exceeding capacity will be provided. Year of exceeding capacity is defined as the year when the arterial Level-of-Service (measured from Partin Settlement to US 192) falls to LOS F based on a SYNCHRO arterial LOS analysis.

An analysis of No-Build conditions will be performed for each analysis year. Build Alternatives will be analyzed in the Opening and Design analysis years. AM and PM peak hour conditions will be analyzed for each scenario.

**Build Alternative**

The build alternative will consist of widening Neptune Road to a 4-lane divided roadway with premium bicycle and pedestrian facilities (i.e., bike lanes, multiuse path(s), and/or sidewalks) where feasible. It is anticipated that various intersection alternatives will be considered in the analysis. Potential intersection improvements will be identified based on anticipated deficiencies, operational concerns, and public involvement comments. Alternative improvements (i.e., two eastbound lanes, a center turn lane, and one westbound lane) will be evaluated between Canoe Creek Road and US 192.

**Measures of Effectiveness**

Measures of Effectiveness will include the following:

Intersection	Arterial	Safety
Queue lengths	Travel Speed	Crash Frequency
Volume to Capacity Ratios	Arterial Level-of-Service	Crash Rate
Delay	--	Number of Fatalities
Level-of-Service	--	Crash Severity Level
--	--	Economic Loss

While the County does not have LOS standards for transportation, they do consider V/C ratios as one of many factors (which are related to the County’s mobility indicators) in establishing priorities for roadway improvements. It should be noted that while V/C ratios below 1.0 are desirable, they are not required by Osceola County.

Synchro software will be used to evaluate the arterial and study area intersections with the Measures of Effectiveness shown above. FDOT’s Intersection Control Evaluation (ICE) Stage 1 screening will be performed using the Capacity Analysis for Planning of Junctions (CAP-X) for all study area intersections. The ICE findings will be screened based on context, practicality, right-of-way impacts, and cost. ICE stage 2 analysis will be conducted as applicable.

The analyses will also consider multimodal conditions, including facilities to accommodate pedestrians, bicyclists, transit, and freight. This will be accomplished by counting pedestrians and bicyclists during the turning movement counts, and vehicle classification counts to identify the percentage of trucks. Currently, there is no transit service on Neptune Road and no transit is planned for Neptune Road. Autonomous transit will also be considered as part of the PD&E and the results of the PTAR will be considered in the review of potential autonomous transit service. The accommodation of pedestrians and bicyclists will be considered in the intersection analysis. Separate performance measures for bicyclists and pedestrians will not be evaluated.

Access management strategies will be considered as they relate to safety and operational efficiency.

## Data Sources

Traffic counts previously provided by the County will be used for the analysis. The traffic counts were taken on Thursday, May 17, 2018. The seasonal factor for Osceola County was determined based on reports from FDOT. Historic traffic counts have been collected from County and FDOT sources. The Central Florida Regional Planning Model (CFRPM) version 6.1 will be used for modeling tasks. Transit ridership and origin/destination data, provided by LYNX, will be used to assess transit.

New ZDATA (to be provided by FDOT) will be compared to ZDATA from the adopted regional travel demand model to see if the new ZDATA has significant differences that may affect future traffic projections.

## Intersection Balancing

Intersection volumes (from counts) will be entered into the FDOT TURNS5 program to balance volumes. Manual adjustments may be performed as needed to better replicate actual turning patterns. This balancing step will be performed for each analysis scenario.

## Existing Conditions

Existing roadway segment data are provided in **Table 1**.

**Table 1: Existing Roadway Characteristics**

ROADWAY SEGMENT	2018 ADT	Average Peak Hour Volume	Peak Hour NB/EB	Peak Hour SB/WB	Measured K Factor	Measured D Factor	Axle Adj. Factor	Seasonal Adj. Factor	2018 AADT
<b>Mainline</b>									
<b>Neptune Road</b>									
West of Partin Settlement Rd	35,634	2,743	1,811	932	7.7%	66%	0.99	1.01	36,000
Partin Settlement Rd to Cross Prairie Pkwy	25,825	2,615	1,088	1,527	10.1%	58%	0.99	1.01	26,000
Cross Prairie Pkwy to Old Canoe Ck Rd	24,394	1,998	768	1,230	8.2%	62%	0.99	1.01	24,000
Old Canoe Ck Rd to US 192	21,336	1,233	456	777	5.8%	63%	0.99	1.01	21,000
East of US 192 (Brown Chapel Rd)	4,244	524	398	126	12.3%	76%	0.99	1.01	4,200
<b>Other Study Area Roadways</b>									
<b>Partin Settlement Road</b>									
Neptune Rd to US 192	13,452	1,162	474	688	8.6%	59%	0.99	1.01	13,000
<b>Cross Prairie Parkway</b>									
South of Neptune Rd	3,717	298	194	104	8.0%	65%	0.99	1.01	3,700
<b>Old Canoe Creek Road</b>									
US 192 to Neptune Rd	19,212	1,515	681	834	7.9%	55%	0.99	1.01	19,000
Neptune Rd to Kissimmee Park Rd	32,050	2,049	1,398	651	6.4%	68%	0.99	1.01	32,000
<b>US 192</b>									
Old Canoe Creek Rd to Neptune Rd	37,428	2,541	1,316	1,225	6.8%	52%	0.99	1.01	37,000
Neptune Rd to Columbia Ave	42,056	2,849	1,365	1,484	6.8%	52%	0.99	1.01	42,000

Note – The 2018 ADT for Brown Chapel Road was determined by factoring the intersection turning movement counts. The ADT for all other segments was determined based on 72-hour segment counts.

### Development of Future Volumes

Future volumes will be developed using methods described in the FDOT PTF Handbook.

The adopted future travel demand model, CFRPM version 6.1, was compared to a model developed by Central Florida Expressway Authority (CFX), which is a modified version of the CFRPM. The CFX model was developed for evaluating existing and future expressways in and around Osceola County and resulted in improved accuracies for these types of regional roadways. However, the traffic forecasts on roadways in the study area were more accurate in the CFRPM than in the CFX model.

**Table 2** shows a comparison of base model conditions compared to actual volumes for study area

segments. Note that segments along Neptune Road are within 15% of actual volumes in the CFRPM model, but over 70% too low in the CFX model. Side-street segments also perform significantly better in the CFRPM than in CFX, where CFX volumes are too high by 66% and CFRPM volumes are too low by 26%.

**Table 2:** Comparison of CFX base model and CFRPM base model to actual volumes

ROADWAY SEGMENT	CFX: 2015	Actual 2015	2015 CFX/ 2015 Actual	Percent Deviation	CFRPM: 2010	Actual 2010	2010 CFRPM / 2010 Actual	Percent Deviation	Standard
<b>Neptune Road</b>									
West of Partin Settlement Rd	12,009	25,994	0.46	-54%	23,000	19,932	1.15	15%	+/- 15%
Partin Settlement Rd to Cross Prairie Pkwy	5,248	21,770	0.24	-76%	16,000	16,234	0.99	-1%	+/- 15%
Cross Prairie Pkwy to Old Canoe Ck Rd	3,203	21,770	0.15	-85%	15,000	16,234	0.92	-8%	+/- 15%
Old Canoe Ck Rd to US 192 (4-Lane)	1,829	11,252	0.16	-84%	16,184	8,661	1.87	87%	+/- 15%
<b>Total - Mainline</b>	<b>22,289</b>	<b>80,786</b>	<b>0.276</b>	<b>-72.41%</b>	<b>70,184</b>	<b>61,061</b>	<b>1.149</b>	<b>14.94%</b>	<b>+/- 5%</b>
<b>Partin Settlement Road</b>									
Neptune Rd to US 192	4,527	8,003	0.57	-43%	3,933	7,331	0.54	-46%	+/- 25%
East/North of US 192	15,285	13,005	1.18	18%	10,714	9,961	1.08	8%	+/- 25%
<b>Old Canoe Creek Road</b>									
US 192 to Neptune Rd	35,571	19,242	1.85	85%	4,638	17,123	0.27	-73%	+/- 15%
Neptune Rd to Kissimmee Park Rd	39,641	24,222	1.64	64%	13,000	24,343	0.53	-47%	+/- 15%
<b>US 192</b>									
Shady Ln to Partin Settlement Rd	98,412	52,278	1.88	88%	49,876	52,370	0.95	-5%	+/- 15%
<b>Total - Sidestreets</b>	<b>193,436</b>	<b>116,750</b>	<b>1.657</b>	<b>65.68%</b>	<b>82,161</b>	<b>111,128</b>	<b>0.739</b>	<b>-26.07%</b>	<b>+/- 5%</b>

Further, future population and employment data within the CFX model were lower than the medium-high projections within the CFRPM. Population and employment data within the CFX model were particularly low in the South Lake Toho area, east of Lake Tohopekaliga, and near Neptune Road. Due to these factors, the CFRPM was selected as the most appropriate model to use.

After the initial comparison of models, a sub-area model validation process was performed for the CFRPM by comparing model performance for Year 2018 to actual volumes from Year 2018. This effort was intended to determine how well the travel demand model performs on roadways within the study area. The validation process is described in greater detail in subsequent sections.

The future year models within the CFRPM do not include Cross Prairie Parkway, so the facility was added as a four-lane divided arterial. Centroid connectors near Cross Prairie Parkway were modified based on this network change, with zones west of the Turnpike generally connecting to Cross Prairie Parkway rather than to the network east of the Turnpike. This modification does not affect the base model since the facility was not in place in Year 2010 (which is the base year for CFRPM 6.1). For reference, model network printouts for Year 2045 are provided in **Appendix B**, with and without Cross Prairie Parkway in place.

### Historic Traffic Data

Historic traffic volume trends on study area roadways were identified using data from Osceola County’s Traffic Count program and data from FDOT’s Florida Traffic Information (FTI) database. Historic growth rates on study area roadways are shown in **Table 2**. Historic growth data are provided in **Appendix C**.

**Table 2: Historic Growth Rates**

ROADWAY SEGMENT	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Historic Growth Rate
<b>Mainline</b>												
<b>Neptune Road</b>												
West of Partin Settlement Rd			19,932		23,102			25,943	24,286	31,370	29,670	4.08%
Partin Settlement Rd to Cross Prairie Pkwy			16,234		18,773			21,553	23,378	20,286		3.56%
Cross Prairie Pkwy to Old Canoe Ck Rd			16,234		18,773			21,553	23,378	20,286		3.56%
Old Canoe Ck Rd to US 192	8,490	8,520	8,249		8,763			11,252	11,922	12,287		4.05%
East of US 192 (Brown Chapel Rd)		5,873			6,658			7,142	8,059	8,568	8,686	3.70%
<b>Other Study Area Roadways</b>												
<b>Partin Settlement Road</b>												
Neptune Rd to US 192	11,180	10,937	9,961		10,911			12,750	12,959	13,628	14,119	2.68%
<b>Old Canoe Creek Road</b>												
US 192 to Neptune Rd	16,553	16,712	16,308		18,430			19,242	20,382	18,298	19,536	1.71%
Neptune Rd to Kissimmee Park Rd	24,311		24,343		25,551			23,747	26,251	26,053	24,807	44.00%
<b>US 192</b>												
Old Canoe Creek Rd to Neptune Rd						38,000	40,000	36,500	37,500	39,500		0.13%
Neptune Rd to Columbia Ave						40,000	41,000	45,000	45,000	47,000		3.81%

### Population Projections

Population growth forecasts for Osceola County were identified from the Bureau of Economic and Business Research (BEBR), as shown in **Table 3**. The average of the medium and high growth rates between 2017 and 2045 is 2.95%

**Table 3: BEBR Population Forecast for Osceola County**

Estimate	2017 BEBR Population	2025 BEBR Projected Population	2045 BEBR Projected Population	Growth Rate 2017-2025	Growth Rate 2017-2045
Low	337,614	400,000	495,700	2.3%	1.4%
Medium	337,614	452,400	649,800	4.2%	2.5%
High	337,614	495,500	808,100	5.8%	3.4%

### Sub-Area Model Validation

A sub-area model validation analysis was performed to improve the accuracy of the travel demand model within the study area. Existing year (2018) AADT values for roadway segments were obtained from the volume and classification counts performed for this project as well as the most recent Osceola County Traffic Count Reports. Model AADTs for year 2018 were derived by interpolating model volumes from the base year (2010) and interim year (2020), then multiplying the output volume by the Osceola County Model Output Conversion Factor (MOCF). The MOCF is identified on the FDOT FTI seasonal factor sheet. The Year 2020 model network was modified to include the existing laneage for US 192, which is in the process of being widened to a 6-lane facility. Since it was a 4-lane roadway in Year 2018, the model was modified to reduce the laneage from 6-lanes to 4-lanes. This step was necessary for the comparison of 2018 actual volumes (where US 192 is a 4-lane road) to 2018 interpolated model volumes. Similarly, the Year 2020 model was modified to reduce laneage on Neptune Road to match existing laneage. Specifically, the model was modified from showing Neptune Road as a 4-lane facility to including it as a 2-lane facility. The Facility Type was changed from 32 to 23 to improve the model accuracy.

The model population for Year 2020 was compared to the average of the BEBR medium and high population projections for Year 2020 and was found to be approximately 1.3% higher than the BEBR average. Due to the similar populations, there are no recommended ZDATA edits or population factors.

Initial model runs indicated that model volumes were unreasonably high on Brown Chapel Road, northeast of US 192. The facility type and area type factors were therefore modified to more accurately represent the roadway and this resulted in more accurate results. These changes were also made to all future years for this segment. The facility type was changed from 43 to 46.

As identified in the FDOT PTF Handbook, the three measures of effectiveness for the model accuracy assessment are as follows:

- the model volume-to-count ratio for study area links
- the model volume-to-count ratio for cutlines
- the Root Mean Square Error (RMSE)

As stated in the FDOT PTF Handbook, the acceptable volume-to-count ratio for arterials is  $\pm 15\%$ . For collector roads, a larger difference of  $\pm 25\%$  is acceptable. Model volumes interpolated to Year 2018 were compared to count data, as shown in **Table 4**.



