

Major Traffic Study

for submittal to
City of Lakeland, Florida

Publix Warehouse Campus Expansion

5300 Alan K. Breed Highway
Lakeland, Florida

Prepared for

Publix Super Markets, Inc.

Revised: January 2024

CPH Project P14820.1



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Date

TABLE OF CONTENTS

1	Introduction	4
2	Existing Conditions.....	9
3	Background Growth Conditions.....	16
4	Project Traffic	24
5	Future Conditions	27
6	Conclusion	27

Appendices

A	Traffic Methodology
B	Turning Movement Count Worksheets & Peak Season Factor
C	Signal Timings & Vested Trips
D	Synchro Reports: Existing Conditions
E	Synchro Reports: Background Growth Conditions
F	Trip Generation Report
G	Synchro Reports: Future Conditions
H	Truck Percentage Calculations

LIST OF TABLES

1	Existing – AM & PM Peak Hour – Intersection Level of Service	12
2	Existing – AM & PM Peak Hour – Queue & Turn Lane Analyses	15
3	Background – AM & PM Peak Hour – Intersection Level of Service	18
4	Background – AM & PM Peak Hour – Queue & Turn Lane Analyses	22
5	Trip Generation	23
6	Future – AM & PM Peak Hour – Intersection Level of Service	28
7	Future – AM & PM Peak Hour – Queue & Turn Lane Analyses	31

LIST OF FIGURES

Figure 1 – Location Map.....	5
Figure 2 – Site Plan.....	6
Figure 3 – Site Access	7
Figure 4 – Existing Traffic Volumes.....	11
Figure 5 – Existing LOS Map A.M.	13
Figure 6 – Existing LOS Map P.M.	14
Figure 7 – Background Forecast Volumes	17
Figure 8 – Background LOS Map A.M.....	19
Figure 9 – Background LOS Map P.M.....	20
Figure 10 – Site Trip Distribution.....	24
Figure 11 – Site Traffic Assignment	25
Figure 12 – Future Forecast Volumes.....	27
Figure 13 – Future LOS Map A.M.	29
Figure 14 – Future LOS Map P.M.	30

1 Introduction

Location

A new Publix Warehouse is proposed to be constructed at 5300 Allen K. Breed Highway, in Lakeland, Florida (see **Figure 1**). This project will be an expansion of the Publix Warehouse Campus located at 2600 County Line Rd.

Proposed Development

The proposed 511,535 square foot development (see **Figure 2**) consists of the following:

- 1) A warehouse of 450,000 square feet and
- 2) A Return Center warehouse of 61,535 square feet.

Proposed Site Access

Access to the site will be provided by one driveway – a proposed connection/extension of Key Logistics Center Driveway (see **Figure 3**). This driveway intersects Breed Hwy and is a three-legged intersection with the minor road approach controlled by stop sign. While this development will be connected to the existing Publix warehouse on County Line Road, all project traffic will be directed to enter/exit via key Logistics Center Driveway.

Study Area

An October 2023 pre-application meeting was held with City of Lakeland staff to identify traffic study requirements and parameters. The result was a *Traffic Methodology* document approved by City staff (see **Appendix A**).

The methodology included Traffic Impact Significance calculations that determined the Study Area focus on four intersections:

