



Ringling Trail Traffic Analysis

September 2020

Prepared By

Kimley»»Horn

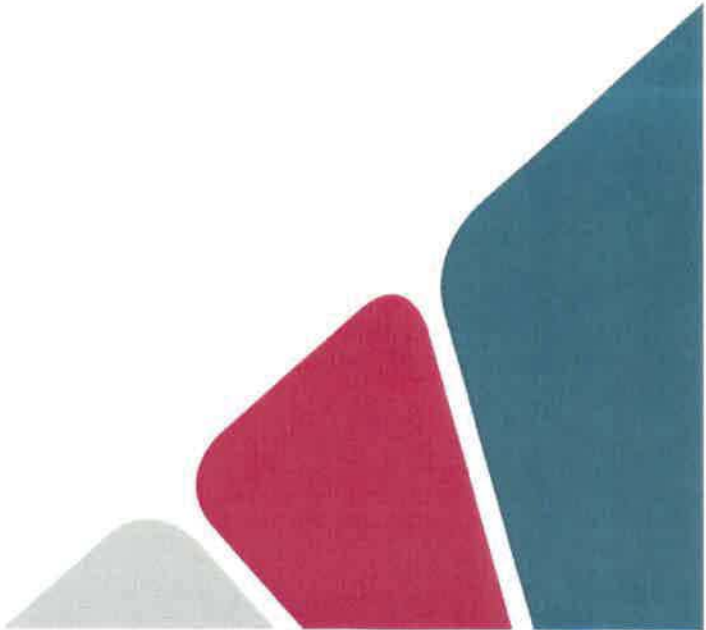


TABLE OF CONTENTS

EXECUTIVE SUMMARY 1
INTRODUCTION 2
ROADWAY SECTION..... 3
DATA COLLECTION..... 3
ORIGIN/DESTINATION ANALYSIS..... 8
LANE REPURPOSING10
DAILY TRAFFIC ANALYSIS.....10
INTERSECTION ANALYSIS12
PEAK HOUR ROADWAY ANALYSIS15
TURN LANE ANALYSIS.....16
CONCLUSION.....18
APPENDIX.....19

Executive Summary

The report analyzed the transportation impacts of adding protected bicycle lanes along Ringling Boulevard. Historic traffic data from before COVID-19 demonstrates that car traffic on Ringling Boulevard has decreased over the past five years. Nonetheless, a positive growth rate of 1% was assumed to examine a hypothetical scenario of growth in car traffic. The analysis also demonstrates that Ringling Boulevard serves as a highly local roadway with few trips originating from outside of two miles of the corridor.

The report finds that even with the hypothetical growth rate there would be sufficient additional capacity on Ringling Boulevard for car traffic. Vehicles would continue to move acceptably through the year 2040 and beyond. Each segment of Ringling Boulevard from Pine Place to Lime Avenue and each intersection analyzed would continue to operate at or above the City's adopted level-of-service (LOS). In addition, the overall level-of-service would generally be maintained for the roadway through the year 2040.

Some approaches at particular intersections would need monitoring over time to ensure the network would continue to function smoothly. These approaches would be the following turn movements:

- The right turn from Ringling Boulevard onto southbound School Avenue
- The right turn from Ringling Boulevard onto northbound US 301
- The right turn from School Avenue onto eastbound Ringling Boulevard
- The right turn from Osprey Avenue onto eastbound Ringling Boulevard

Overall, the report finds, even with hypothetical positive growth in car traffic, that adding the protected bicycle lanes to Ringling Boulevard would maintain an acceptable traffic flow of automobiles for at least the next two decades. Bicyclists themselves will see a transformational improvement in capacity as well as a significant improvement in safety.

Introduction

This report documents the traffic impacts from the proposed Ringling Trail in the City of Sarasota. The concept design includes a lane repurposing for a portion of Ringling Avenue from Pine Place to Lime Avenue. This included the decrease of the total roadway vehicular lanes from 4-lanes to 2-lanes with a protected bicycle lane.

The purpose of the traffic analysis is to study the existing traffic conditions and the proposed lane repurposing design. Traffic conditions were analyzed for the study roadway segments and the signalized study area intersections along Ringling Boulevard. The project limits for the traffic analysis are shown in **Figure 1**.

FIGURE 1: PROJECT LOCATION MAP



Roadway Section

Ringling Boulevard is a local roadway which provides an east to west connection from Tuttle Avenue to Bayfront Drive (US 41). Ringling Boulevard is currently a 2-lane divided roadway at the intersection of Bayfront Drive & Ringling Boulevard which then widens to a 4-lane cross section at the intersection of Ringling Boulevard & Pine Place. The roadway currently has a posted speed limit of 30 miles-per-hour west of Washington Boulevard (US 301) and a posted speed limit of 25 miles-per-hour east of Washington Boulevard.