**Table 4:** Comparison of Model Volumes to Actual Traffic Count Data

ROADWAY SEGMENT	2018 AADT	Interp. 2018 Model ADT	Factored 2018 Model AADT	2018 CFRPM AADT / 2018 AADT	Percent Deviation	Standard
<b>Mainline Characteristics</b>						
<b>Neptune Road</b>						
West of Partin Settlement Rd	36,000	27,775	27,000	0.75	-25%	+/- 15%
Partin Settlement Rd to Cross Prairie Pkwy	26,000	19,627	19,000	0.73	-27%	+/- 15%
Cross Prairie Pkwy to Old Canoe Ck Rd	24,000	19,921	19,000	0.79	-21%	+/- 15%
Old Canoe Ck Rd to US 192	21,000	14,639	14,000	0.67	-33%	+/- 15%
East of US 192 (Brown Chapel Rd)	4,200	8,651	8,400	2.00	100%	+/- 25%
<b>Side Street Characteristics</b>						
<b>Partin Settlement Road</b>						
Neptune Rd to US 192	13,000	9,233	9,000	0.69	-31%	+/- 25%
East/North of US 192	14,000	11,995	12,000	0.86	-14%	+/- 25%
<b>Old Canoe Creek Road</b>						
US 192 to Neptune Rd	19,000	19,816	19,000	1.00	0%	+/- 15%
Neptune Rd to Kissimmee Park Rd	32,000	30,879	30,000	0.94	-6%	+/- 15%
<b>US 192</b>						
Shady Ln to Partin Settlement Rd	37,000	52,694	51,000	1.38	38%	+/- 15%
Old Canoe Creek Rd to Neptune Rd	37,000	30,139	29,000	0.78	-22%	+/- 15%
Neptune Rd to Columbia Ave	42,000	39,482	38,000	0.90	-10%	+/- 15%
<b>Total</b>	<b>305,200</b>		<b>275,400</b>	<b>0.902</b>	<b>-9.76%</b>	<b>+/- 5%</b>

As shown in **Table 4**, Neptune Road and the side streets have model volumes that are much lower than actual volumes. Few individual segments fit within the standard threshold for error, and the total area-wide error exceeds the standard error.

The acceptable level of accuracy for screenlines/cutlines is based on the AADT:

- Cut-lines with greater than 70,000 AADT: ±10%
- Cut-lines with 35,000 to 70,000 AADT: ±15%
- Cut-lines with less than 35,000 AADT: ±20%

The screenline comparison is shown in **Table 5**. As shown in the table, both cutlines exceed the error threshold.

**Table 5: Model Cutlines**

Cutline Number	Road	Location	AADT (Count)	AADT (Model)	% Difference	Standard
Cutline 1	Neptune Road US 192	West of Partin Settlement Rd	36,000	27,775	-22.8%	--
		East of Shady Ln	37,000	52,694	42.4%	--
		<b>Total Cutline 1</b>	<b>73,000</b>	<b>80,469</b>	<b>10.2%</b>	<b>+/-10%</b>
Cutline 2	Neptune Road US 192	East of Old Canoe Creek Rd	21,000	14,639	-30.3%	--
		East of Old Canoe Creek Rd	37,000	29,000	-21.6%	--
		<b>Total Cutline 2</b>	<b>58,000</b>	<b>43,639</b>	<b>-24.8%</b>	<b>+/-15%</b>

The Percent Root Mean Square Error (RMSE) for an area can be  $\pm 35\%$  to 45%. The RMSE calculations are shown in **Table 6**. All volume groups fall within the acceptable errors, and the overall error is at the limit of being acceptable.

**Table 6: RMSE Calculations**

Volume Group	Count AADT	Model AADT	RMSE	Standard	
				Preferred	Acceptable
5,000 - 9,999	0	0	n/a	35%	45%
10,000 - 14,999	27,000	21,000	23%	27%	35%
15,000 - 19,999	19,000	19,000	0%	25%	30%
20,000 - 29,999	71,000	52,000	27%	15%	37%
30,000 - 49,999	263,000	244,000	22%	15%	25%
50,000 - 59,999	0	0	n/a	10%	20%
Over 60,000	0	0	n/a	10%	19%
<b>RMSE Areawide</b>	<b>380,000</b>	<b>336,000</b>	<b>45%</b>	<b>35%</b>	<b>45%</b>

As shown in **Tables 4, 5, and 6**, the individual segments, overall area, and cutlines have model volumes that exceed the standard errors allowed per the FDOT PTF Handbook. The overall RMSE calculations adequately represent existing conditions, with the area-wide measure at the acceptable standard. Due to the overall model performance in the area, it is recommended that the travel demand model be used with caution, and only as needed, when forecasting future volumes. For existing segments, model growth rates should be considered in conjunction with historic growth and population projections. For new roadways (i.e., Cross Prairie Parkway), the travel demand model should be used to forecast future volumes.

### Model Growth Rates

Model growth rates are calculated by adding the growth between the projected 2018 volumes and the projected 2045 volumes to the measured 2018 volumes, then determining the growth rate. This assumes that the model provides a reasonable estimate of future traffic growth, even if it does not accurately project the 2018 conditions. The Year 2045 model was run under No-Build conditions with Neptune Road as a 2-lane facility between Partin Settlement Road and US 192. For Build conditions, a Year 2045 model was run with Neptune Road as a 4-lane divided roadway from Partin Settlement Road to US 192. Model growth rates for Build and No-Build conditions are shown in **Table 7**. The rates are based on model growth between model volumes interpolated to Year 2018 and the future Build and No-Build model volumes for Year 2045.

**Table 7: Future Model Volumes**

ROADWAY SEGMENT	2018 AADT	2018 Model AADT	No-Build			Build		
			2045 Model AADT	Model Growth	Growth Rate	2045 Model AADT	Model Growth	Growth Rate
<b>Mainline Characteristics</b>								
<b>Neptune Road</b>								
West of Partin Settlement Rd	36,000	27,000	45,000	18,000	1.85%	46,000	19,000	1.95%
Partin Settlement Rd to Cross Prairie Pkwy	26,000	19,000	22,000	3,000	0.43%	36,000	17,000	2.42%
Cross Prairie Pkwy to Old Canoe Ck Rd	24,000	19,000	16,000	-3,000	-0.46%	29,000	10,000	1.54%
Old Canoe Ck Rd to US 192	21,000	14,000	11,000	-3,000	-0.53%	18,000	4,000	0.71%
<b>Weighted Average:</b>					<b>0.85%</b>			<b>1.82%</b>
<b>Side Street Characteristics</b>								
<b>Partin Settlement Road</b>								
Neptune Rd to US 192	13,000	9,000	29,000	20,000	5.70%	21,000	12,000	3.42%
<b>Old Canoe Creek Road</b>								
US 192 to Neptune Rd	19,000	19,000	26,000	7,000	1.36%	22,000	3,000	0.58%
Neptune Rd to Kissimmee Park Rd	32,000	30,000	39,000	9,000	1.04%	42,000	12,000	1.39%
<b>Weighted Average:</b>					<b>1.17%</b>			<b>1.11%</b>
<b>US 192</b>								
Old Canoe Creek Rd to Neptune Rd	37,000	29,000	41,000	12,000	1.20%	37,000	8,000	0.80%
Neptune Rd to Columbia Ave	42,000	38,000	48,000	10,000	0.88%	50,000	12,000	1.06%
<b>Weighted Average:</b>					<b>1.03%</b>			<b>0.95%</b>

### Growth Rate Recommendation

The historic growth rates, population forecasts, model growth rates, and recommended growth rates are shown in **Table 8**. Model volumes are recommended for Cross Prairie Parkway since the roadway is new and there is not a sufficient amount of existing or historic data.

**Table 8: Growth Rate Comparison and Selection**

ROADWAY SEGMENT	CFRPM No-Build Growth Rate	CFRPM Build Growth Rate	Historical Trend Growth Rate	BEBR Growth Rate (Avg of Medium & High)	No Build Growth Rate To Use	Source	Build Growth Rate To Use	Source
<b>Mainline Characteristics</b>								
<b>Neptune Road</b>								
West of Partin Settlement Rd	1.85%	1.95%	4.08%	2.95%	2.0%	Blend of Model & Population Growth	2.0%	Blend of Model & Population Growth
Partin Settlement Rd to Cross Prairie Pkwy	0.43%	2.42%	3.56%	2.95%	1.0%		2.5%	
Cross Prairie Pkwy to Old Canoe Ck Rd	-0.46%	1.54%	3.56%	2.95%	1.0%		1.5%	
Old Canoe Ck Rd to US 192	-0.53%	0.71%	4.05%	2.95%	1.0%		1.0%	
East of US 192 (Brown Chapel Rd)	-0.62%	-0.88%	3.70%	2.95%	1.0%		1.0%	
<b>Side Street Characteristics</b>								
<b>Partin Settlement Road</b>								
Neptune Rd to US 192	5.70%	3.42%	2.68%	2.95%	5.0%	Blend of Model & Population	3.0%	BEBR
<b>Cross Prairie Parkway</b>								
South of Neptune Rd	n/a	n/a	n/a	2.95%	Use Model Volumes			
<b>Old Canoe Creek Road</b>								
US 192 to Neptune Rd	1.36%	0.58%	1.71%	2.95%	1.0%	Minimum	1.0%	Minimum
Neptune Rd to Kissimmee Park Rd	1.04%	1.39%	44.00%	2.95%	1.0%	Minimum	1.0%	Minimum
<b>US 192</b>								
Old Canoe Creek Rd to Neptune Rd	1.20%	0.80%	0.13%	2.95%	1.0%	Minimum	1.0%	Minimum
Neptune Rd to Columbia Ave	0.88%	1.06%	3.81%	2.95%	1.0%	Minimum	1.0%	Minimum

### Development of Design Traffic Characteristics

Design traffic characteristics will be developed in accordance with the Project Traffic Forecasting (PTF) Handbook, January 2014. The primary design traffic characteristics are the standard K factor, Design Hour Directional Demand (D) factor, and percentage of trucks for both the design hour and daily conditions ( $T_f$ ,  $T_{24}$ ). These characteristics are used in developing the future traffic volumes and conducting future operational analyses.

The K factor defines the proportion between the design hour volume (DHV) and daily volume. As explained in the PTF Handbook, the K factor “defines the volume of traffic for which the road is

designed to handle.” FDOT has adopted a standard K factor to use in analyses based on area and facility type. For arterials and highway within an urbanized area, the standard K factor is 9.0%. Therefore, a K factor of 9.0% (for PM peak hour) will be used for the study area roadways to develop DDHV representing the PM peak-hour conditions.

In addition to the analysis of DDHV conditions, it is desired to provide an AM peak-hour analysis. Therefore, existing traffic counts along Neptune Road were evaluated to develop an AM peak-hour peak-to-daily ratio. Based on these counts, a 7.0% factor is appropriate for calculating AM peak hour volumes. Therefore, AM peak hour segment volumes will be calculated by applying a factor of 7.0% to the daily volume. Additional information documenting the development of the 7% value is provided in **Appendix D**.

The D factor is used to determine the directional split of traffic during the design hour. The D values for Neptune Road were obtained from roadway traffic counts. The D factors fall within the recommended range for similar types of roadways. FDOT’s PTF Handbook recommends a range of D values based on facility type. A summary of the recommended values for an Urban Arterial are included in **Table 9** below.

**Table 9:** Recommended Range of D Values

Facility Type	FDOT D Values		
	Low	Average	High
Urban Arterial	50.80%	57.90%	67.10%

It is recommended that the average D value of 57.9% be used for all segments in the study area. In the AM peak hour, the peak direction is westbound for Neptune Road and northbound for side streets. In the PM peak hour, the peak direction is eastbound for Neptune Road and southbound for side streets. The only exception is Ames Haven Road, where the AM peak direction is southbound, and the PM peak direction is northbound.

**T<sub>24</sub> and T<sub>f</sub> Factors**

Truck percentages were calculated for both daily (T<sub>24</sub>) and peak hour (T<sub>f</sub>) conditions. Historical T<sub>24</sub> values from count site 928063 of FDOT’s FTI 2017 are listed in **Table 10**. As presented in the table, the historical T<sub>24</sub> values range from 4.1% to 5.8%, with an average value of 5.11%.

**Table 10:** Neptune Road Historical T<sub>24</sub> Values

YEAR	T <sub>24</sub> Factor
<b>SITE 92-8063</b>	
<b>NEPTUNE RD, E OF OLD CANOE CK RD</b>	
2011	5.4%
2012	5.8%
2013	5.3%
2014	5.0%
2015	4.4%
2016	5.8%
2017	4.1%
<b>Average:</b>	5.11%
<b>Minimum:</b>	4.10%
<b>Maximum:</b>	5.80%

As explained in the PTF Handbook, T<sub>f</sub> is estimated to equal at least half of T<sub>24</sub>. Historical T<sub>24</sub> values were used to calculate T<sub>f</sub> as shown in **Table 11** below.

**Table 11:** Neptune Road Historical T<sub>f</sub> Values

Measure	T <sub>f</sub> Factor
<b>Average:</b>	2.56%
<b>Minimum:</b>	2.05%
<b>Maximum:</b>	2.90%

The average truck factors of 5.11% for T<sub>24</sub> and 2.56% for T<sub>f</sub> were used in the analysis. This is consistent with the recommendation from the PTF Handbook that the T<sub>f</sub> value should be at least half of the T<sub>24</sub>.

**Recommended Design Traffic Characteristics**

The recommended design characteristics for this study are identified in **Table 12**. These are based on a review of historical and measured design traffic characteristics.

**Table 12:** Recommended Design Traffic Characteristics

ROADWAY SEGMENT	K Factor (PM)	AM Peak to Daily Factor	D Factor	T <sub>24</sub> Factor	T <sub>f</sub> Factor
Neptune Road	9.0%	7.0%	57.9%	5.1%	2.6%

**Safety Analysis**

A safety analysis will be performed by documenting historic crash trends. Five years of data, from 1/1/2013 – 12/31/2017, will be summarized in terms of the total crashes, injury crashes, fatal crashes, property damage, crashes in the dark or on wet surfaces, and crashes involving bicycles or pedestrians. Crashes will then be summarized by time of day and day of week. A crash type analysis will be performed to understand trends. A crash location analysis will be performed to identify locations that should be considered further.

The safety performance of the Build alternatives will be identified using Crash Modification Factors (CMFs) from the Federal Highway Administration (FHWA) clearinghouse.

Documentation of the safety analysis will be included within the PTAR.