1. Breed Hwy & County Line Rd
2. Breed Hwy & Key Logistics Center Driveway (Project Driveway)

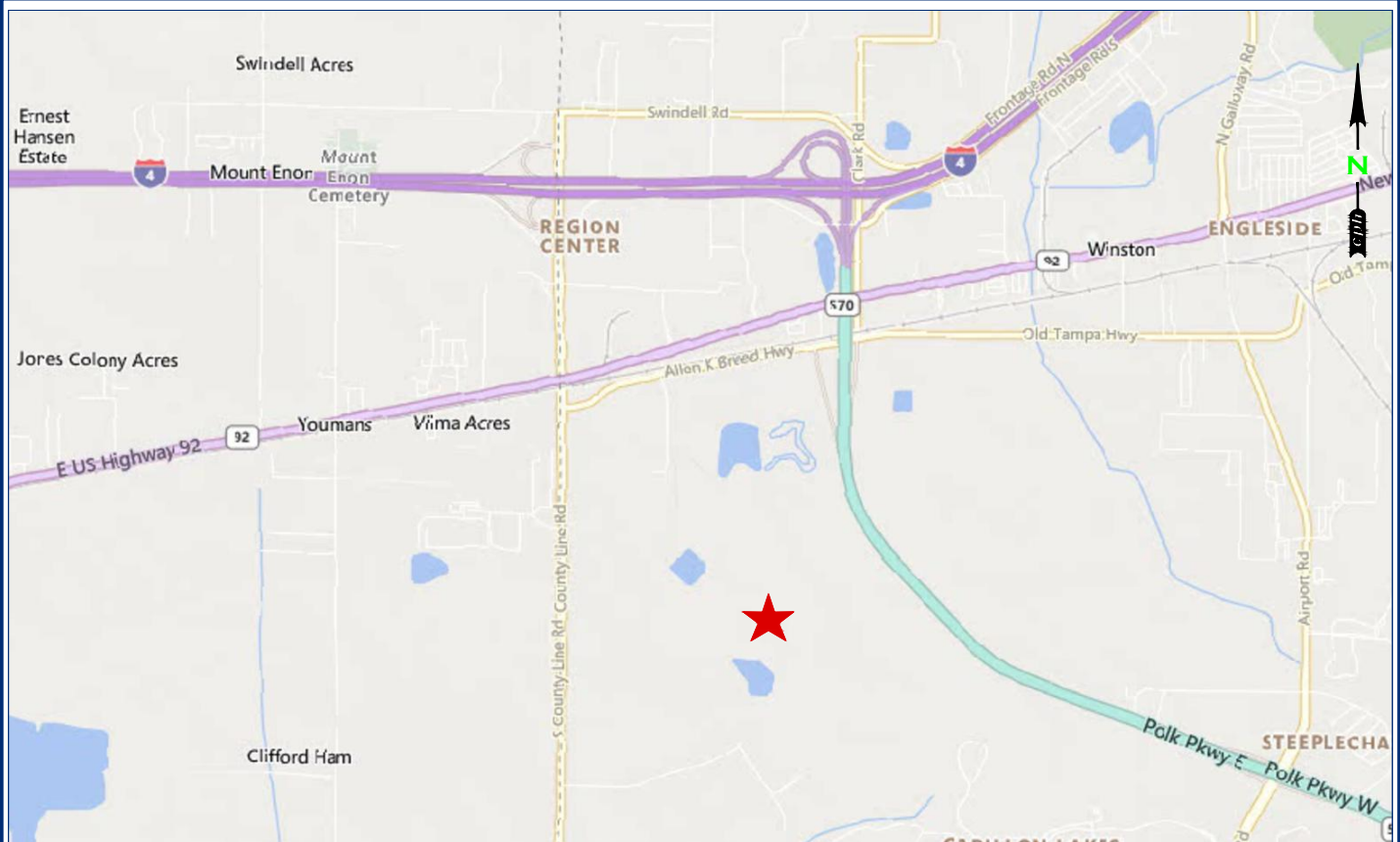
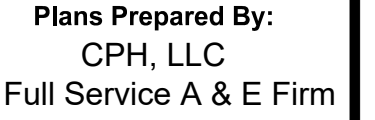
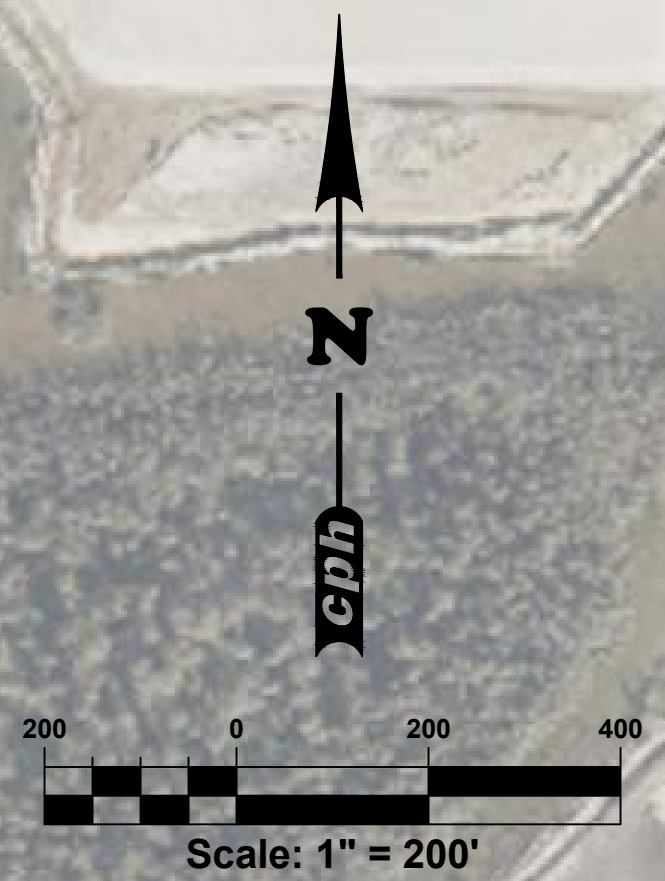


FIGURE 1 - LOCATION MAP

**Publix Warehouse Addition
Lakeland, Polk County, Florida**



Engineers
Architects
Planners
Landscape Architects
Transportation/Traffic
Surveyors
Environmental Scientists
Construction Management