The traffic analysis focused primarily on the impacts to the Ringling Trail from Pine Place to Lime Avenue (where the roadway is currently a four-lane section). The roadway is proposed to be repurposed to a two-lane section with a protected bicycle lane along each side.

Data Collection

Weekday AM and PM peak hour volume data (7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM) was collected using the Advanced Traffic Management System (ATMS) data on Tuesday, March 12, 2019 to Thursday, March 14, 2019 for the following study intersections:

- Ringling Boulevard & Pine Place
- Ringling Boulevard & East Avenue
- Ringling Boulevard & School Avenue
- Ringling Boulevard & Lime Street
- Ringling Boulevard & Shade Avenue

As the ATMS data system provides traffic volumes per lane, additional information was used to supplement the data to provide the turning movement counts. Due to the current impacts of COVID, new traffic turning movement counts were not collected. Instead, Street Light traffic data was utilized to determine the traffic origin and destinations for each movement at the study intersections.

Street Light traffic data was also utilized for the traffic volume at the following study intersection:

- Ringling Boulevard & Osprey Avenue




As FDOT maintains US 301, the intersection traffic volume for the intersection of Ringling Boulevard & US 301 was derived using available FDOT data to determine the peak hour volumes. Additionally, a previous turning movement count at the intersection of Ringling Boulevard & School Avenue and Ringling Boulevard & Shade Avenue was utilized and is provided in **Appendix A**.

The traffic count data was adjusted to local peak season weekday conditions using a peak season factor provided by the Florida Department of Transportation (FDOT) 2018 peak season factor category report. FDOT's 2018 peak season factor category report is included in **Appendix B**. The 2018 peak season AM and PM peak hour turning movement volumes were then adjusted to year 2020 by using a 1.0% growth rate. A negative background growth rate was calculated using five years of historical traffic data. However, to provide a conservative analysis, the existing peak-season volumes were increased by a 1.0% annual growth rate to reflect year 2020 traffic volumes.

The existing peak season AM and PM peak hour turning movement volumes for the study intersections along Ringling Boulevard are shown in **Figure 2** and **Figure 3**. The analysis includes projected future traffic volumes for 2040. The AM and PM peak-hour turning movement volumes for the study intersections along Ringling Boulevard for 2040 future conditions are shown in **Figure 4** and **Figure 5**.



Legend

-  Roadway
-  Study Intersection
-  A.M. Peak-Hour Existing Traffic

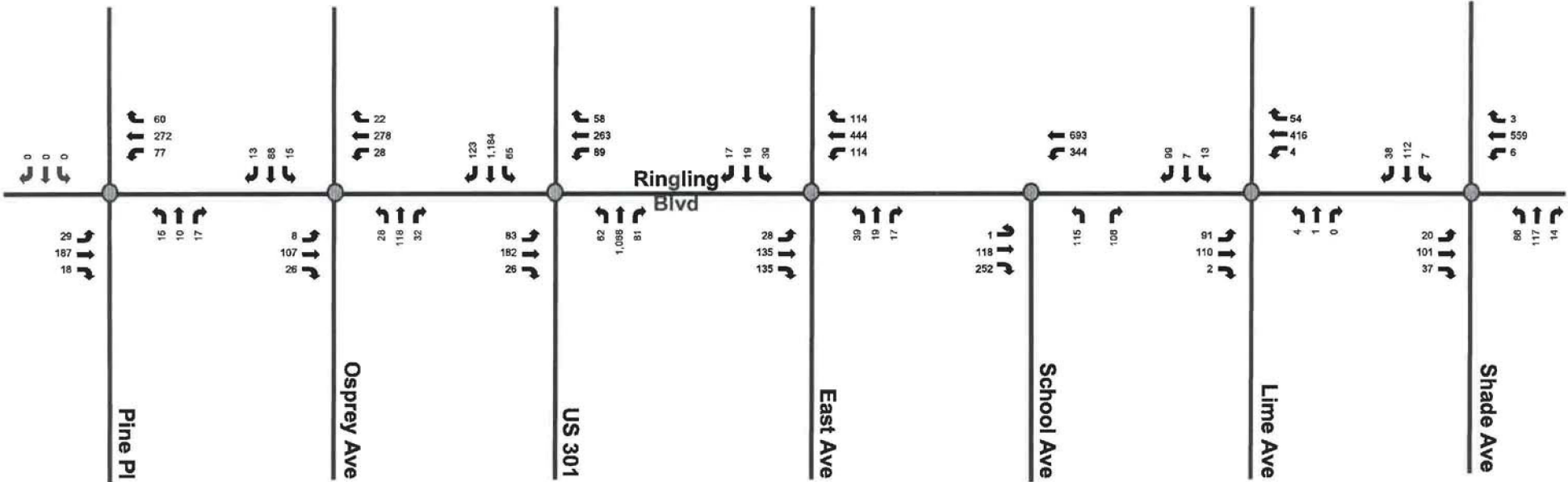





Figure 2
A.M. Peak-Hour Existing Traffic
Ringling Trail
City of Sarasota, Florida