**Multimodal Analysis**

A multimodal analysis will be performed to document the presence, width, and location of facilities for walking, biking, and transit. Bicycle and pedestrian count data will be provided at study area intersections.

**Documentation**

Results of the traffic analysis will be documented in a Project Traffic Analysis Report (PTAR). An Executive Summary will be provided. The PTAR will detail the intersection analysis and anticipated operational performance of study area roadways based on the performance measures described in this methodology. The anticipated Equivalent Single Axle Load (ESAL) calculations will be included in the PTAR. The PTAR will be delivered electronically as a PDF. Word, Excel, and Synchro files will also be provided to the County.



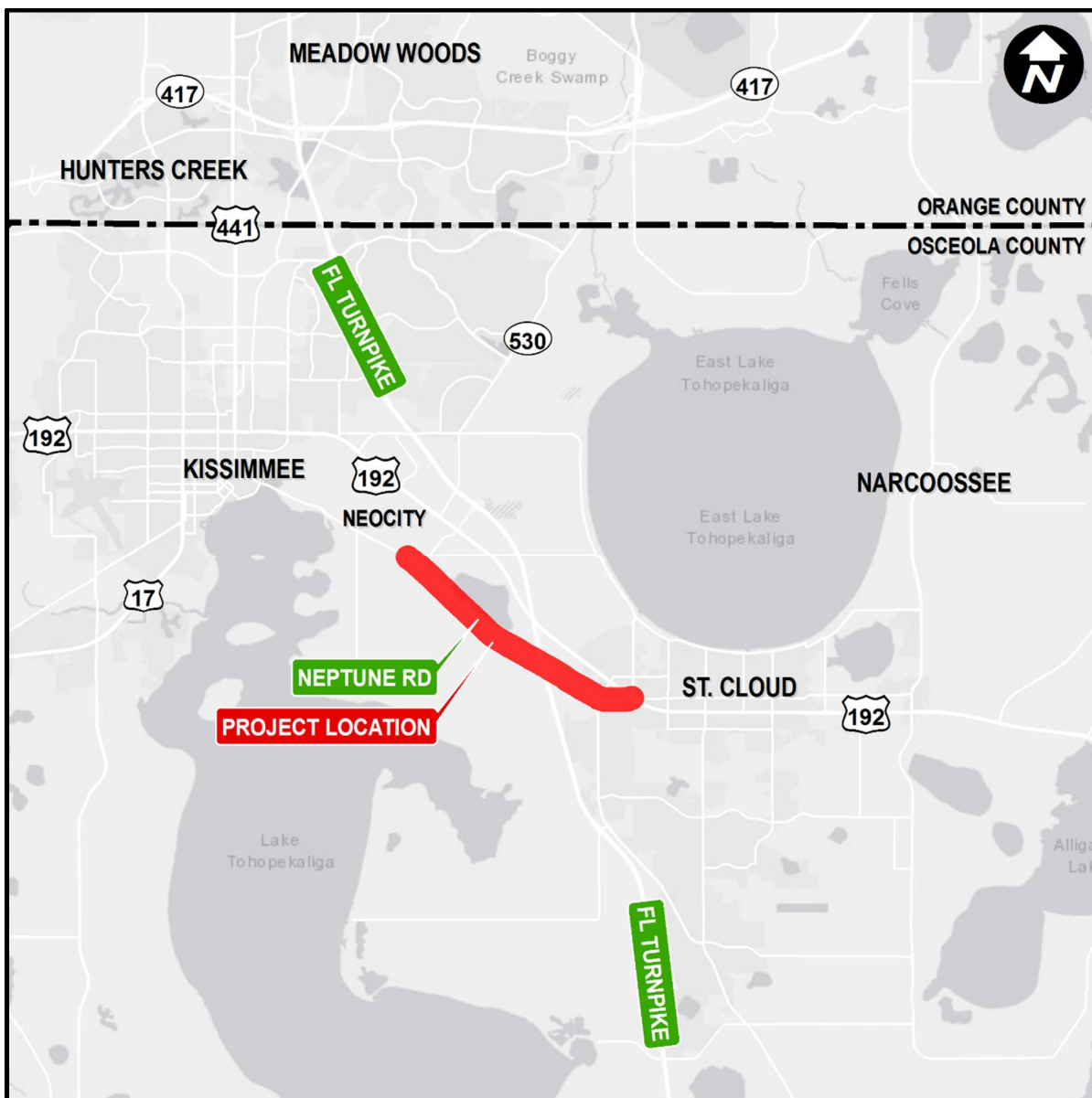
## **Appendix A**

### Description of Purpose

## Project Description

This project involves a 3.9-mile segment of Neptune Road extending from Partin Settlement Road to US 192 in Osceola County. The section east of the St. Cloud canal (approximately 1.1 miles in length) is within the City of St. Cloud. From Partin Settlement Road to Old Canoe Creek Road, the proposed project improves the existing 2-lane roadway to a 4-lane, divided roadway with a curbed median, with premium bicycle and pedestrian facilities (i.e., bike lanes, multiuse path(s), and/or sidewalks). From Old Canoe Creek Road to US 192, the project widens the existing 2-lane roadway to 4-lanes with sidewalks. Bridge structures are to be replaced and stormwater management facilities will be evaluated. Figure 1 illustrates the project location.

Figure 1: Project Location



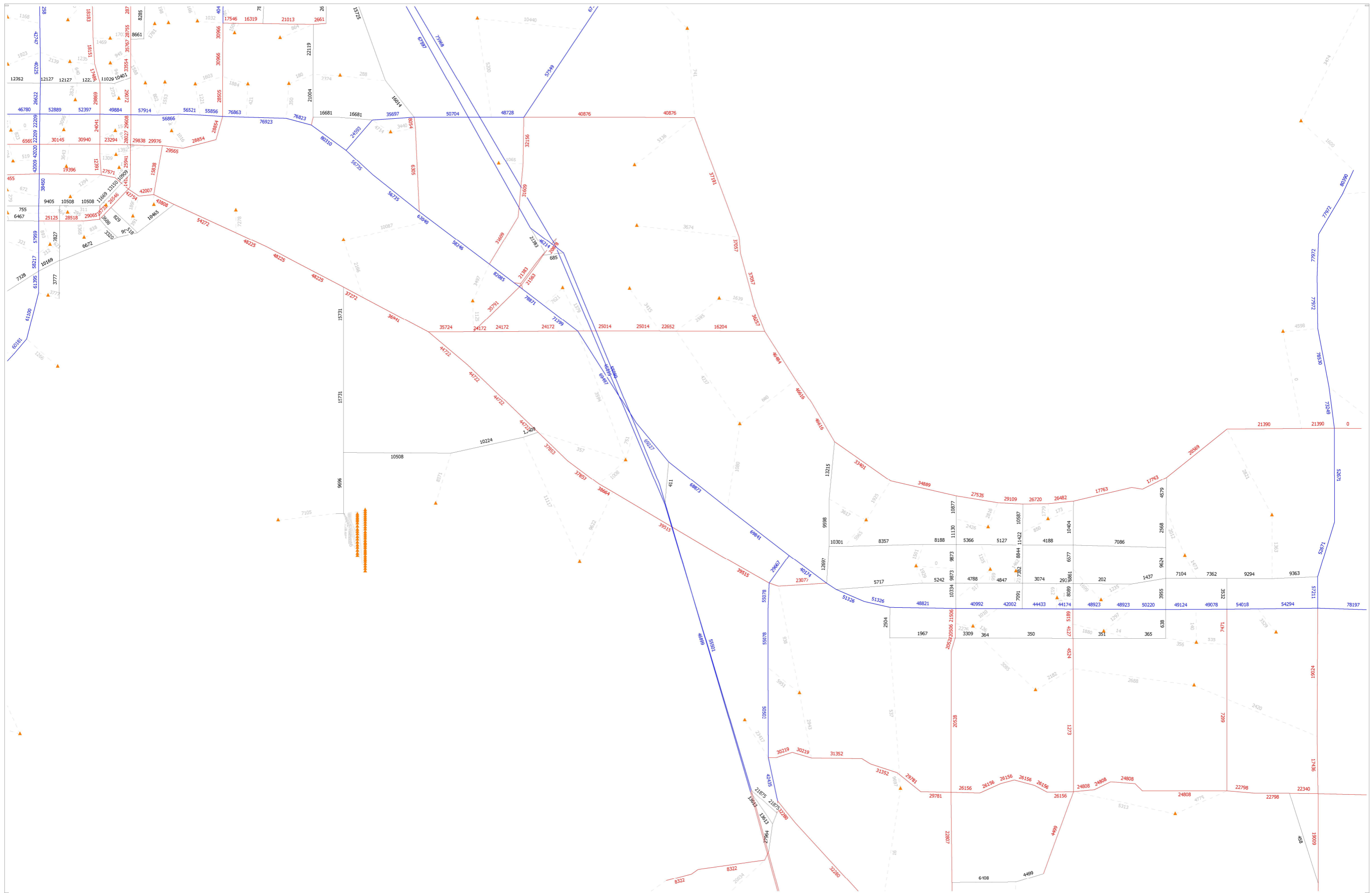
## Traffic Analysis Objective

The primary purpose of improving Neptune Road is to enhance mobility from US 192 and St. Cloud to Downtown Kissimmee, improve access to NeoCity, and improve overall traffic operations of the existing highway network within the project study area. The secondary objectives are to provide transportation infrastructure to support economic growth, provide consistency with local plans and policies, and enhance safety.

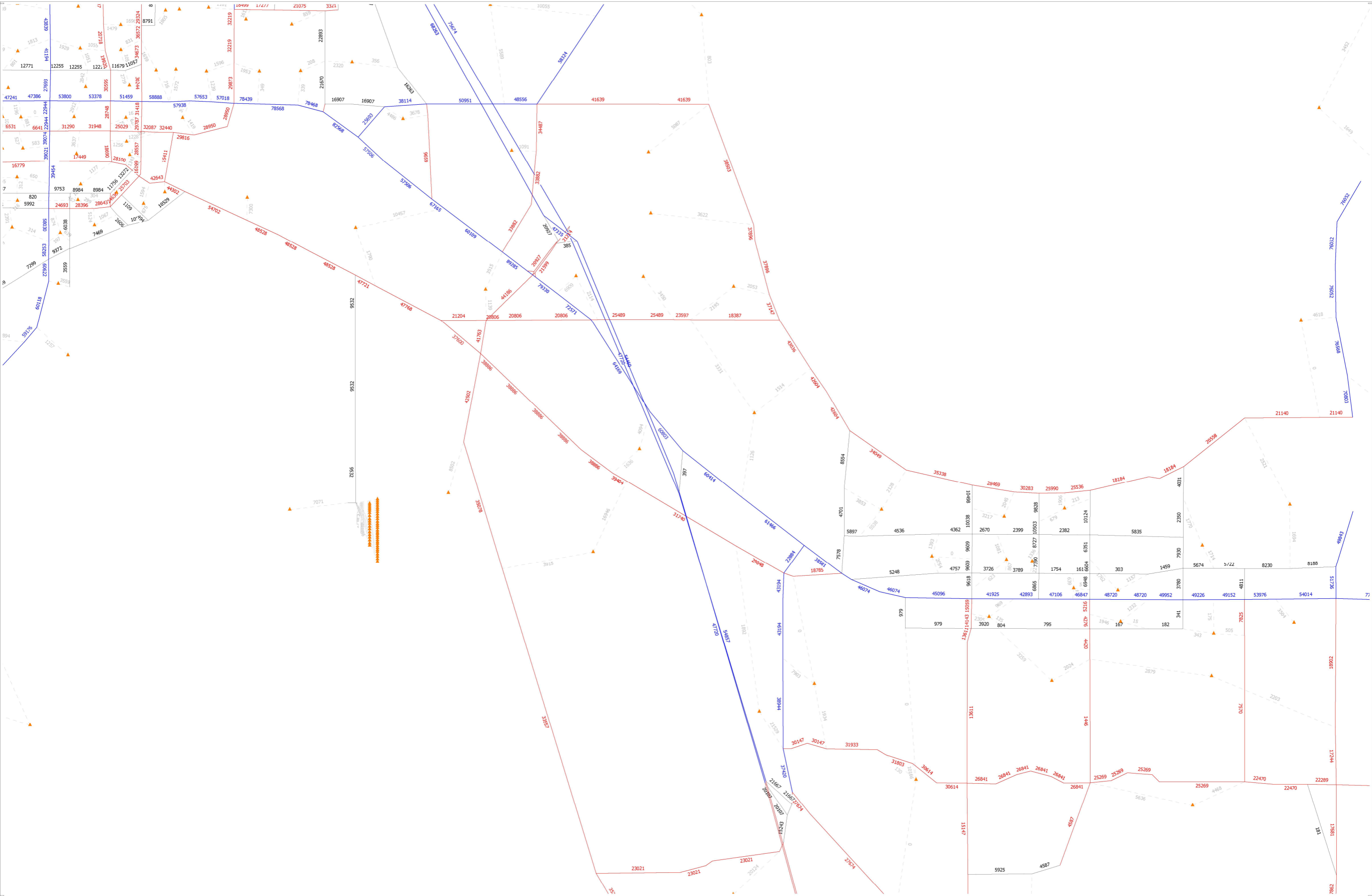
The need for the project is to provide system linkage, provide additional capacity, address transportation demand, meet social and economic needs, provide improved modal interrelationships, improve safety and achieve consistency with transportation plans.

The objective of the traffic analysis is to document the performance of alternatives in providing additional capacity to address the future transportation demand and to improve safety.