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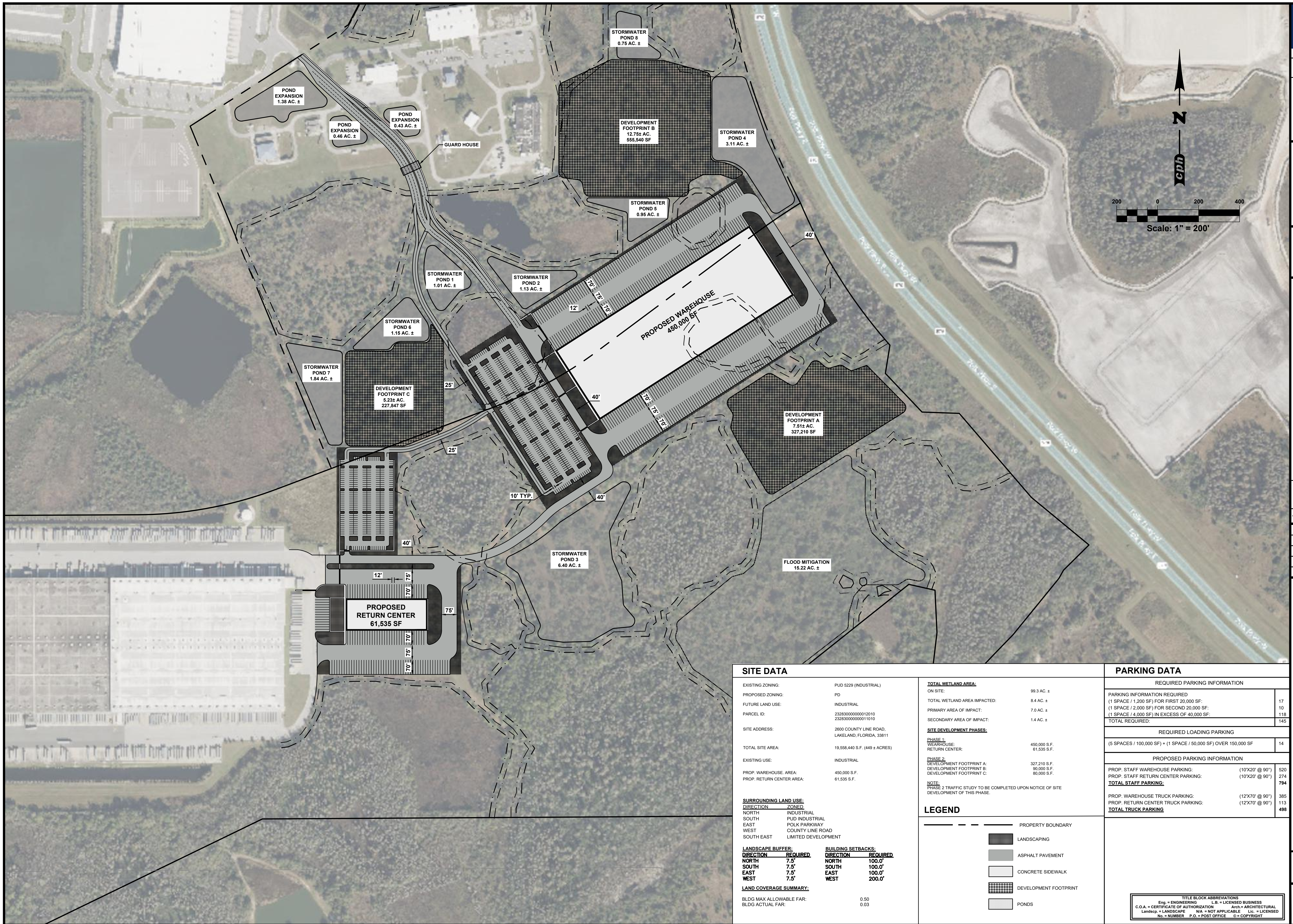
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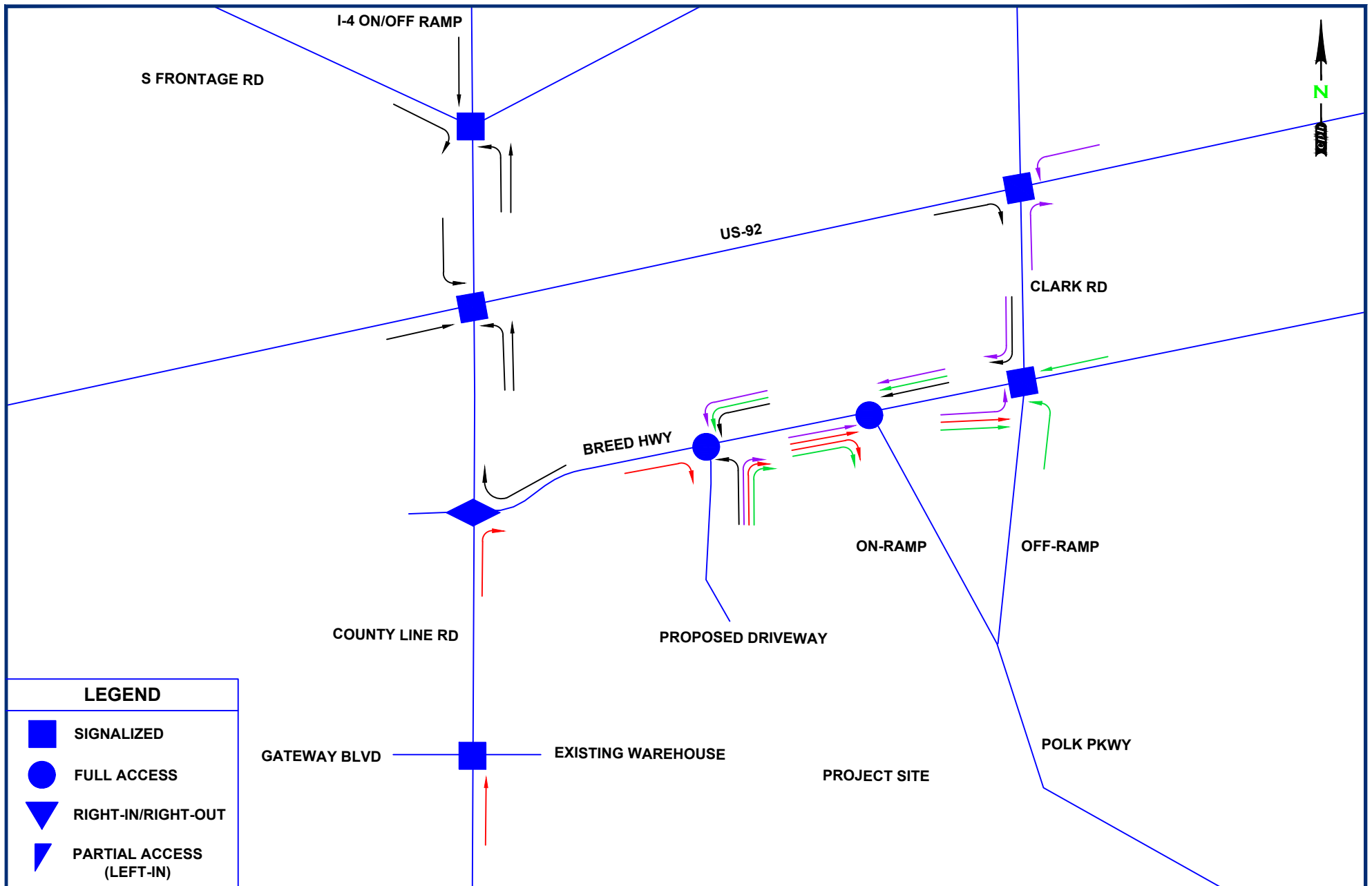
(FUTURE) SITE DIMENSION PLAN