Legend

-  Roadway
-  Study Intersection
-  P.M. Peak-Hour Existing Traffic

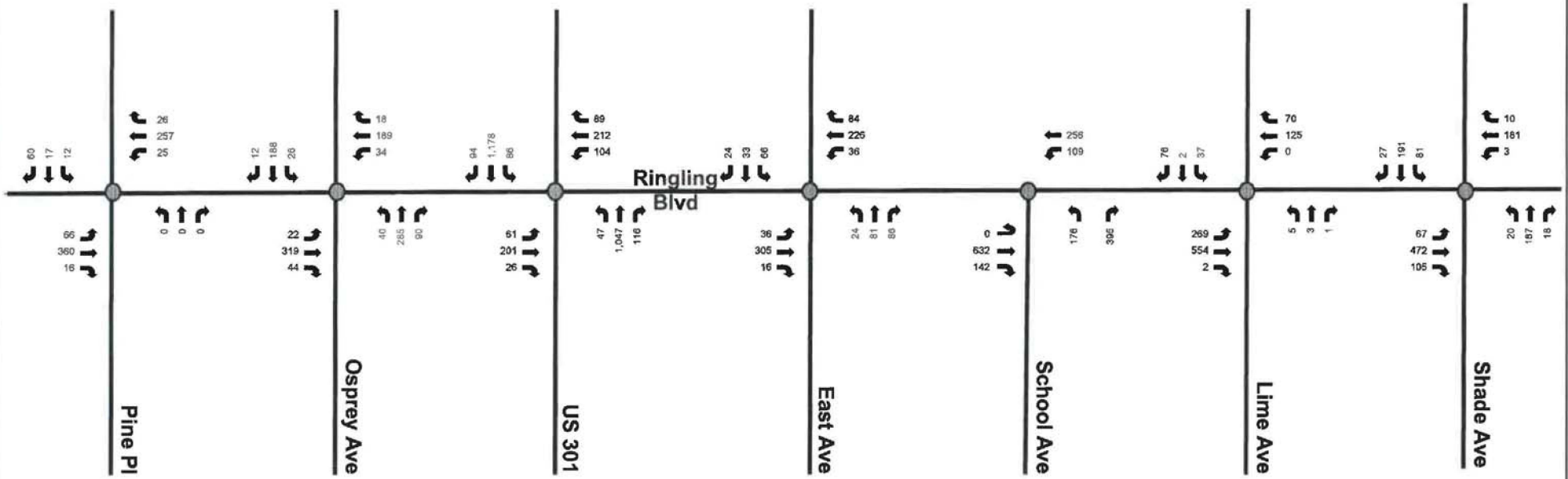


Figure 3
P.M. Peak-Hour Existing Traffic
Ringling Trail
City of Sarasota, Florida



- Legend**
- Roadway
 - ⊙ Study Intersection
 - XX A.M. Peak-Hour Future Traffic (2040)