**Appendix B**  
Year 2045 Model Network Printouts



CF\_2045 Base Run  
C:\FSUTMS\D5\CFRPMV61\_Daily\Base\CF\_2045\Output\HWYLOAD\_C45.NET  
Base.CF\_2045 10/15/2018



CF\_2045 Modified

C:\FSUTMS\D5\CFRPMV61\_Daily\Base\CF\_2045\Neptune\_45\_2\Output\HWYLOAD\_C45.NET  
 Base.CF\_2045.Neptune\_45\_2 10/16/2018



(Licensed to Kimley Horn and Associates Inc)

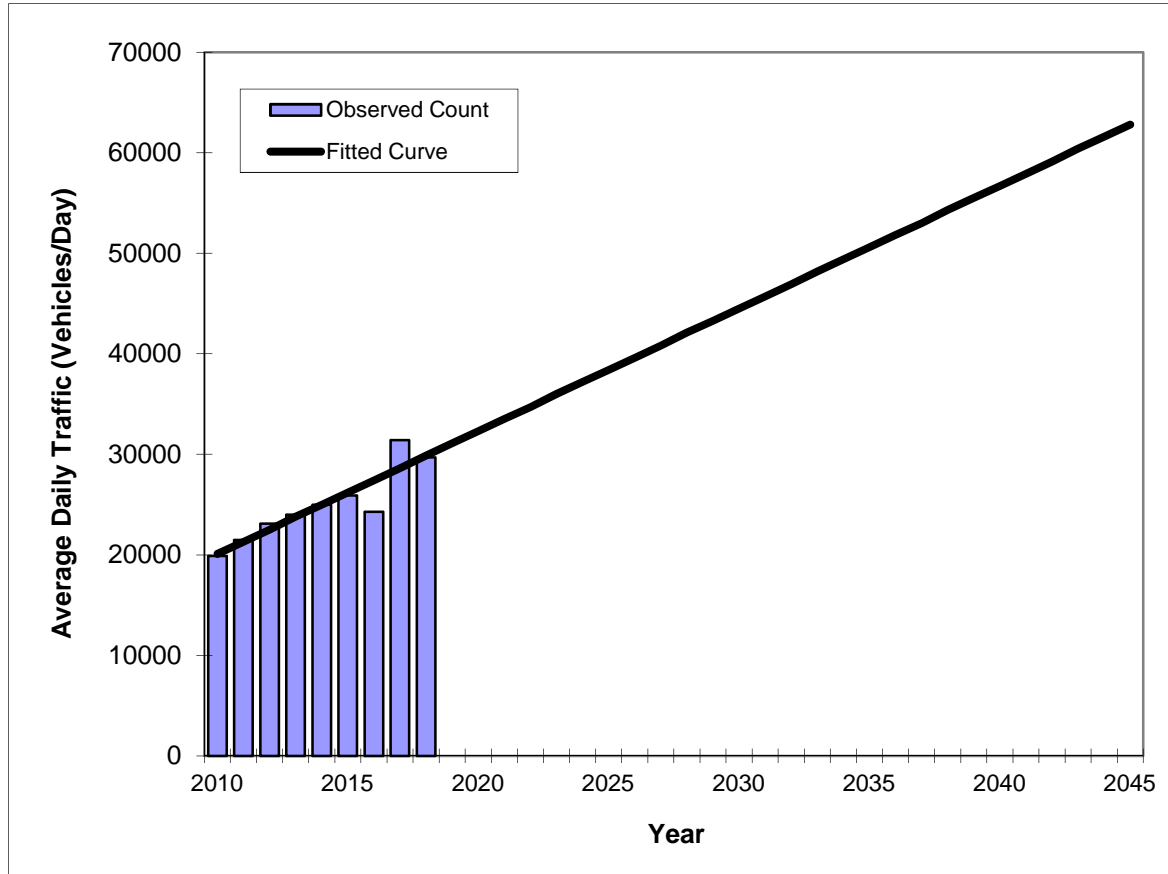
**Appendix C**  
Historic Growth Trend Worksheets

## Traffic Trends - V2.0

### NEPTUNE RD -- West of Partin Settlement Rd

PIN#	12345
Location	1

County:	Osceola (92)
Station #:	0
Highway:	NEPTUNE RD



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2010	19900	20100
2011	21500	21300
2012	23100	22500
2013	24000	23800
2014	25000	25000
2015	25900	26200
2016	24300	27400
2017	31400	28600
2018	29700	29900
<b>2018 Opening Year Trend</b>		
2018	N/A	29900
<b>2025 Mid-Year Trend</b>		
2025	N/A	38400
<b>2045 Design Year Trend</b>		
2045	N/A	62800
<b>TRANPLAN Forecasts/Trends</b>		

\*\* Annual Trend Increase: 1,220  
 Trend R-squared: 83.29%  
 Trend Annual Historic Growth Rate: 6.09%  
 Trend Growth Rate (2018 to Design Year): 4.08%  
 Printed: 11-Mar-19

**Straight Line Growth Option**

\*Axle-Adjusted

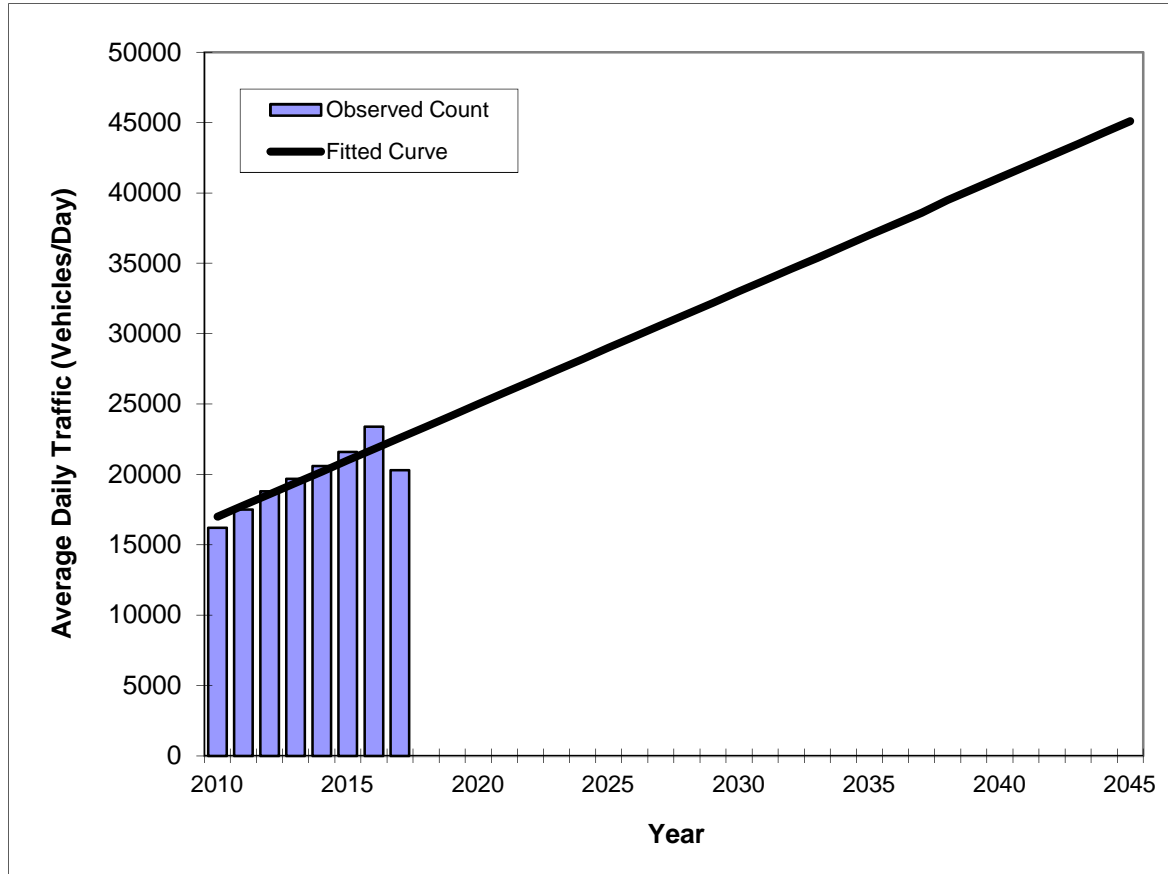


## Traffic Trends - V2.0

### NEPTUNE RD -- Partin Settlement to Cross Prairie

PIN#	12345
Location	1

County:	Osceola (92)
Station #:	0
Highway:	NEPTUNE RD



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2010	16200	17000
2011	17500	17800
2012	18800	18600
2013	19700	19400
2014	20600	20200
2015	21600	21000
2016	23400	21800
2017	20300	22600
<b>2018 Opening Year Trend</b>		
2018	N/A	23400
<b>2025 Mid-Year Trend</b>		
2025	N/A	29000
<b>2045 Design Year Trend</b>		
2045	N/A	45100
<b>TRANPLAN Forecasts/Trends</b>		

** Annual Trend Increase:	804
Trend R-squared:	74.63%
Trend Annual Historic Growth Rate:	4.71%
Trend Growth Rate (2017 to Design Year):	3.56%
Printed:	11-Mar-19
<b>Straight Line Growth Option</b>	

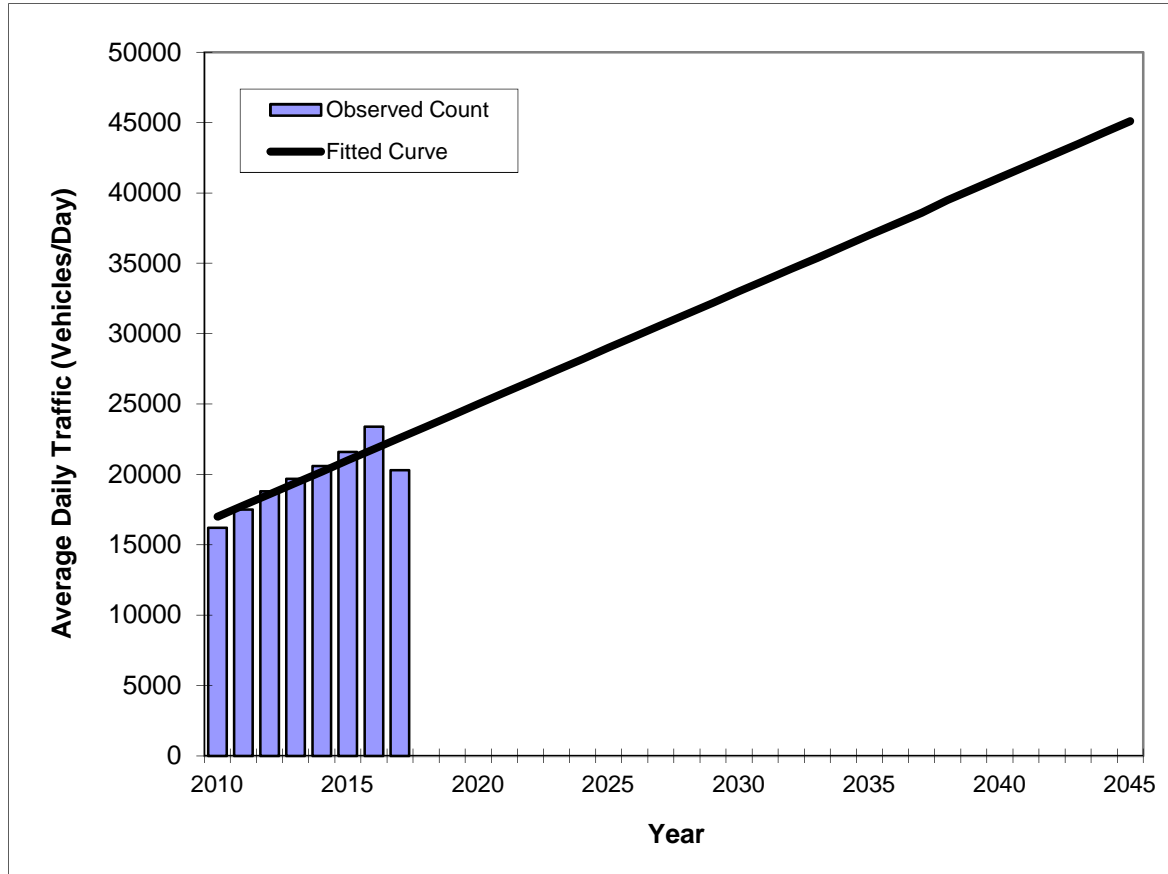
\*Axle-Adjusted

## Traffic Trends - V2.0

### NEPTUNE RD -- Cross Prairie to Old Canoe Creek

PIN#	12345
Location	1

County:	Osceola (92)
Station #:	0
Highway:	NEPTUNE RD



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2010	16200	17000
2011	17500	17800
2012	18800	18600
2013	19700	19400
2014	20600	20200
2015	21600	21000
2016	23400	21800
2017	20300	22600
<b>2018 Opening Year Trend</b>		
2018	N/A	23400
<b>2025 Mid-Year Trend</b>		
2025	N/A	29000
<b>2045 Design Year Trend</b>		
2045	N/A	45100
<b>TRANPLAN Forecasts/Trends</b>		

** Annual Trend Increase:	804
Trend R-squared:	74.63%
Trend Annual Historic Growth Rate:	4.71%
Trend Growth Rate (2017 to Design Year):	3.56%
Printed:	11-Mar-19
<b>Straight Line Growth Option</b>	