PUBLIC WAREHOUSE
2600 COUNTY LINE ROAD
LAKELAND, FL 33811
SECTION 30-TOWNSHIP 28 SOUTH-RANGE 23 EAST
POLK COUNTY, FLORIDA

THIS SHEET NOT VALID FOR
CONSTRUCTION WITHOUT
COMPLETE SET OF PLANS.

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3. Breed Hwy & Polk Pkwy On-Ramp
4. Breed Hwy & Clark Rd/Polk Pkwy Off-Ramp

Although the 2023 Polk TPO *Roadway Network Database* was not available at the time of the October methodology meeting, when it was subsequently released, the results of the calculations were unchanged.

Timeframe

Intersection, queueing and turn lane analyses were conducted for the AM and PM Peak Hours in accordance with the approved *Traffic Methodology* document. These hours are the sixty consecutive minutes with the highest volume between 7-9 AM and 4-6 PM on an average non-holiday weekday.

2 Existing Conditions

Study Area Intersections

As identified in the previous section, there are four Study Area intersections. Each is described below. Intersection sketches are included in **Appendix B**.

Breed Hwy/County Line Rd is a four-leg unsignalized intersection with stop sign control on the minor roads (Breed Hwy and an opposing driveway). Breed Hwy is a two-lane roadway while County Line Rd is a four-lane facility. Both are under Polk County jurisdiction. A center median on County Line Rd prohibits southbound lefts to and westbound lefts from Breed Hwy.

Breed Hwy/Key Logistics Center is a three-leg unsignalized intersection with stop sign control on the Key Logistic Center driveway. Both roadways are two-lane facilities. An eastbound left-turn lane is provided on Breed Hwy to serve the Key Logistics Center.

Breed Hwy/Polk Parkway On-Ramp is a three-leg intersection without traffic control. Breed Highway has an eastbound left-turn lane serving vehicles entering the Polk County Parkway toll road.

Breed Hwy/Clark Rd/Polk Parkway Off-Ramp is a four-leg signalized intersection with the south leg being the toll road off-ramp. An exclusive left-turn lane is provided on each leg except the Breed Hwy east leg. Left turns are prohibited from westbound Breed Hwy as the off-ramp is one-way northbound.

Peak Hour Volumes

Turning movement counts were collected on Thursday, October 5th 2023, from 7:00 AM – 9:00 AM & 4:00 PM – 6:00 PM. Field data collection summary sheets are included in **Appendix B**.

All existing traffic counts were seasonally adjusted using the *2022 Peak Season Correction Factor* (PSCF) for Polk County of 1.04 as published by the Florida Department of Transportation (FDOT). The PSCF report and adjustments to field data are also included in **Appendix B**.

Figure 4 illustrates Existing AM & PM Peak Hour traffic volumes in the Study Area adjusted for the PSCF. Traffic signal timings obtained from Polk County are included in **Appendix C**.

Daily Volumes

Polk County annually publishes a *Roadway Network Database* including traffic data for the year. Average Annual Daily Traffic (AADT) volumes for roadway segments within the Study Area are:

Breed Hwy – County Line Rd to Wabash Av	2,800
Clark Road – Breed Hwy to North Frontage Rd.....	5,200
County Line Rd – Pipkin Rd to Interstate 4.....	25,600

Intersection Analysis

Level of Service (LOS) analysis was performed using *Synchro 12* utilizing *Highway Capacity Manual (7th Edition)* procedures for existing geometry, traffic volumes and signal timings. **Table 1** summarizes the intersection LOS results for the four Study intersections during the AM & PM Peak Hours.

Three of the four existing intersections operate at an overall LOS “A” in the AM & PM Peak Hour (see **Figures 5 & 6**). Breed Hwy/Clark Rd intersection operates at a LOS “C” and has one approach (southbound) that operates at LOS “D” during both AM and PM peak hours.

The Polk County LOS standard is “D” for peak hour. Therefore, all intersections are currently operating within LOS standards with existing geometry, traffic volumes and signal timings.

Queueing and Turn Lane Analyses

Current queue length and turn lane needs were analyzed using *Synchro 12*. All existing turn lanes are sufficient as shown in **Table 2**. Signalized intersections use a 50% queue standard while unsignalized intersections use a 95% queue standard. Detailed *Synchro* worksheets for Existing Conditions are included in **Appendix D**.