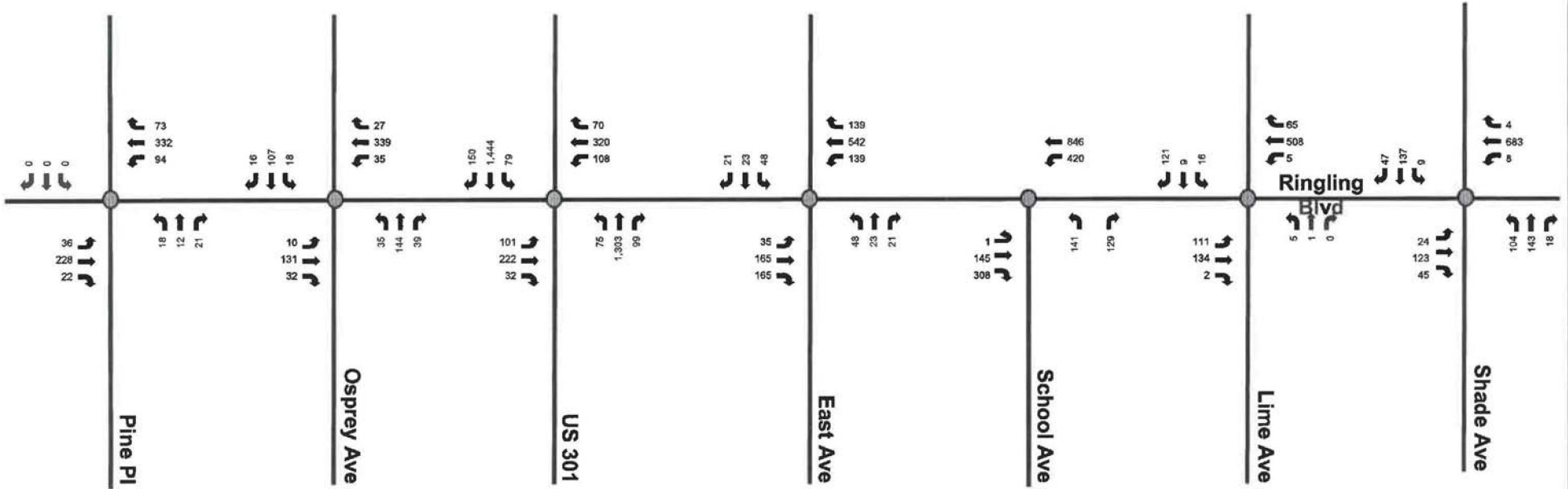


Figure 4
A.M. Peak-Hour Future Traffic
Ringling Trail
City of Sarasota, Florida



Legend

- Roadway
- Study Intersection
- XX P.M. Peak-Hour Future Traffic (2040)

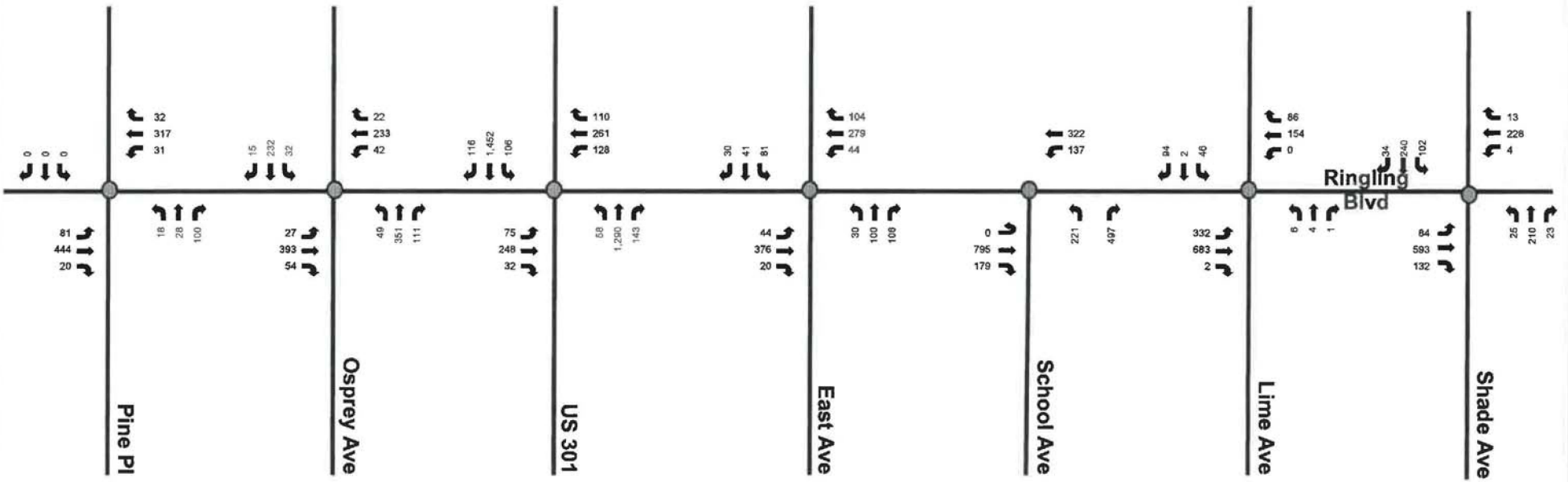


Figure 5
P.M. Peak-Hour Future Traffic
Ringling Trail
City of Sarasota, Florida

Origin/Destination Analysis

Origins and destinations were collected to understand existing travel patterns along the Ringling Trail. The analysis utilized Street Light data (which is collected based upon Bluetooth data) to evaluate the census block groups within 1.5 miles of Ringling Boulevard. The data is summarized for both vehicle and bicycle trips in the area. **Figure 6** indicates the top origin/destination zones for vehicles within the area.

The origin/destination analysis indicates a majority of the trips on the corridor are local trips which are concentrated in the adjacent zones of the corridor (indicated on the map as Zone 1, Zone 8, and Zone 11). The data indicated the three adjacent zones to the study area were the top origins and top destinations using Ringling Boulevard in the area.