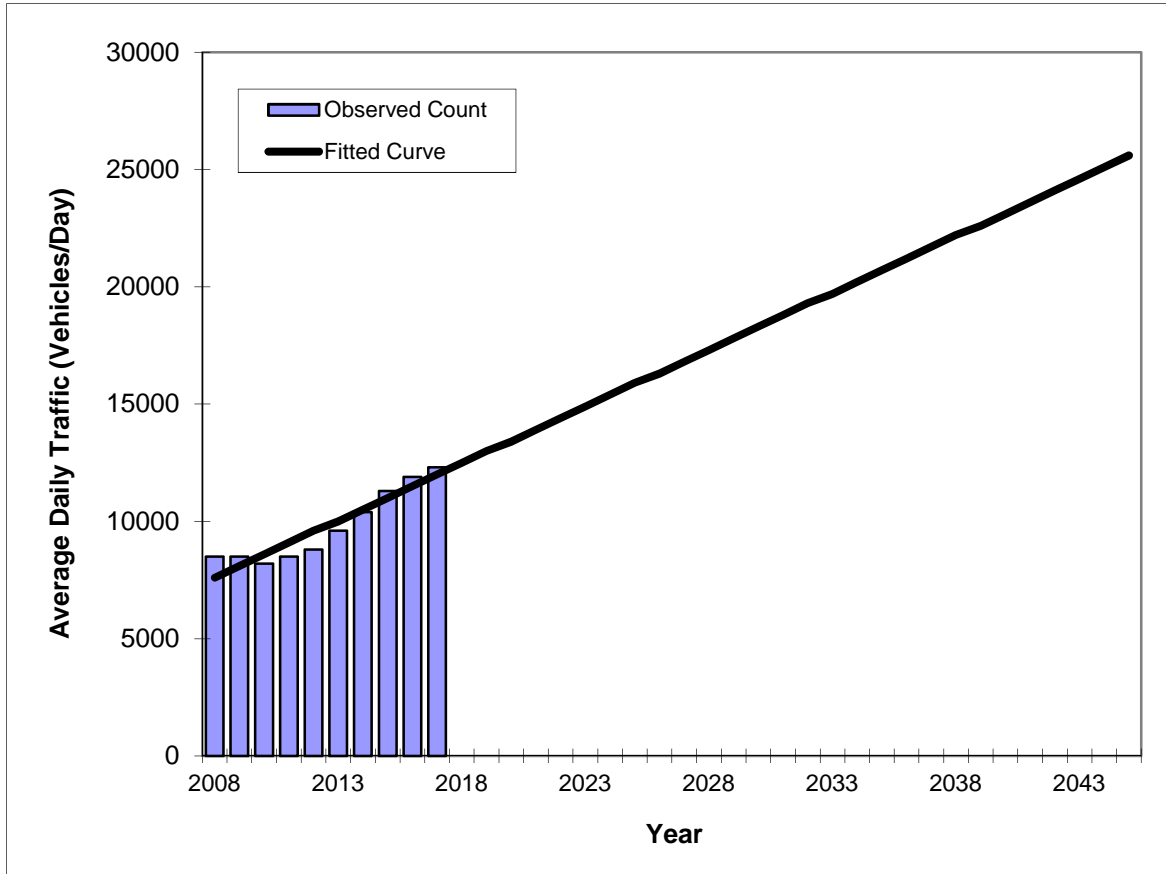
\*Axle-Adjusted

## Traffic Trends - V2.0

**NEPTUNE RD -- Old Canoe creek to US 192**

PIN#	12345
Location	1

County:	Osceola (92)
Station #:	0
Highway:	NEPTUNE RD



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2008	8500	7600
2009	8500	8100
2010	8200	8600
2011	8500	9100
2012	8800	9600
2013	9600	10000
2014	10400	10500
2015	11300	11000
2016	11900	11500
2017	12300	12000
<b>2018 Opening Year Trend</b>		
2018	N/A	12500
<b>2025 Mid-Year Trend</b>		
2025	N/A	15900
<b>2045 Design Year Trend</b>		
2045	N/A	25600
<b>TRANPLAN Forecasts/Trends</b>		

** Annual Trend Increase:	485
Trend R-squared:	88.40%
Trend Annual Historic Growth Rate:	6.43%
Trend Growth Rate (2017 to Design Year):	4.05%
Printed:	11-Mar-19
<b>Straight Line Growth Option</b>	

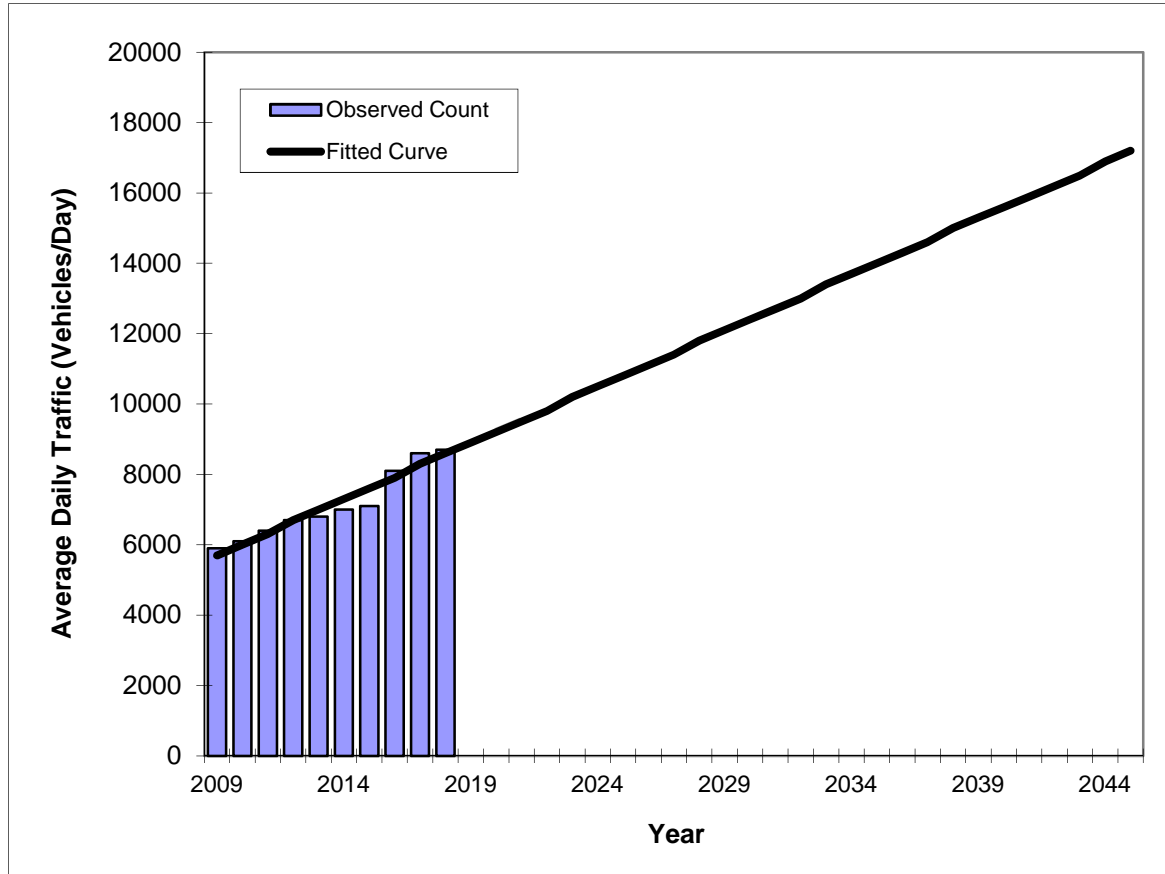
\*Axle-Adjusted

## Traffic Trends - V2.0

### NEPTUNE RD -- North of US 192

PIN#	12345
Location	1

County:	Osceola (92)
Station #:	0
Highway:	NEPTUNE RD



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2009	5900	5700
2010	6100	6000
2011	6400	6300
2012	6700	6700
2013	6800	7000
2014	7000	7300
2015	7100	7600
2016	8100	7900
2017	8600	8300
2018	8700	8600
<b>2018 Opening Year Trend</b>		
2018	N/A	8600
<b>2025 Mid-Year Trend</b>		
2025	N/A	10800
<b>2045 Design Year Trend</b>		
2045	N/A	17200
<b>TRANPLAN Forecasts/Trends</b>		

** Annual Trend Increase:	319
Trend R-squared:	93.32%
Trend Annual Historic Growth Rate:	5.65%
Trend Growth Rate (2018 to Design Year):	3.70%
Printed:	11-Mar-19
<b>Straight Line Growth Option</b>	

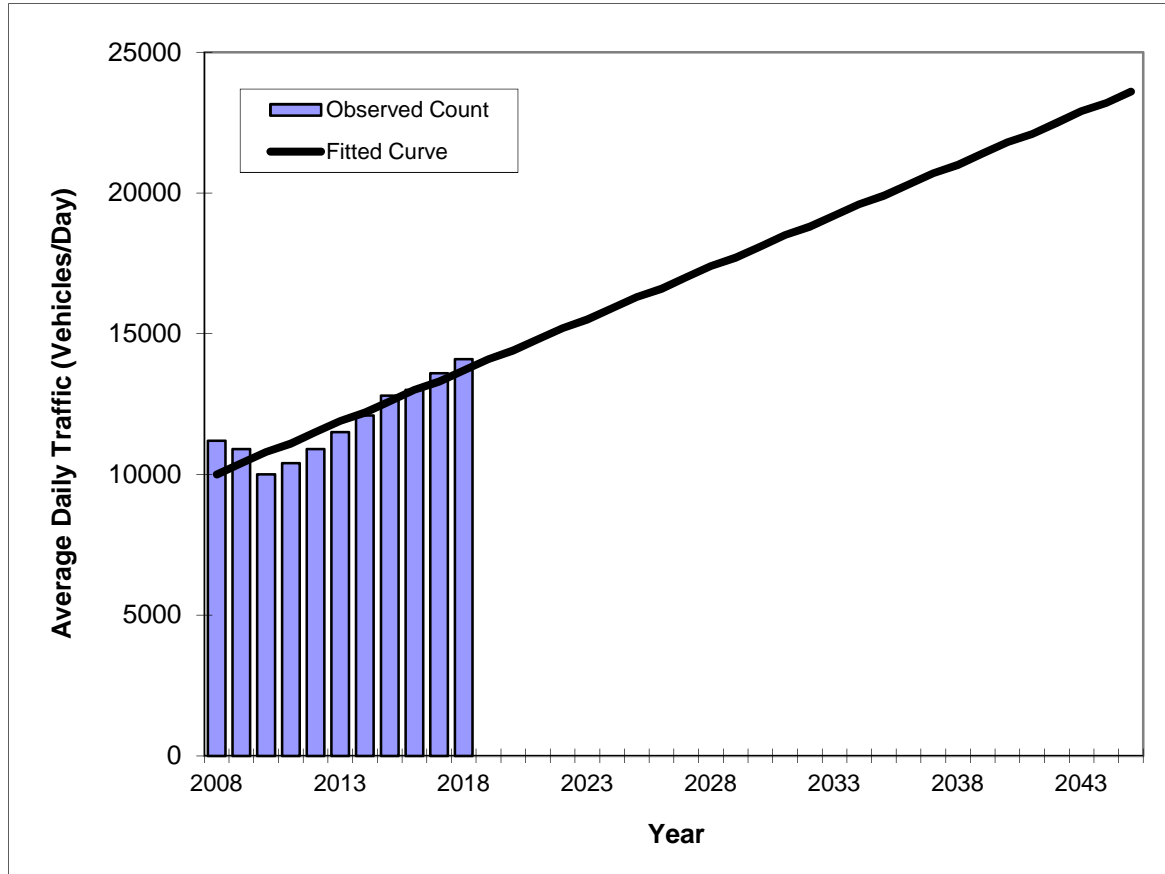
\*Axle-Adjusted

## Traffic Trends - V2.0

### PARTIN SETTLEMENT RD -- Neptune to US 192

PIN#	12345
Location	1

County:	Osceola (92)
Station #:	0
Highway:	PARTIN SETTLEMENT RD



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2008	11200	10000
2009	10900	10400
2010	10000	10800
2011	10400	11100
2012	10900	11500
2013	11500	11900
2014	12100	12200
2015	12800	12600
2016	13000	13000
2017	13600	13300
2018	14100	13700
<b>2018 Opening Year Trend</b>		
2018	N/A	13700
<b>2025 Mid-Year Trend</b>		
2025	N/A	16300
<b>2045 Design Year Trend</b>		
2045	N/A	23600
<b>TRANPLAN Forecasts/Trends</b>		

** Annual Trend Increase:	366
Trend R-squared:	80.74%
Trend Annual Historic Growth Rate:	3.70%
Trend Growth Rate (2018 to Design Year):	2.68%
Printed:	11-Mar-19
<b>Straight Line Growth Option</b>	

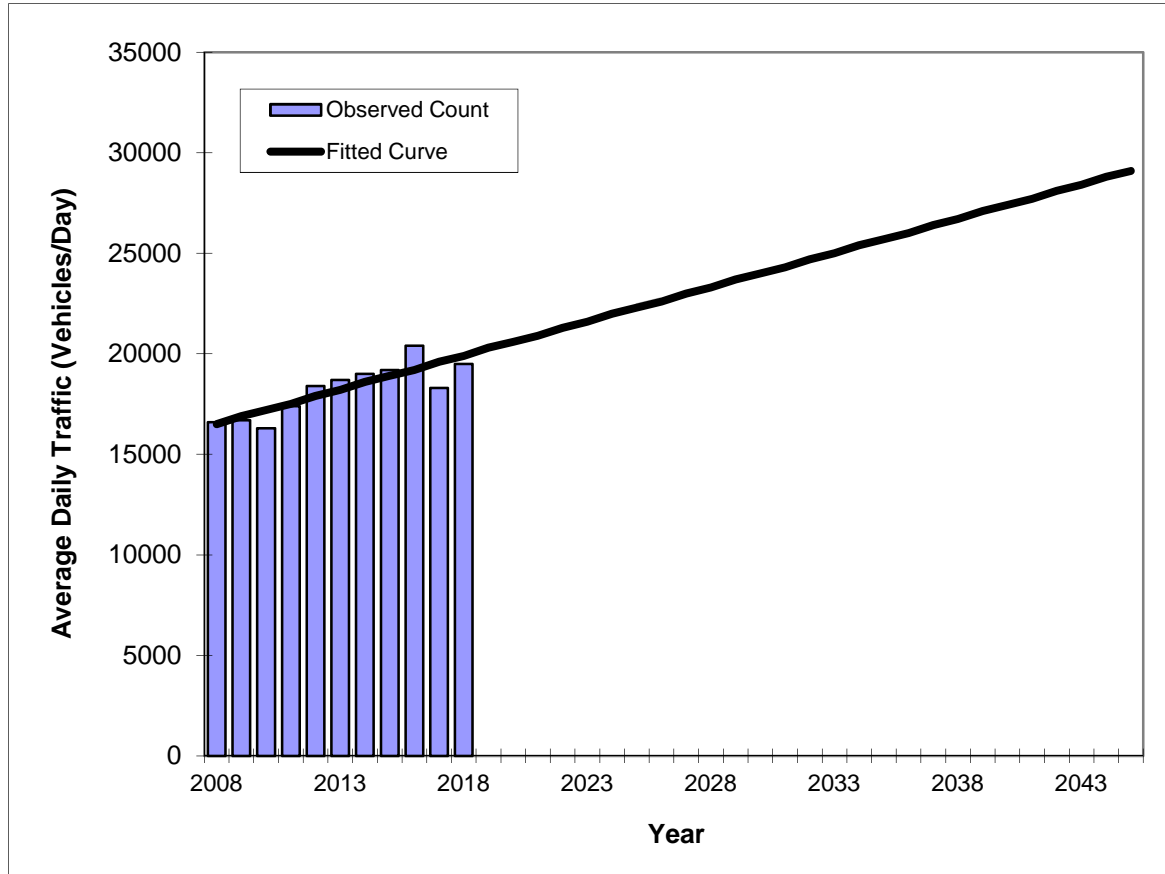
\*Axle-Adjusted

## Traffic Trends - V2.0

### OLD CANOE CREEK RD -- US 192 to Neptune Rd

PIN#	12345
Location	1

County:	Osceola (92)
Station #:	0
Highway:	OLD CANOE CREEK RD



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2008	16600	16500
2009	16700	16900
2010	16300	17200
2011	17400	17500
2012	18400	17900
2013	18700	18200
2014	19000	18600
2015	19200	18900
2016	20400	19200
2017	18300	19600
2018	19500	19900
<b>2018 Opening Year Trend</b>		
2018	N/A	19900
<b>2025 Mid-Year Trend</b>		
2025	N/A	22300
<b>2045 Design Year Trend</b>		
2045	N/A	29100
<b>TRANPLAN Forecasts/Trends</b>		