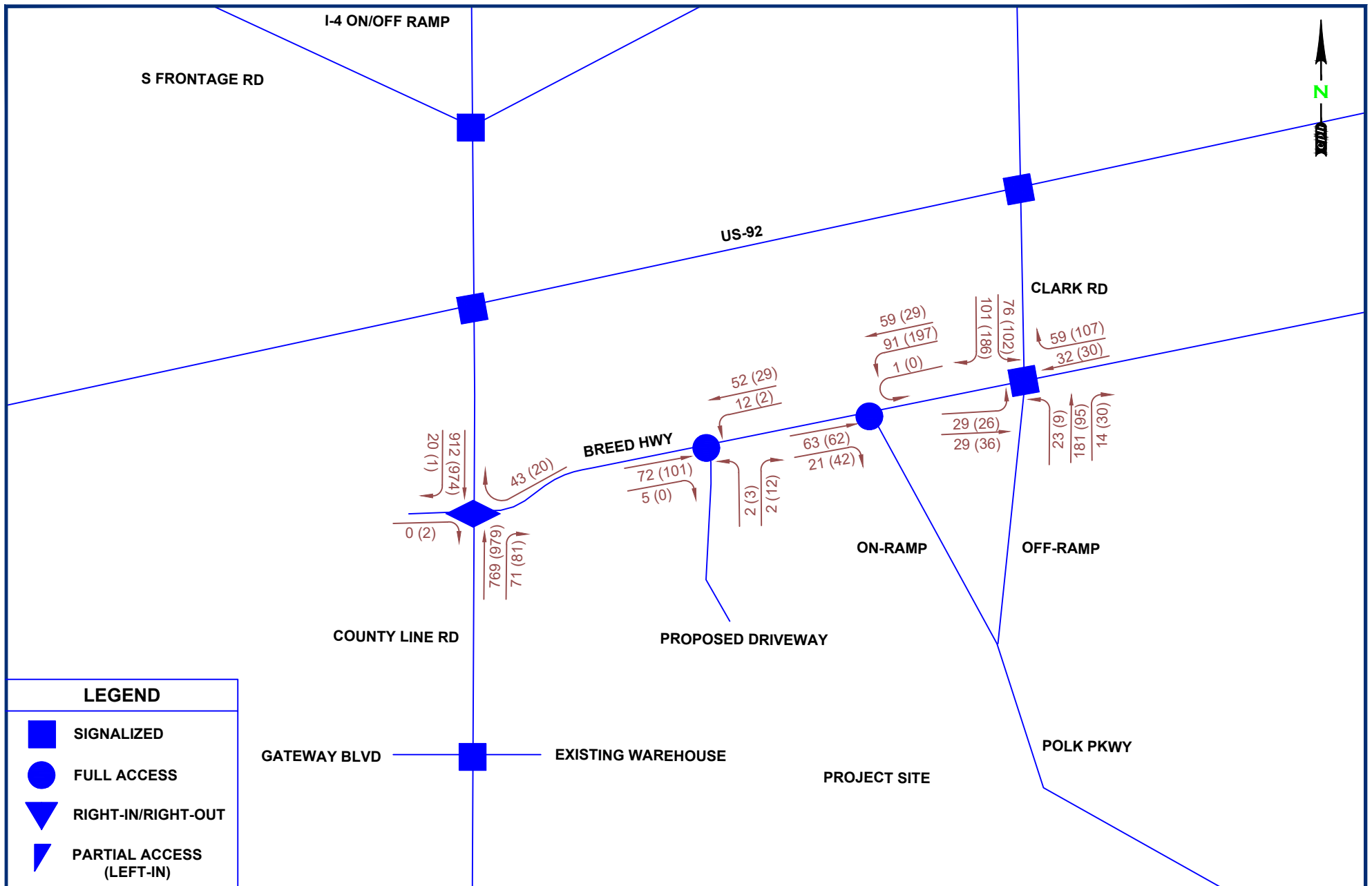
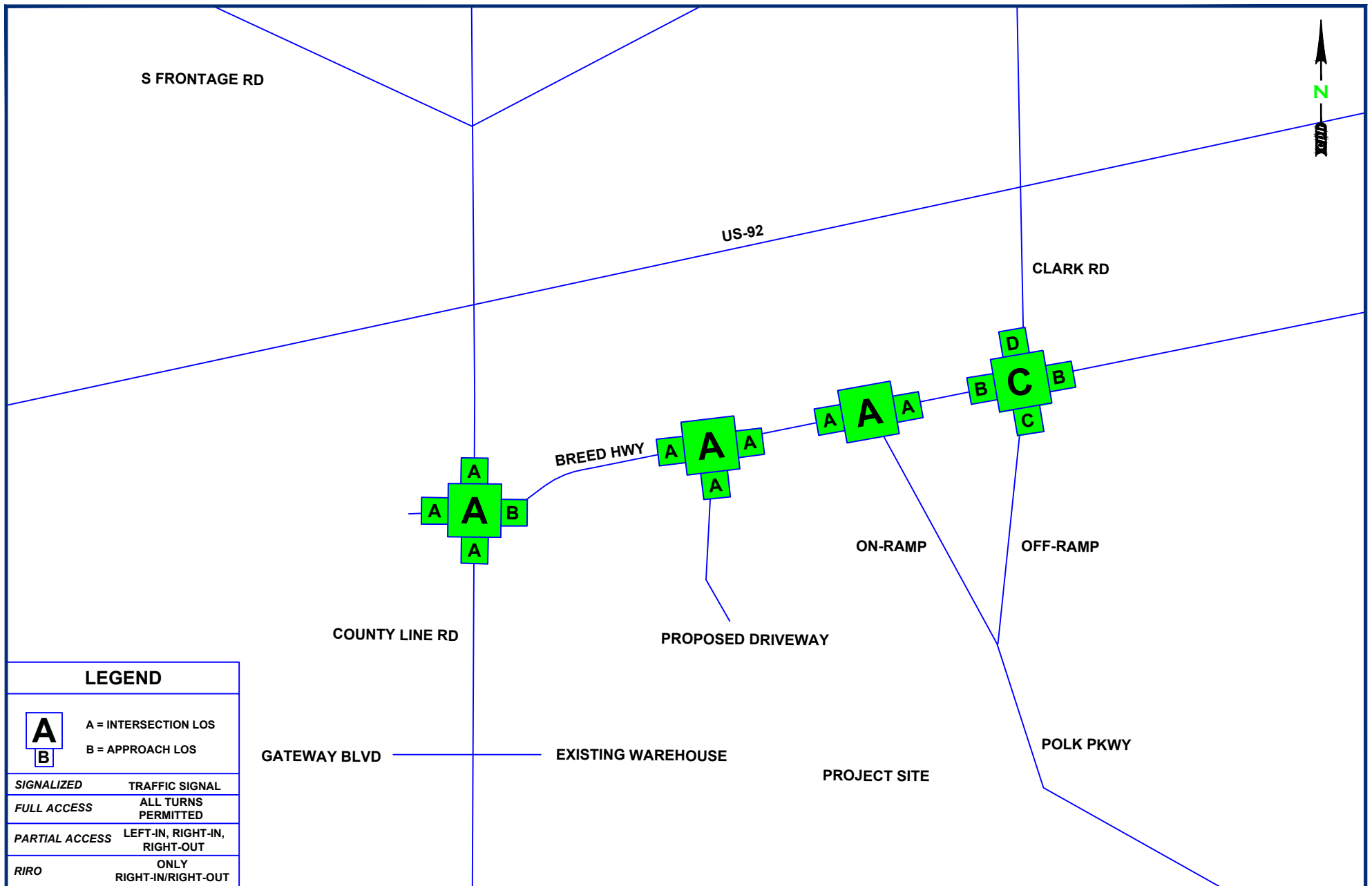