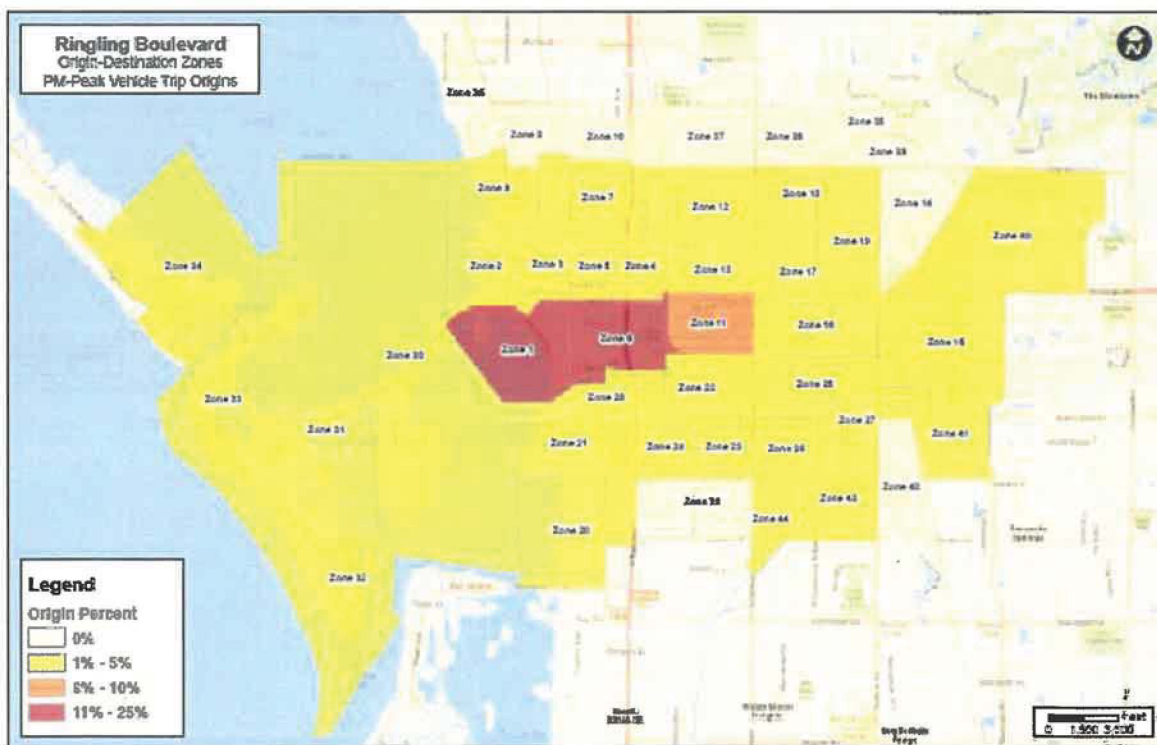


FIGURE 6: VEHICLE ORIGIN/DESTINATION ZONES

The origin/destination analysis was also performed for the bicycle trips. The data indicates a majority of the trips occur along the corridor and in the zones directly north of the corridor. The protected bicycle lanes will provide enhanced facilities for the current users as well as provide connectivity to the Legacy Trail extension.