** Annual Trend Increase:	340
Trend R-squared:	72.57%
Trend Annual Historic Growth Rate:	2.06%
Trend Growth Rate (2018 to Design Year):	1.71%
Printed:	11-Mar-19
<b>Straight Line Growth Option</b>	

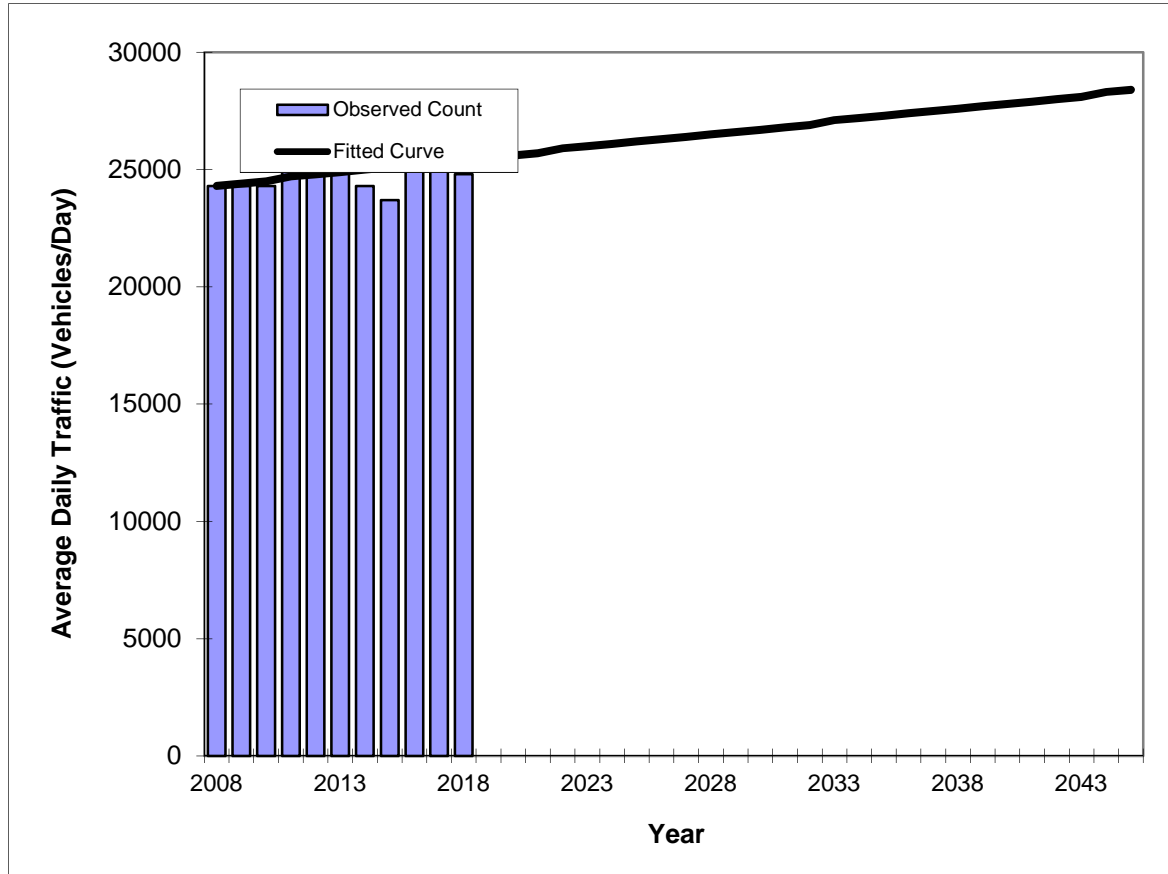
\*Axle-Adjusted

## Traffic Trends - V2.0

**OLD CANOE CREEK RD -- Neptune Rd to Kissimmee Park Rd**

PIN#	12345
Location	1

County:	Osceola (92)
Station #:	0
Highway:	OLD CANOE CREEK RD



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2008	24300	24300
2009	24300	24400
2010	24300	24500
2011	24900	24700
2012	25600	24800
2013	25000	24900
2014	24300	25000
2015	23700	25100
2016	26300	25200
2017	26100	25300
2018	24800	25400
<b>2018 Opening Year Trend</b>		
2018	N/A	25400
<b>2025 Mid-Year Trend</b>		
2025	N/A	26200
<b>2045 Design Year Trend</b>		
2045	N/A	28400
<b>TRANPLAN Forecasts/Trends</b>		

** Annual Trend Increase:	109
Trend R-squared:	19.30%
Trend Annual Historic Growth Rate:	0.45%
Trend Growth Rate (2018 to Design Year):	0.44%
Printed:	11-Mar-19
<b>Straight Line Growth Option</b>	

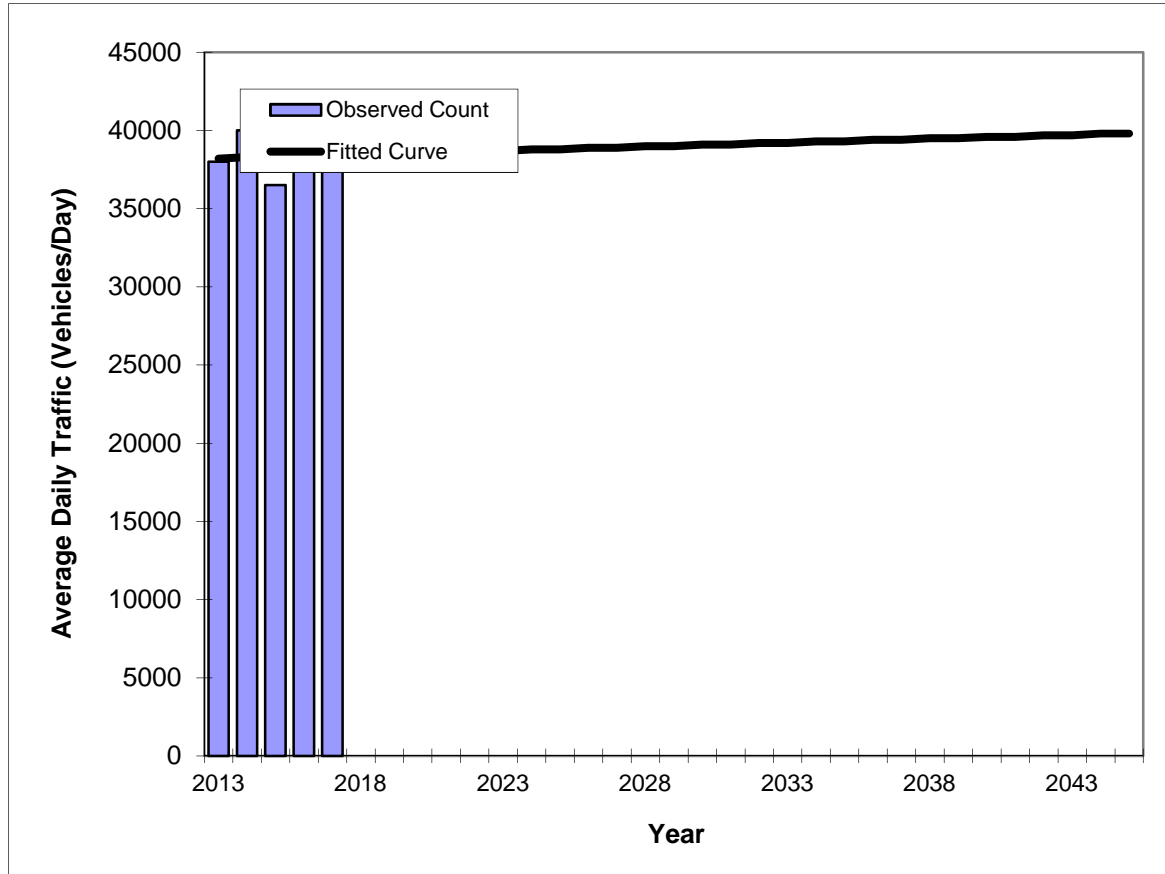
\*Axle-Adjusted

## Traffic Trends - V2.0

### US 192 -- Commerce Center to Neptune Rd

PIN#	12345
Location	1

County:	Osceola (92)
Station #:	0
Highway:	US 192



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2013	38000	38200
2014	40000	38300
2015	36500	38300
2016	37500	38400
2017	39500	38400
<b>2018 Opening Year Trend</b>		
2018	N/A	38500
<b>2025 Mid-Year Trend</b>		
2025	N/A	38800
<b>2045 Design Year Trend</b>		
2045	N/A	39800
<b>TRANPLAN Forecasts/Trends</b>		

** Annual Trend Increase:	50
Trend R-squared:	0.30%
Trend Annual Historic Growth Rate:	0.13%
Trend Growth Rate (2017 to Design Year):	0.13%
Printed:	11-Mar-19
<b>Straight Line Growth Option</b>	

\*Axle-Adjusted

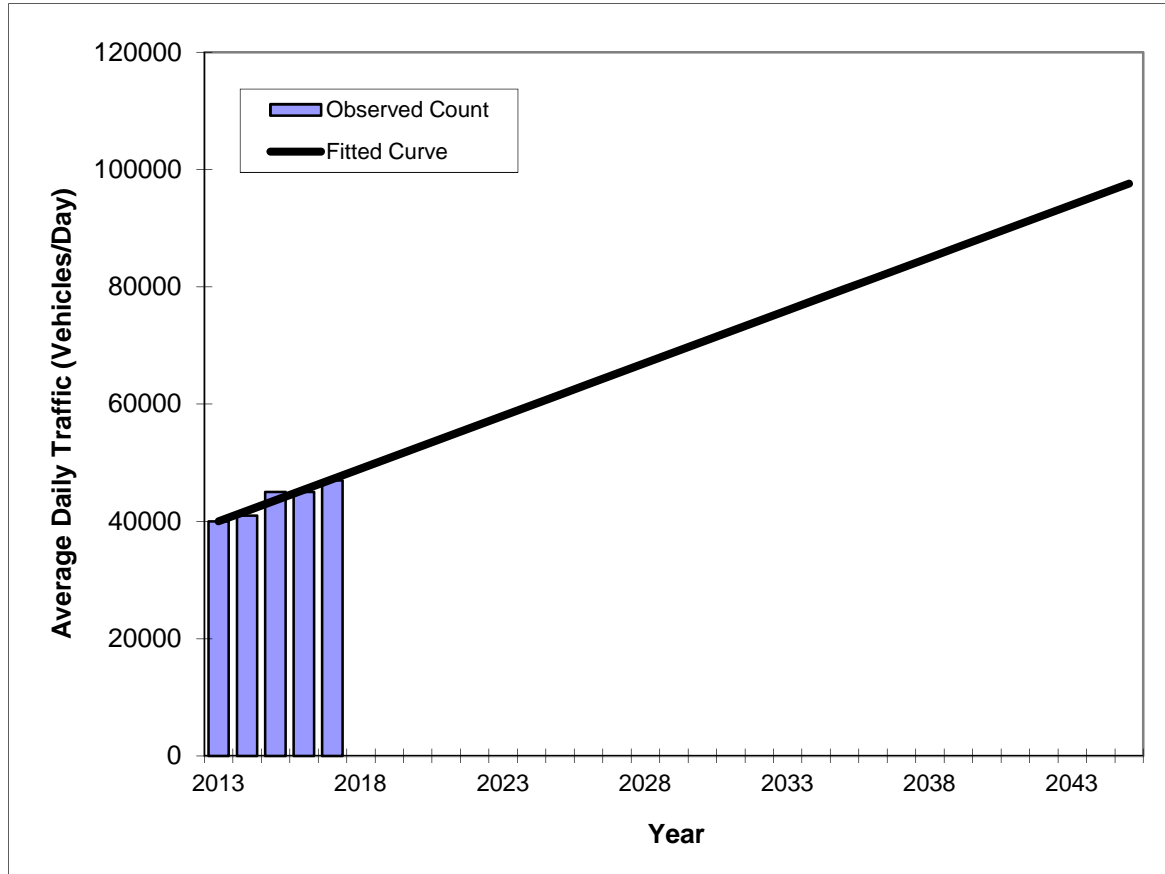


## Traffic Trends - V2.0

**US 192 -- Neptune Rd to Columbia Ave**

PIN#	12345
Location	1

County:	Osceola (92)
Station #:	0
Highway:	US 192



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2013	40000	40000
2014	41000	41800
2015	45000	43600
2016	45000	45400
2017	47000	47200
<b>2018 Opening Year Trend</b>		
2018	N/A	49000
<b>2025 Mid-Year Trend</b>		
2025	N/A	61600
<b>2045 Design Year Trend</b>		
2045	N/A	97600
<b>TRANPLAN Forecasts/Trends</b>		

** Annual Trend Increase:	1,800
Trend R-squared:	92.05%
Trend Annual Historic Growth Rate:	4.50%
Trend Growth Rate (2017 to Design Year):	3.81%
Printed:	11-Mar-19
<b>Straight Line Growth Option</b>	

\*Axle-Adjusted

**Appendix D**  
Development of AM Peak-to-Daily Ratio

## MEMORANDUM

To: Victor Muchuruza, P.E.

From: Mike Woodward, P.E.  
Kimley-Horn and Associates, Inc.