FIGURE 4 - EXISTING TRAFFIC VOLUMES

Publix Warehouse Addition
Lakeland, Polk County, Florida

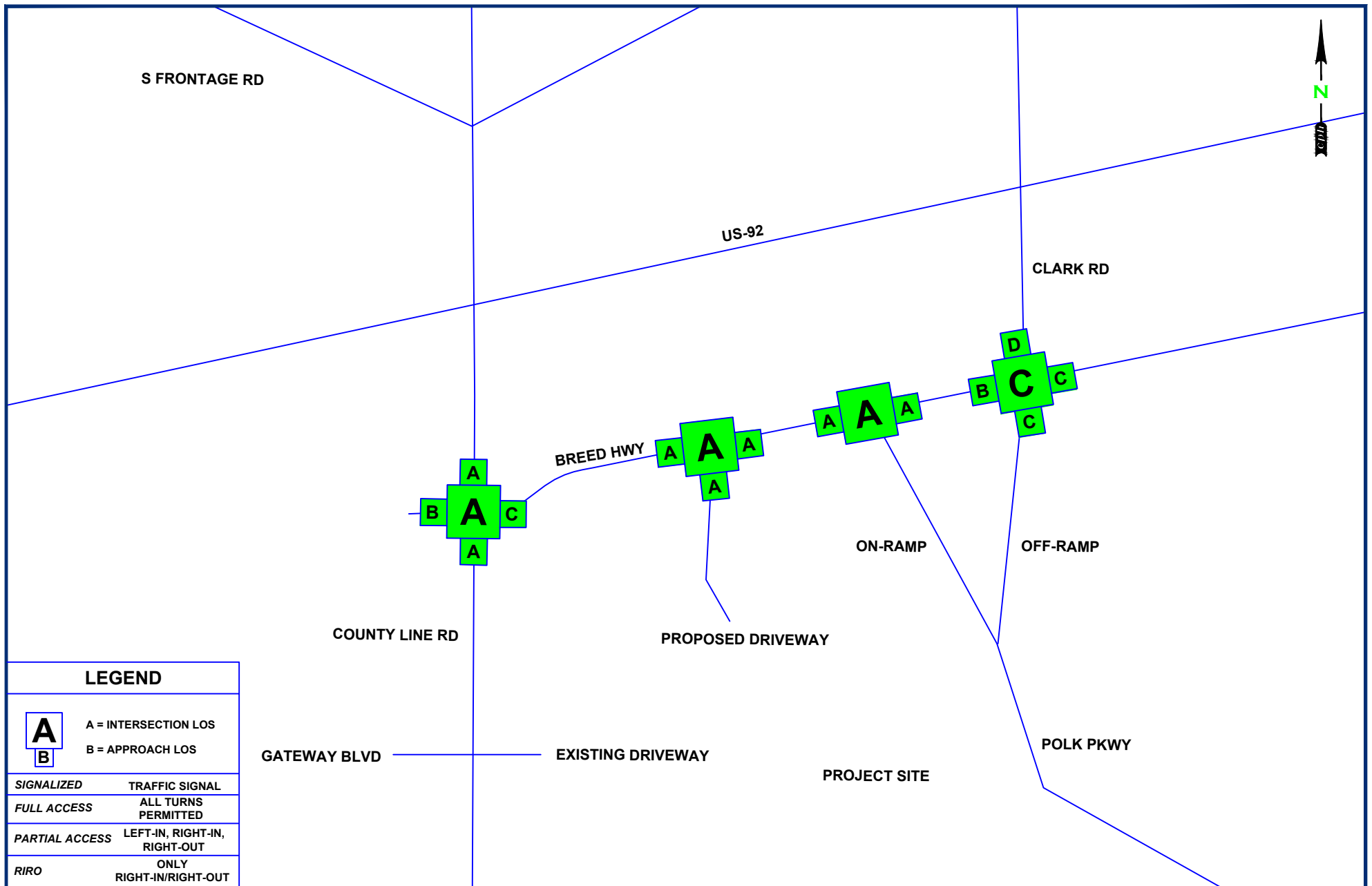
Table 1
Existing - AM & PM Peak Hour
Intersection Level of Service