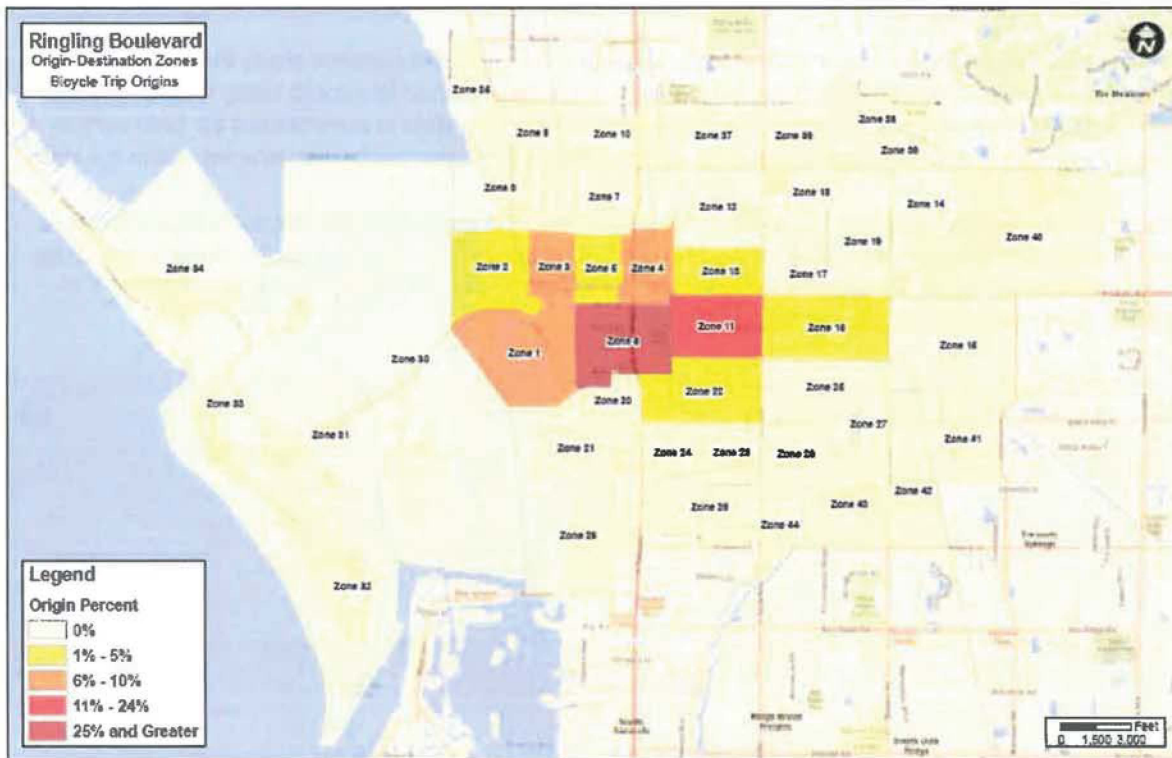


FIGURE 7: BICYCLE ORIGIN/DESTINATION ZONES

LANE REPURPOSING

The concept design includes a lane repurposing for a portion of Ringling Boulevard from Pine Place to Shade Avenue. This included the decrease of the total amount of lanes from 4-lanes to 2-lanes with a protected bicycle lane. Analysis of traffic conditions were conducted with a generalized roadway segment analysis and intersection analysis to determine anticipated project impacts.

Daily Traffic Analysis

The annual average daily traffic volumes were also reviewed along Ringling Boulevard at three locations along the corridor. The daily service volume was calculated based upon the Florida Department of Transportation (FDOT) Quality/Level of Service (QLOS) Tables. The existing (2020) volumes are summarized in **Table 1** and indicate the highest segment of the study area along Ringling Boulevard is from US 301 to Shade Avenue. The daily traffic volumes indicate the current four lane section is utilizing approximately 30% of the maximum available capacity.

TABLE 1: EXISTING DAILY TRAFFIC VOLUMES

		Ringling Boulevard				
		Annual Average Daily Traffic Volumes ¹	Four-Lane Service Volume (LOS E)	Volume to Capacity Ratio	Available Capacity (%)	Existing LOS
Daily Traffic Volumes	Pine Place to Osprey Avenue	7,200	30,420	0.24	76%	C
	Osprey Avenue to US 301	7,700	30,420	0.25	75%	C
	US 301 to Shade Avenue	7,900	30,420	0.26	74%	C

1. Source FDOT Traffic Online

The proposed lane repurposing was analyzed for existing traffic volumes. The analysis is summarized in **Table 2** and indicates that Ringling Boulevard is anticipated to operate acceptably as a two-lane roadway. The daily traffic volumes indicate the proposed two-lane section would utilize approximately 55% of the available capacity.

TABLE 2. EXISTING DAILY TRAFFIC VOLUMES (LANE REPURPOSING)

		Ringling Boulevard				
		Annual Average Daily Traffic Volumes ¹	Two-Lane Service Volume (LOS E)	Volume to Capacity Ratio	Available Capacity (%)	Existing LOS
Daily Traffic Volumes	Pine Place to Osprey Avenue	7,200	14,742	0.49	51%	D
	Osprey Avenue to US 301	7,700	14,742	0.52	48%	D
	US 301 to Shade Avenue	7,900	14,742	0.54	46%	D

1. Source FDOT Traffic Online

The proposed lane repurposing was also analyzed for future 2040 traffic volumes. A negative background growth rate was calculated using five years of historical traffic data. However, as discussed with the City and to provide a conservative analysis, the existing peak-season volumes were increased by a 1.0% annual growth rate to reflect year 2040 traffic volumes. The volumes are summarized in **Table 3** and indicate that Ringling Boulevard is anticipated to operate acceptably as a two-lane roadway in 2040. The daily traffic volumes indicate the proposed two-lane section would utilize approximately 70% of the available capacity.