Date: August 12, 2019

Subject: Development of AM Peak Hour Turning Movements, Neptune Road PD&E

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Multiple traffic counts were collected for the Neptune Road Project Development and Environment (PD&E) study. This memorandum is provided to support the use of 7.0 percent of the daily traffic for the development of AM peak hour turning movements. This is not the K-Factor. A standard 9.0 percent K-Factor will be used to develop the design traffic, which corresponds with the PM peak hour conditions.

Of the traffic counts taken on the portion of Neptune Road to be improved, the segment from Partin Settlement Road to Cross Prairie Parkway has the highest volume. This is expected to be consistent for future conditions as well.

Based on a 72-hour traffic count on Neptune Road, east of Partin Settlement Road, the PM peak hour represents the design hour for the roadway, accounting for between 9.1 percent and 9.9 percent of the daily traffic volume. The peak hour factors ranged from 0.89 to 0.90, suggesting no peak spreading. A copy of this count is included in **Attachment A**. The hourly counts by day are summarized in **Table 1** and the 15-minute counts used to identify the PM peak hour are identified in **Table 2**.

**Table 1:** Daily Traffic Count, Neptune Road, East of Partin Settlement Road

Ending Hour	Tues 5/8/2018	Wed 5/9/2018	Thurs 5/10/2018
1	214	199	215
2	100	91	134
3	91	103	88
4	87	102	107
5	209	211	213
6	538	531	510
7	1,478	1,436	1,372
8	1,728	1,677	1,708
9	1,589	1,486	1,510
10	1,285	1,321	1,269
11	1,264	1,211	1,218
12	1,272	1,220	1,246
13	1,315	1,288	1,283
14	1,419	1,330	1,304
15	1,523	1,492	1,523
16	1,866	1,652	1,579
17	2,183	2,221	2,007
18	<b>2,581</b>	1,504	<b>2,329</b>
19	1,517	<b>2,296</b>	1,608
20	1,159	1,134	1,204
21	952	1,013	1,018
22	676	767	766
23	612	508	488
24	321	310	323
<b>Total</b>	<b>25,979</b>	<b>25,103</b>	<b>25,022</b>

 Designates peak hour

**Table 2:** 15-Minute Counts to Identify PM Peak Hour

Ending Time	Tues 5/8/2018	Wed 5/9/2018	Thurs 5/10/2018
16:45	469	567	510
17:00	539	540	508
17:15	<b>535</b>	429	<b>522</b>
17:30	<b>674</b>	382	<b>651</b>
17:45	<b>722</b>	258	<b>602</b>
18:00	<b>650</b>	435	<b>554</b>
18:15	407	<b>637</b>	415
18:30	402	<b>544</b>	422
18:45	368	<b>584</b>	392
19:00	340	<b>531</b>	379
19:15	339	328	312
<b>PM Pk Hr</b>	<b>2,581</b>	<b>2,296</b>	<b>2,329</b>
Percent	9.9%	9.1%	9.3%
PHF	0.89	0.90	0.89

**Figure 1** illustrates the hourly traffic counts collected on Neptune Road, east of Partin Settlement Road on Tuesday, May 8, 2018. This was the highest count measured within the project limits and is typical of the traffic patterns on Neptune Road. In addition to the PM peak, a second peak was observed during the morning hours; however, the volumes are significantly lower than measured in the PM peak hour. This is a very normal occurrence in urban areas as the PM peak hour is typically higher than the AM peak hour. As summarized in **Table 3**, the morning peak hour accounted for between 6.7 percent and 6.9 percent of the daily traffic volume. The peak hour factors ranged from 0.89 to 0.91, suggesting no peak spreading.

Figure 1: Hourly Traffic Volumes (Tuesday, May 8, 2018)

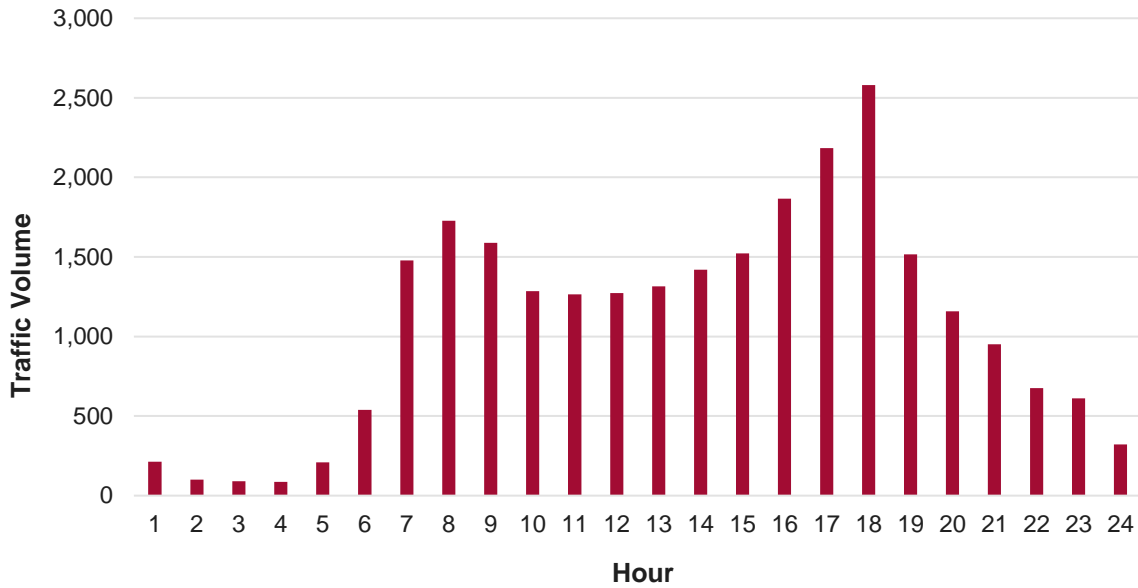


Table 3: 15-Minute Counts to Identify AM Peak Hour

Ending Time	Tues 5/8/2018	Wed 5/9/2018	Thurs 5/10/2018
6:15	298	278	281
6:30	358	339	294
6:45	396	377	370
7:00	426	442	427
7:15	414	383	395
7:30	359	382	372
7:45	468	449	460
8:00	487	463	481
8:15	397	355	407
8:30	453	397	346
8:45	392	380	378
9:00	347	354	379
<b>AM Pk Hr</b>	<b>1,805</b>	<b>1,677</b>	<b>1,708</b>
Percent	6.9%	6.7%	6.8%
PHF	0.93	0.91	0.89

Kimley-Horn proposes to use the standard K for developing future PM peak hour turning movements. However; we propose to develop the AM peak hour turning movements by applying 7.0% to the projected AADT.

Minimal guidance is provided by FDOT for developing the morning peak hour turning movements. Section 4.4.5 Develop Project Traffic Forecast in Detail, of the Project Traffic Forecasting Handbook (January 2014) provides the following:

4. *Use K and D factors to develop directional design hour traffic projections in the peak periods. AM and PM forecasts usually involve reversing the peak direction of flow.*
5. *Review the AM and PM design hour volumes for consistency with the trip generation activity pattern of the projected land uses in the vicinity and adjust if necessary. Such adjustments are made with reference to observed differences in travel characteristics such as numbers of trips and directional splits that occur during morning and evening peak periods. Directional traffic counts collected at local land use sites may provide the necessary data or the ITE Trip Generation Manual may be used to obtain the peak period trip generation characteristics of various land use/special generator sites.*

As noted above, while point 4 may suggest (no specific direction is provided) reversing the PM forecasts for the AM forecast, point 5 directs the manual adjustments for reasonableness. Based on the characteristics of Neptune Road traffic (and consistent with typical conditions for urban roadways) the AM peak hour traffic is significantly lower than the PM peak hour traffic. Therefore, we believe the use of 7.0 percent of the AADT to develop the AM peak hour turning movement volumes is appropriate and consistent with the guidance provided in point 5 above, which recognizes the need to adjust the project volumes based on specific characteristics of the corridor.

**Attachment A**

72-Hour Traffic Count  
Neptune Road, East of Partin Settlement Road



# Roadway Count Summary

<b>Start Date</b> 05/08/2018 (Tue)	<b>Start Time</b> 00:00
<b>Stop Date</b> 05/10/2018 (Thu)	<b>Stop Time</b> 24:00
<b>County</b> Osceola	
<b>Location</b> 1A:Neptune Rd: SE of Partin Settlement Rd	

8-May-18 (Tue)	<u>Northbound Volume</u>												
End Time	00	01	02	03	04	05	06	07	08	09	10	11	
15	16	8	14	12	19	49	175	230	249	178	169	133	
30	13	8	7	12	31	79	218	166	287	150	177	165	
45	11	6	10	14	32	77	216	280	218	178	155	152	
00	5	6	8	13	47	116	224	324	197	175	146	122	
<b>Hr Total</b>	<b>45</b>	<b>28</b>	<b>39</b>	<b>51</b>	<b>129</b>	<b>321</b>	<b>833</b>	<b>1000</b>	<b>951</b>	<b>681</b>	<b>647</b>	<b>572</b>	
End Time	12	13	14	15	16	17	18	19	20	21	22	23	
15	135	141	154	165	259	166	135	137	85	75	125	34	
30	127	162	153	187	179	160	133	105	112	78	52	33	
45	158	156	147	166	168	188	136	100	94	68	27	24	
00	142	160	195	147	174	163	115	91	101	42	46	19	
<b>Hr Total</b>	<b>562</b>	<b>619</b>	<b>649</b>	<b>665</b>	<b>780</b>	<b>677</b>	<b>519</b>	<b>433</b>	<b>392</b>	<b>263</b>	<b>250</b>	<b>110</b>	
<b>24 Hour Total:</b>		11,216				<i>Peak Hour Analysis</i>		<b>Begins</b>	<b>Volume</b>	<b>Pk Hr Fac</b>			
AM 7:00-8:00		1,000				PM 4:00-5:00		7:30	1,140	0.88			
AM 8:00-9:00		951				PM 5:00-6:00		16:00	780	0.75			

8-May-18 (Tue)	<u>Southbound Volume</u>												
End Time	00	01	02	03	04	05	06	07	08	09	10	11	
15	49	22	15	9	17	26	123	184	148	163	154	154	
30	41	21	17	9	15	41	140	193	166	140	144	196	
45	43	14	12	10	11	81	180	188	174	148	152	192	
00	36	15	8	8	37	69	202	163	150	153	167	158	
<b>Hr Total</b>	<b>169</b>	<b>72</b>	<b>52</b>	<b>36</b>	<b>80</b>	<b>217</b>	<b>645</b>	<b>728</b>	<b>638</b>	<b>604</b>	<b>617</b>	<b>700</b>	
End Time	12	13	14	15	16	17	18	19	20	21	22	23	
15	178	202	222	284	364	369	272	202	132	93	129	58	
30	204	194	227	310	373	514	269	191	158	112	80	48	
45	193	180	226	315	301	534	232	183	142	105	62	58	
00	178	224	199	292	365	487	225	150	128	103	91	47	
<b>Hr Total</b>	<b>753</b>	<b>800</b>	<b>874</b>	<b>1201</b>	<b>1403</b>	<b>1904</b>	<b>998</b>	<b>726</b>	<b>560</b>	<b>413</b>	<b>362</b>	<b>211</b>	
<b>24 Hour Total:</b>		14,763				<i>Peak Hour Analysis</i>		<b>Begins</b>	<b>Volume</b>	<b>Pk Hr Fac</b>			
AM 7:00-8:00		728				PM 4:00-5:00		6:45	767	0.95			
AM 8:00-9:00		638				PM 5:00-6:00		17:00	1,904	0.89			

8-May-18 (Tue)	<u>TOTAL TWO WAY (Northbound Volume + Southbound Volume)</u>												
End Time	00	01	02	03	04	05	06	07	08	09	10	11	
15	65	30	29	21	36	75	298	414	397	341	323	287	
30	54	29	24	21	46	120	358	359	453	290	321	361	
45	54	20	22	24	43	158	396	468	392	326	307	344	
00	41	21	16	21	84	185	426	487	347	328	313	280	
<b>Hr Total</b>	<b>214</b>	<b>100</b>	<b>91</b>	<b>87</b>	<b>209</b>	<b>538</b>	<b>1478</b>	<b>1728</b>	<b>1589</b>	<b>1285</b>	<b>1264</b>	<b>1272</b>	
End Time	12	13	14	15	16	17	18	19	20	21	22	23	
15	313	343	376	449	623	535	407	339	217	168	254	92	
30	331	356	380	497	552	674	402	296	270	190	132	81	
45	351	336	373	481	469	722	368	283	236	173	89	82	
00	320	384	394	439	539	650	340	241	229	145	137	66	
<b>Hr Total</b>	<b>1315</b>	<b>1419</b>	<b>1523</b>	<b>1866</b>	<b>2183</b>	<b>2581</b>	<b>1517</b>	<b>1159</b>	<b>952</b>	<b>676</b>	<b>612</b>	<b>321</b>	
<b>24 Hour Total:</b>		25,979				<i>Peak Hour Analysis</i>		<b>Begins</b>	<b>Volume</b>	<b>Pk Hr Fac</b>			
AM 7:00-8:00		1,728				PM 4:00-5:00		7:30	1,805	0.93			
AM 8:00-9:00		1,589				PM 5:00-6:00		17:00	2,581	0.89			