Intersection				Existing Conditions		
Name	Traffic Control	Time Period	Approach	Overall LOS (Delay)	Approach LOS	Delay
County Line Rd & Breed Hwy	Stop Sign (Minor Road)	AM	EB	A (0.3)	A	0.00
			WB		B	12.50
			NB		A	0.00
			SB		A	0.00
		PM	EB	A (0.2)	B	12.01
			WB		C	15.24
			NB		A	0.00
			SB		A	0.00
Breed Hwy & Key Logistic Center (Driveway #2)	Stop Sign (Minor Road)	AM	EB	A (0.9)	A	0.00
			WB		A	1.42
			NB		A	9.58
			SB			
		PM	EB	A (1.0)	A	0.00
			WB		A	0.48
			NB		A	9.09
			SB			
Breed Hwy & Polk Pkwy On-Ramp	Unsignalized (Free Flow)	AM	EB	A (0.0)	A	0.00
			WB		A	0.00
			NB			
			SB			
		PM	EB	A (0.0)	A	0.00
			WB		A	0.00
			NB			
			SB			
Breed Hwy & Polk Pkwy Off-Ramp	Signalized	AM	EB	C (22.7)	B	17.30
			WB		B	16.60
			NB		C	21.30
			SB		D	38.20
		PM	EB	C (29.5)	B	15.10
			WB		C	23.10
			NB		C	30.40
			SB		D	45.50



← **TRAFFIC FLOW DIRECTION**
A.M. PEAK HOUR

 www.cphcorp.com	Plan Prepared By: CPH, LLC.	Date: 1/10/2024	FIGURE 5 - EXISTING LOS MAP A.M. Publix Warehouse Addition Lakeland, Polk County, Florida
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FIGURE 6 - EXISTING LOS MAP P.M.

**Publix Warehouse Addition
Lakeland, Polk County, Florida**

Table 2
Existing - AM & PM Peak Hour
Queue & Turn Lane Analyses

Intersections			Queue Analysis				Turn Lane Analysis				
Name	Time Period	Approach	V/C Ratio	Vehicles	50% Queue Length	95% Queue Length	Speed Limit	Required Deceleration Length	Required Length for 50% Queue	Required Length for 95% Queue	Existing Turn Lane Length*
County Line Rd & Breed Hwy	AM	EBR	0.00	0.00	n/a	0					
		WBR	0.09	0.30	n/a	25					
		NBR	0.00	0.00	n/a	0					
		SBR	0.00	0.00	n/a	0					
	PM	EBR	0.00	0.00	n/a	0					
		WBR	0.06	0.20	n/a	25					
		NBR	0.00	0.00	n/a	0					
		SBR	0.00	0.00	n/a	0					
Breed Hwy & Key Logistic Center (Project Driveway)	AM	EBR	0.00	0.00	n/a	0					
		WBL	0.01	0.00	n/a	0	45	240	n/a	240	350
		NB(L+R)	0.01	0.00	n/a	0					
	PM	EBR	0.00	0.00	n/a	0					
		WBL	0.00	0.00	n/a	0	45	240	n/a	240	350
		NB(L+R)	0.02	0.10	n/a	25					
Breed Hwy & Polk Pkwy On-Ramp	AM	EBR	0.00	0.00	n/a	0	45	240	n/a	240	275
		WBL	0.00	0.00	n/a	0	45	240	n/a	240	350
	PM	EBR	0.00	0.00	n/a	0	45	240	n/a	240	275
		WBL	0.00	0.00	n/a	0	45	240	n/a	240	350
Breed Hwy & Polk Pkwy Off-Ramp	AM	EBL	0.08	0.30	25	n/a	45	240	265	n/a	310
		WBR	0.24	0.90	25	n/a					
		NBL	0.09	0.30	25	n/a	40	185	210	n/a	450
		NBR	0.42	2.60	75	n/a					
		SBL	0.75	1.40	50	n/a	35	155	205	n/a	340
		SBR	0.00	0.00	0	n/a					
	PM	EBL	0.07	0.30	25	n/a	45	240	265	n/a	310
		WBR	0.37	2.20	75	n/a					
		NBL	0.04	0.10	25	n/a	40	185	210	n/a	450
		NBR	0.44	2.60	75	n/a					
		SBL	0.80	2.60	75	n/a	35	155	230	n/a	340
		SBR	0.00	0.00	0	n/a					

Alternative Transportation Modes

Transit

The Lakeland Area Mass Transit District - operating as Citrus Connection - conducts public transit in Polk County. The Lemon bus line passes the site on Breed Highway in the eastbound direction only as part of a loop on the route's western end. The Lemon line runs between County Line Road area industries and business and downtown Lakeland. Current service headway is one hour during weekdays between 5:45 am-5:45 pm. Saturday service is run four times with headways of two or three hours between 7:15 am-3:15 pm. Sunday service is not provided.

There is an existing bus stop sign on the southwest corner of Breed Highway and Key Logistics Center entrance. Although a concrete pad is present, neither a shelter nor a bench is available to waiting passengers.

Bicycle

No cycling facilities pass by the site. The nearest dedicated bike lanes are found one-half north along County Line Road from Great Oak Drive to the Interstate 4 ramps. Although not signed/marked continuously, space is provided in the shoulders as County Line Road continues north to Swindell Road.