TABLE 3: 2040 DAILY TRAFFIC VOLUMES (LANE REPURPOSING)

		Ringling Boulevard				
		Annual Average Daily Traffic Volumes ¹	Two-Lane Service Volume (LOS E)	Volume to Capacity ratio	Available Capacity (%)	LOS
Daily Traffic Volumes	Orange Avenue to Osprey Avenue	8,962	14,742	0.61	39%	D
	Osprey Avenue to US 301	9,584	14,742	0.65	35%	D
	US 301 to Shade Avenue	9,833	14,742	0.67	33%	D

1. Source FDOT Traffic Online

Intersection Analysis

To further assess the transportation impacts of the lane repurposing design, *Synchro* (v10) software was used to determine AM and PM peak-hour operational conditions for the study area intersections. A summary of intersection level of service (LOS) and maximum volume to capacity (v/c) ratios by approach for the AM and PM peak-hour conditions is provided in **Table 4** and **Table 5**.

Under existing (2020) AM and PM peak-hour conditions, the signalized study area intersections currently operate with the volume to capacity ratios for all movements of less than 1.0 with Ringling Boulevard as a four-lane facility.

The analysis includes a future no-build scenario which shows the anticipated traffic impact in 2040 with the existing roadway (four-lane facility) and the future build scenario with the protected bicycle lanes and two-lane facility. For both scenarios the intersection analysis indicated the study area intersections are all anticipated to operate with acceptable v/c ratios for all movements (defined as less than 1.0).

During the PM peak hour period, in the future build scenarios, the intersection of Ringling Boulevard & School Avenue is anticipated to operate with a v/c ratio greater than 1.0 for the eastbound approach. Therefore, it is recommended to include an eastbound right-turn movement at the intersection to reduce the delay. It is also recommended to implement signal retiming at this intersection to provide additional green time to the northbound movement. The Synchro outputs are contained in **Appendix C**.

TABLE 4: AM PEAK-HOUR INTERSECTION ANALYSIS

		AM PEAK HOUR EXISTING V/C RATIO {FUTURE NO BUILD V/C RATIO} [FUTURE BIKEWAY V/C RATIO]											Intersection LOS	
		Eastbound			Westbound			Northbound			Southbound			
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT		SBR
Intersection Analysis	Ringling Blvd & Pine Pl	0.04 {0.47} [0.47]	0.08 {0.10} [0.20]		0.09 {0.11} [0.11]	0.11 {0.14} [0.27]	0.06 {0.07} [0.07]	0.52 {0.59} [0.59]			---			A {A} [A]
	Ringling Blvd & Osprey Ave	0.01 {0.02} [0.02]	0.06 {0.07} [0.17]	0.03 {0.04} [0.17]	0.04 {0.05} [0.05]	0.14 {0.18} [0.37]	0.03 {0.03} [0.37]	0.10 {0.13} [0.13]	0.45 {0.54} [0.54]	0.06 {0.09} [0.09]	0.30 {0.37} [0.37]	B {B} [B]		
	Ringling Blvd & US 301	0.60 {0.73} [0.78]	0.58 {0.64} [0.83]		0.47 {0.54} [0.59]	0.83 {0.86} [0.95] ¹		0.27 {0.48} [0.57]	0.53 {0.68} [0.75]	0.24 {0.40} [0.47]	0.61 {0.78} [0.86]		C {D} [D]	
	Ringling Blvd & East Ave	0.13 {0.17} [0.30]			0.28 {0.36} [0.66]			0.29 {0.34} [0.34]	0.31 {0.32} [0.32]	0.29 {0.34} [0.34]	0.31 {0.32} [0.32]		A {A} [A]	
	Ringling Blvd & School Ave	0.20 {0.27} [0.64]		0.47 {0.64} --	0.63 {0.86} [0.94]	0.37 {0.45} [0.86]		0.22 {0.27} [0.27]	---	0.23 {0.28} [0.28]	---			B {C} [C]
	Ringling Blvd & Lime Ave	0.61 {0.66} [0.82]	0.11 {0.13} [0.13]		0.43 {0.43} [0.43]	0.48 {0.59} [0.62]		0.01 {0.02} [0.02]	0.01 {0.01} [0.01]	0.06 {0.07} [0.07]		0.34 {0.41} [0.41]	B {C} [C]	

1. Westbound right-turn lane included in analysis
2. Eastbound right-turn lane included in analysis. Without eastbound right-turn lane included in analysis, v/c ratio = 1.03