# Roadway Count Summary

<b>Start Date</b> 05/08/2018 (Tue) <b>Stop Date</b> 05/10/2018 (Thu) <b>County</b> Osceola <b>Location</b> 1A:Neptune Rd: SE of Partin Settlement Rd	<b>Start Time</b> 00:00 <b>Stop Time</b> 24:00
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9-May-18 (Wed)	Northbound Volume												
End Time	00	01	02	03	04	05	06	07	08	09	10	11	
15	17	5	9	6	22	62	169	238	203	180	158	141	
30	14	2	9	19	35	82	221	170	260	197	149	132	
45	15	10	10	11	42	81	205	278	197	194	156	132	
00	8	8	6	12	34	123	242	306	199	174	141	158	
<b>Hr Total</b>	<b>54</b>	<b>25</b>	<b>34</b>	<b>48</b>	<b>133</b>	<b>348</b>	<b>837</b>	<b>992</b>	<b>859</b>	<b>745</b>	<b>604</b>	<b>563</b>	
End Time	12	13	14	15	16	17	18	19	20	21	22	23	
15	140	139	136	157	220	123	162	119	97	71	56	38	
30	156	132	160	174	187	100	153	108	112	71	41	34	
45	139	167	133	148	207	50	167	83	102	53	33	22	
00	162	127	190	142	195	119	141	92	86	53	36	20	
<b>Hr Total</b>	<b>597</b>	<b>565</b>	<b>619</b>	<b>621</b>	<b>809</b>	<b>392</b>	<b>623</b>	<b>402</b>	<b>397</b>	<b>248</b>	<b>166</b>	<b>114</b>	
<b>24 Hour Total:</b>		10,795				<i>Peak Hour Analysis</i>		<b>Begins</b>	<b>Volume</b>	<b>Pk Hr Fac</b>			
AM 7:00-8:00		992				PM 4:00-5:00		809		AM Peak Hour:	7:00	992	0.81
AM 8:00-9:00		859				PM 5:00-6:00		392		PM Peak Hour:	16:00	809	0.92

9-May-18 (Wed)	Southbound Volume												
End Time	00	01	02	03	04	05	06	07	08	09	10	11	
15	42	14	14	15	15	23	109	145	152	123	154	163	
30	37	19	16	16	18	43	118	212	137	115	132	168	
45	37	20	19	14	22	53	172	171	183	168	155	166	
00	29	13	20	9	23	64	200	157	155	170	166	160	
<b>Hr Total</b>	<b>145</b>	<b>66</b>	<b>69</b>	<b>54</b>	<b>78</b>	<b>183</b>	<b>599</b>	<b>685</b>	<b>627</b>	<b>576</b>	<b>607</b>	<b>657</b>	
End Time	12	13	14	15	16	17	18	19	20	21	22	23	
15	178	151	214	242	334	306	475	209	143	152	95	55	
30	170	202	221	255	373	282	391	202	155	127	89	51	
45	181	193	235	260	360	208	417	162	161	116	88	43	
00	162	219	203	274	345	316	390	159	157	124	70	47	
<b>Hr Total</b>	<b>691</b>	<b>765</b>	<b>873</b>	<b>1031</b>	<b>1412</b>	<b>1112</b>	<b>1673</b>	<b>732</b>	<b>616</b>	<b>519</b>	<b>342</b>	<b>196</b>	
<b>24 Hour Total:</b>		14,308				<i>Peak Hour Analysis</i>		<b>Begins</b>	<b>Volume</b>	<b>Pk Hr Fac</b>			
AM 7:00-8:00		685				PM 4:00-5:00		1,412		AM Peak Hour:	7:00	685	0.81
AM 8:00-9:00		627				PM 5:00-6:00		1,112		PM Peak Hour:	18:00	1,673	0.88

9-May-18 (Wed)	TOTAL TWO WAY (Northbound Volume + Southbound Volume)												
End Time	00	01	02	03	04	05	06	07	08	09	10	11	
15	59	19	23	21	37	85	278	383	355	303	312	304	
30	51	21	25	35	53	125	339	382	397	312	281	300	
45	52	30	29	25	64	134	377	449	380	362	311	298	
00	37	21	26	21	57	187	442	463	354	344	307	318	
<b>Hr Total</b>	<b>199</b>	<b>91</b>	<b>103</b>	<b>102</b>	<b>211</b>	<b>531</b>	<b>1436</b>	<b>1677</b>	<b>1486</b>	<b>1321</b>	<b>1211</b>	<b>1220</b>	
End Time	12	13	14	15	16	17	18	19	20	21	22	23	
15	318	290	350	399	554	429	637	328	240	223	151	93	
30	326	334	381	429	560	382	544	310	267	198	130	85	
45	320	360	368	408	567	258	584	245	263	169	121	65	
00	324	346	393	416	540	435	531	251	243	177	106	67	
<b>Hr Total</b>	<b>1288</b>	<b>1330</b>	<b>1492</b>	<b>1652</b>	<b>2221</b>	<b>1504</b>	<b>2296</b>	<b>1134</b>	<b>1013</b>	<b>767</b>	<b>508</b>	<b>310</b>	
<b>24 Hour Total:</b>		25,103				<i>Peak Hour Analysis</i>		<b>Begins</b>	<b>Volume</b>	<b>Pk Hr Fac</b>			
AM 7:00-8:00		1,677				PM 4:00-5:00		2,221		AM Peak Hour:	7:00	1,677	0.91
AM 8:00-9:00		1,486				PM 5:00-6:00		1,504		PM Peak Hour:	18:00	2,296	0.90

# Roadway Count Summary

<b>Start Date</b> 05/08/2018 (Tue)	<b>Start Time</b> 00:00
<b>Stop Date</b> 05/10/2018 (Thu)	<b>Stop Time</b> 24:00
<b>County</b> Osceola	
<b>Location</b> 1A:Neptune Rd: SE of Partin Settlement Rd	

10-May-18 (Thu)	Northbound Volume											
End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	24	19	6	10	33	60	164	221	243	171	141	121
30	14	8	10	21	24	78	195	179	199	177	152	150
45	16	11	12	11	41	80	208	294	214	163	124	140
00	9	9	9	10	46	114	223	313	218	187	170	145
<b>Hr Total</b>	<b>63</b>	<b>47</b>	<b>37</b>	<b>52</b>	<b>144</b>	<b>332</b>	<b>790</b>	<b>1007</b>	<b>874</b>	<b>698</b>	<b>587</b>	<b>556</b>
End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	141	161	135	39	176	173	153	104	91	85	49	39
30	152	155	179	40	168	172	159	123	110	67	54	26
45	147	144	142	236	189	177	150	109	93	68	39	25
00	143	155	15	221	159	157	159	96	111	54	28	16
<b>Hr Total</b>	<b>583</b>	<b>615</b>	<b>471</b>	<b>536</b>	<b>692</b>	<b>679</b>	<b>621</b>	<b>432</b>	<b>405</b>	<b>274</b>	<b>170</b>	<b>106</b>
<b>24 Hour Total:</b>		10,771				<i>Peak Hour Analysis</i>		<b>Begins</b>	<b>Volume</b>	<b>Pk Hr Fac</b>		
AM 7:00-8:00		1,007		PM 4:00-5:00		692		7:00	1,007	0.80		
AM 8:00-9:00		874		PM 5:00-6:00		679		16:00	692	0.92		

10-May-18 (Thu)	Southbound Volume											
End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	46	24	14	11	14	21	117	174	164	155	146	186
30	39	23	15	11	11	44	99	193	147	139	173	175
45	34	23	12	13	14	57	162	166	164	126	165	180
00	33	17	10	20	30	56	204	168	161	151	147	149
<b>Hr Total</b>	<b>152</b>	<b>87</b>	<b>51</b>	<b>55</b>	<b>69</b>	<b>178</b>	<b>582</b>	<b>701</b>	<b>636</b>	<b>571</b>	<b>631</b>	<b>690</b>
End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	175	178	219	281	334	349	262	208	170	110	73	49
30	168	178	287	248	311	479	263	222	168	124	97	59
45	171	168	320	245	321	425	242	187	157	136	81	53
00	186	165	226	269	349	397	220	155	118	122	67	56
<b>Hr Total</b>	<b>700</b>	<b>689</b>	<b>1052</b>	<b>1043</b>	<b>1315</b>	<b>1650</b>	<b>987</b>	<b>772</b>	<b>613</b>	<b>492</b>	<b>318</b>	<b>217</b>
<b>24 Hour Total:</b>		14,251				<i>Peak Hour Analysis</i>		<b>Begins</b>	<b>Volume</b>	<b>Pk Hr Fac</b>		
AM 7:00-8:00		701		PM 4:00-5:00		1,315		7:00	701	0.91		
AM 8:00-9:00		636		PM 5:00-6:00		1,650		17:00	1,650	0.86		

10-May-18 (Thu)	TOTAL TWO WAY (Northbound Volume + Southbound Volume)											
End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	70	43	20	21	47	81	281	395	407	326	287	307
30	53	31	25	32	35	122	294	372	346	316	325	325
45	50	34	24	24	55	137	370	460	378	289	289	320
00	42	26	19	30	76	170	427	481	379	338	317	294
<b>Hr Total</b>	<b>215</b>	<b>134</b>	<b>88</b>	<b>107</b>	<b>213</b>	<b>510</b>	<b>1372</b>	<b>1708</b>	<b>1510</b>	<b>1269</b>	<b>1218</b>	<b>1246</b>
End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	316	339	354	320	510	522	415	312	261	195	122	88
30	320	333	466	288	479	651	422	345	278	191	151	85
45	318	312	462	481	510	602	392	296	250	204	120	78
00	329	320	241	490	508	554	379	251	229	176	95	72
<b>Hr Total</b>	<b>1283</b>	<b>1304</b>	<b>1523</b>	<b>1579</b>	<b>2007</b>	<b>2329</b>	<b>1608</b>	<b>1204</b>	<b>1018</b>	<b>766</b>	<b>488</b>	<b>323</b>
<b>24 Hour Total:</b>		25,022				<i>Peak Hour Analysis</i>		<b>Begins</b>	<b>Volume</b>	<b>Pk Hr Fac</b>		
AM 7:00-8:00		1,708		PM 4:00-5:00		2,007		7:00	1,708	0.89		
AM 8:00-9:00		1,510		PM 5:00-6:00		2,329		17:00	2,329	0.89		

# Roadway Count Summary

## Average

<b>Start Date</b> 05/08/2018 (Tue)	<b>Start Time</b> 00:00
<b>Stop Date</b> 05/10/2018 (Thu)	<b>Stop Time</b> 24:00
<b>County</b> Osceola	
<b>Location</b> 1A:Neptune Rd: SE of Partin Settlement Rd	

3 Avg	Northbound Volume											
End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	19	11	10	9	25	57	169	230	232	176	156	132
30	14	6	9	17	30	80	211	172	249	175	159	149
45	14	9	11	12	38	79	210	284	210	178	145	141
00	7	8	8	12	42	118	230	314	205	179	152	142
<b>Hr Total</b>	<b>54</b>	<b>34</b>	<b>38</b>	<b>50</b>	<b>135</b>	<b>334</b>	<b>820</b>	<b>1000</b>	<b>896</b>	<b>708</b>	<b>612</b>	<b>564</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	139	147	142	120	218	154	150	120	91	77	77	37
30	145	150	164	134	178	144	148	112	111	72	49	31
45	148	156	141	183	188	138	151	97	96	63	33	24
00	149	147	133	170	176	146	138	93	99	50	37	18
<b>Hr Total</b>	<b>581</b>	<b>600</b>	<b>580</b>	<b>607</b>	<b>760</b>	<b>582</b>	<b>587</b>	<b>422</b>	<b>397</b>	<b>262</b>	<b>196</b>	<b>110</b>

<b>24 Hour Total:</b>	10,929			<i>Peak Hour Analysis</i>	<b>Begins</b>	<b>Volume</b>	<b>Pk Hr Fac</b>
AM 7:00-8:00	1,000	PM 4:00-5:00	760	AM Peak Hour:	7:00	1,000	0.80
AM 8:00-9:00	896	PM 5:00-6:00	582	PM Peak Hour:	16:00	760	0.87

3 Avg	Southbound Volume											
End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	46	20	14	12	15	23	116	168	155	147	151	168
30	39	21	16	12	15	43	119	199	150	131	150	180
45	38	19	14	12	16	64	171	175	174	147	157	179
00	33	15	13	12	30	63	202	163	155	158	160	156
<b>Hr Total</b>	<b>156</b>	<b>75</b>	<b>57</b>	<b>48</b>	<b>76</b>	<b>193</b>	<b>608</b>	<b>705</b>	<b>634</b>	<b>583</b>	<b>618</b>	<b>683</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	177	177	218	269	344	341	336	206	148	118	99	54
30	181	191	245	271	352	425	308	205	160	121	89	53
45	182	180	260	273	327	389	297	177	153	119	77	51
00	175	203	209	278	353	400	278	155	134	116	76	50
<b>Hr Total</b>	<b>715</b>	<b>751</b>	<b>932</b>	<b>1091</b>	<b>1376</b>	<b>1555</b>	<b>1219</b>	<b>743</b>	<b>595</b>	<b>474</b>	<b>341</b>	<b>208</b>

<b>24 Hour Total:</b>	14,436			<i>Peak Hour Analysis</i>	<b>Begins</b>	<b>Volume</b>	<b>Pk Hr Fac</b>
AM 7:00-8:00	705	PM 4:00-5:00	1,376	AM Peak Hour:	7:00	705	0.88
AM 8:00-9:00	634	PM 5:00-6:00	1,555	PM Peak Hour:	17:00	1,555	0.91

3 Avg	TOTAL TWO WAY (Northbound Volume + Southbound Volume)											
End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	65	31	24	21	40	80	286	397	386	323	307	299
30	53	27	25	29	45	122	330	371	399	306	309	329
45	52	28	25	24	54	143	381	459	383	326	302	321
00	40	23	20	24	72	181	432	477	360	337	312	297
<b>Hr Total</b>	<b>210</b>	<b>109</b>	<b>94</b>	<b>98</b>	<b>211</b>	<b>526</b>	<b>1429</b>	<b>1704</b>	<b>1528</b>	<b>1292</b>	<b>1230</b>	<b>1246</b>

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	316	324	360	389	562	495	486	326	239	195	176	91
30	326	341	409	405	530	569	456	317	272	193	138	84
45	330	336	401	457	515	527	448	275	250	182	110	75
00	324	350	343	448	529	546	417	248	234	166	113	68
<b>Hr Total</b>	<b>1296</b>	<b>1351</b>	<b>1513</b>	<b>1699</b>	<b>2136</b>	<b>2137</b>	<b>1807</b>	<b>1166</b>	<b>995</b>	<b>736</b>	<b>537</b>	<b>318</b>

<b>24 Hour Total:</b>	25,368			<i>Peak Hour Analysis</i>	<b>Begins</b>	<b>Volume</b>	<b>Pk Hr Fac</b>
AM 7:00-8:00	1,704	PM 4:00-5:00	2,136	AM Peak Hour:	7:00	1,704	0.89
AM 8:00-9:00	1,528	PM 5:00-6:00	2,137	PM Peak Hour:	17:00	2,138	0.94