TABLE 5: PM PEAK-HOUR INTERSECTION ANALYSIS

		PM PEAK HOUR EXISTING V/C RATIO {FUTURE NO BUILD V/C RATIO} [FUTURE BIKEWAY V/C RATIO]											Intersection LOS
		Eastbound			Westbound			Northbound			Southbound		
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	
Intersection Analysis	Ringling Blvd & Pine Pl	0.63 {0.71} [0.71]	0.17 {0.21} [0.42]		0.04 {0.05} [0.06]	0.13 {0.16} [0.30]	0.03 {0.04} [0.04]	0.80 {0.82} [0.82]			---		B {B} [B]
	Ringling Blvd & Osprey Ave	0.04 {0.05} [0.06]	0.21 {0.21} [0.45]	0.06 {0.08} [0.09]	0.07 {0.09} [0.09]	0.12 {0.15} [0.32]	0.03 {0.03} [0.32]	0.12 {0.16} [0.16]	0.79 {0.96} [0.96]	0.13 {0.23} [0.23]	0.41 {0.50} [0.50]	C {C} [C]	
	Ringling Blvd & US 301	0.47 {0.53} [0.44]	0.76 {0.78} [0.95]		0.59 {0.65} [0.74]	0.84 {0.87} [0.76] ¹		0.19 {0.36} [0.44]	0.54 {0.70} [0.79]	0.34 {0.54} [0.63]	0.59 {0.76} [0.84]	C {D} [D]	
	Ringling Blvd & East Ave	0.16 {0.21} [0.39]			0.17 {0.21} [0.41]			0.09 {0.11} [0.11]	0.59 {0.60} [0.60]	0.42 {0.47} [0.47]	0.20 {0.21} [0.21]	B {B} [B]	
	Ringling Blvd & School Ave	0.48 {0.61} [0.95] ²	0.48 {0.61} [0.25]	0.24 {0.35} [0.40]	0.13 {0.16} [0.31]	0.38 {0.47} [0.42]	--	0.72 {0.96} [0.96]	---		B {B} [D]		
	Ringling Blvd & Lime Ave	0.78 {0.82} [0.39]	0.48 {0.46} [0.54]		0.41 {0.41} [0.23]	0.21 {0.27} [0.23]	0.02 {0.03} [0.03]	0.02 {0.02} [0.02]	0.15 {0.18} [0.17]	0.34 {0.42} [0.68]	B {B} [C]		

1. Westbound right-turn lane included in analysis
2. Eastbound right-turn lane included in analysis

Peak Hour Roadway Analysis

A peak hour roadway analysis was performed along Ringling Boulevard to document the existing conditions and the proposed lane repurposing. The service volume was calculated based upon the Florida Department of Transportation (FDOT) Quality/Level of Service (QLOS) Tables. An analysis of the lane repurposing was performed for both AM and PM peak-hour periods.

Based upon the existing traffic data, a generalized roadway analysis was performed for the peak-hour periods. As indicated in **Table 6** and **Table 7**, the corridor currently operates acceptably (below the service volume) and is anticipated to continue to operate acceptably with the lane repurposing.

TABLE 6: PEAK-HOUR ROADWAY ANALYSIS EXISTING CONDITIONS SUMMARY

Scenario	Roadway	From	To	Peak Hour Two-Way Service Volume			2020 Traffic Volumes		LOS	
				Lanes	LOS Standard	Service Volume	AM Peak-Hour Volume	PM Peak-Hour Volume	AM	PM
Existing Conditions	Ringling Boulevard	Pine Place	US 301	4	E	2,736	676	661	C	C
	Ringling Boulevard	US 301	School Avenue	4	E	2,736	959	1,007	C	C
	Ringling Boulevard	School Avenue	Shade Avenue	4	E	2,736	1,052	1,132	C	C
Lane Repurposing	Ringling Boulevard	Pine Place	US 301	2	E	1,333	676	661	D	D
	Ringling Boulevard	US 301	School Avenue	2	E	1,333	959	1,007	D	D
	Ringling Boulevard	School Avenue	Shade Avenue	2	E	1,333	1,052	1,132	D	D

TABLE 7: PM PEAK-HOUR ROADWAY ANALYSIS FUTURE CONDITIONS SUMMARY

Scenario	Roadway	From	To	Peak Hour Two-Way Service Volume			2040 Traffic Volumes		LOS	
				Lanes	LOS Standard	Service Volume	AM Peak-Hour Volume	PM Peak-Hour Volume	AM	PM
Existing Conditions	Ringling Boulevard	Pine Place	US 301	4	E	2,736	824	857	C	C
	Ringling Boulevard	US 301	School Avenue	4	E	2,736	1,170	1,257	C	D
	Ringling Boulevard	School Avenue	Shade Avenue	4	E	2,736	1,285	1,303	D	D
Lane Repurposing	Ringling Boulevard	Pine Place	US 301	2	E	1,333	824	857	D	D
	Ringling Boulevard	US 301	School Avenue	2	E	1,333	1,170	1,257	D	E
	Ringling Boulevard	School Avenue	Shade Avenue	2	E	1,333	1,285	1,303	E	E