Pedestrian

A sidewalk is present on the south side of Breed Highway near the site entrance. However, this sidewalk extends only along the frontages of recently developed parcels to the east and west of the site. In neither case does the sidewalk extend to the next intersections (Clark Road and County Line Road respectively).

3 Background Growth Conditions

Committed Developments

Lakeland Central Park (LCP) is a recent development with a size of 5 million square feet off of Breed Hwy, east of Clark Rd. Information regarding this project was provided by the City of Lakeland, and LCP project trips (see **Appendix E**) were incorporated into Background Conditions as vested trips.

Committed Roadway Projects

There are no FDOT, County or City committed roadway projects in the Study Area during the next five years. Therefore, subsequent analyses utilize Existing Conditions roadway geometry.

Growth Rate

Background Growth conditions are those forecast to be present without the project being built. The *Roadway Network Database* indicates a 2.0% annual growth rate for impacted roadway segments. Opening Year for the project is assumed to be 2025; therefore, two years of compounded traffic growth were added to existing volumes.

Figure 7 illustrates Background Growth AM and PM Peak Hour traffic volumes in the Study Area.

Intersection Analysis

Level of Service (LOS) analysis was performed using *Synchro 12* procedures for existing roadway geometry. **Table 3** summarizes the intersection LOS results for the four Study Area intersections during the AM and PM Peak Hours.

Three of the four intersections operate at an overall LOS “A” in the Background AM and PM Peak Hours (see **Figures 8 & 9**). Breed Hwy/Clark Rd intersection operates at a LOS “C” in AM Peak Hour and LOS “D” in the PM Peak Hour.

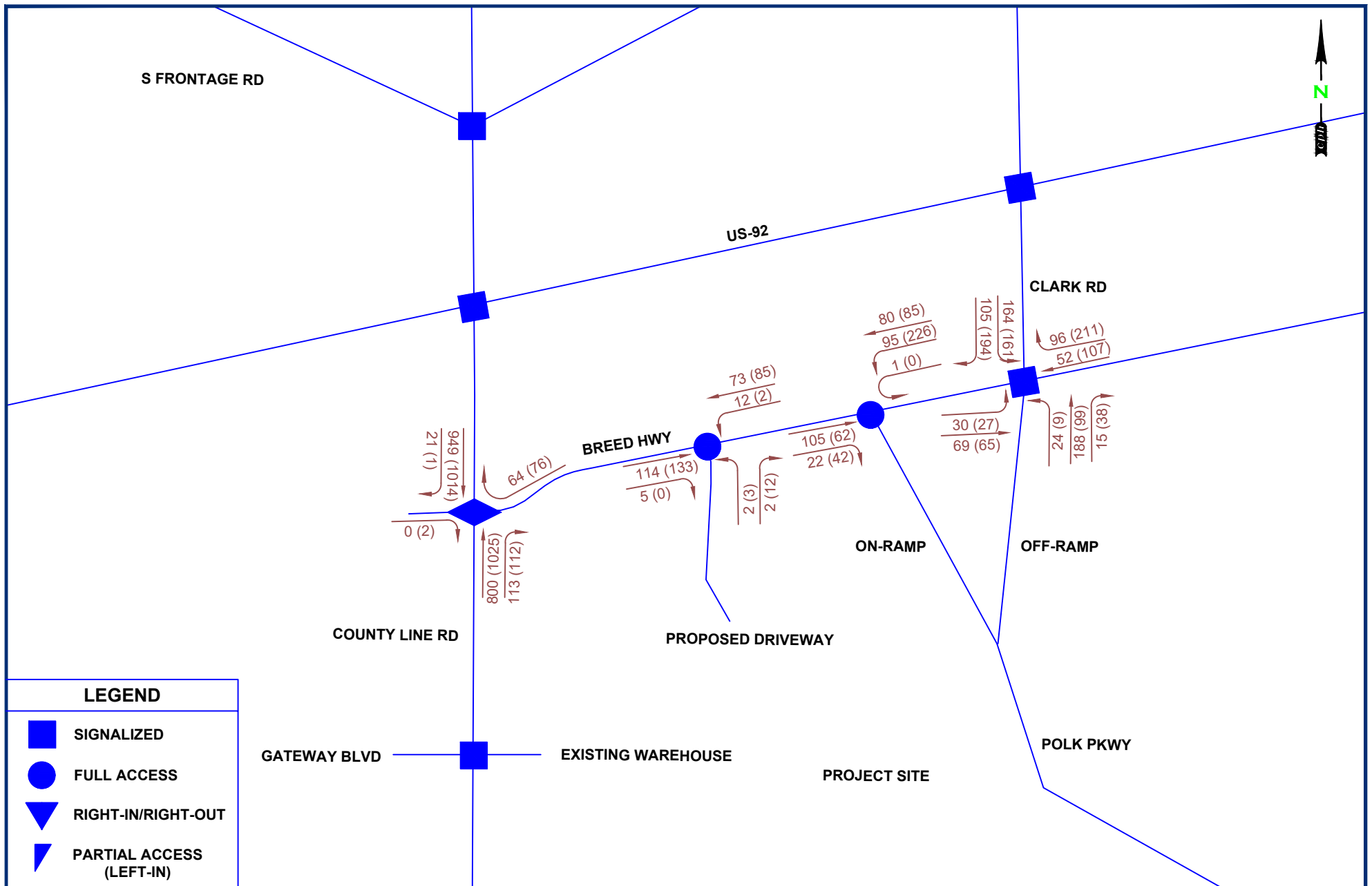
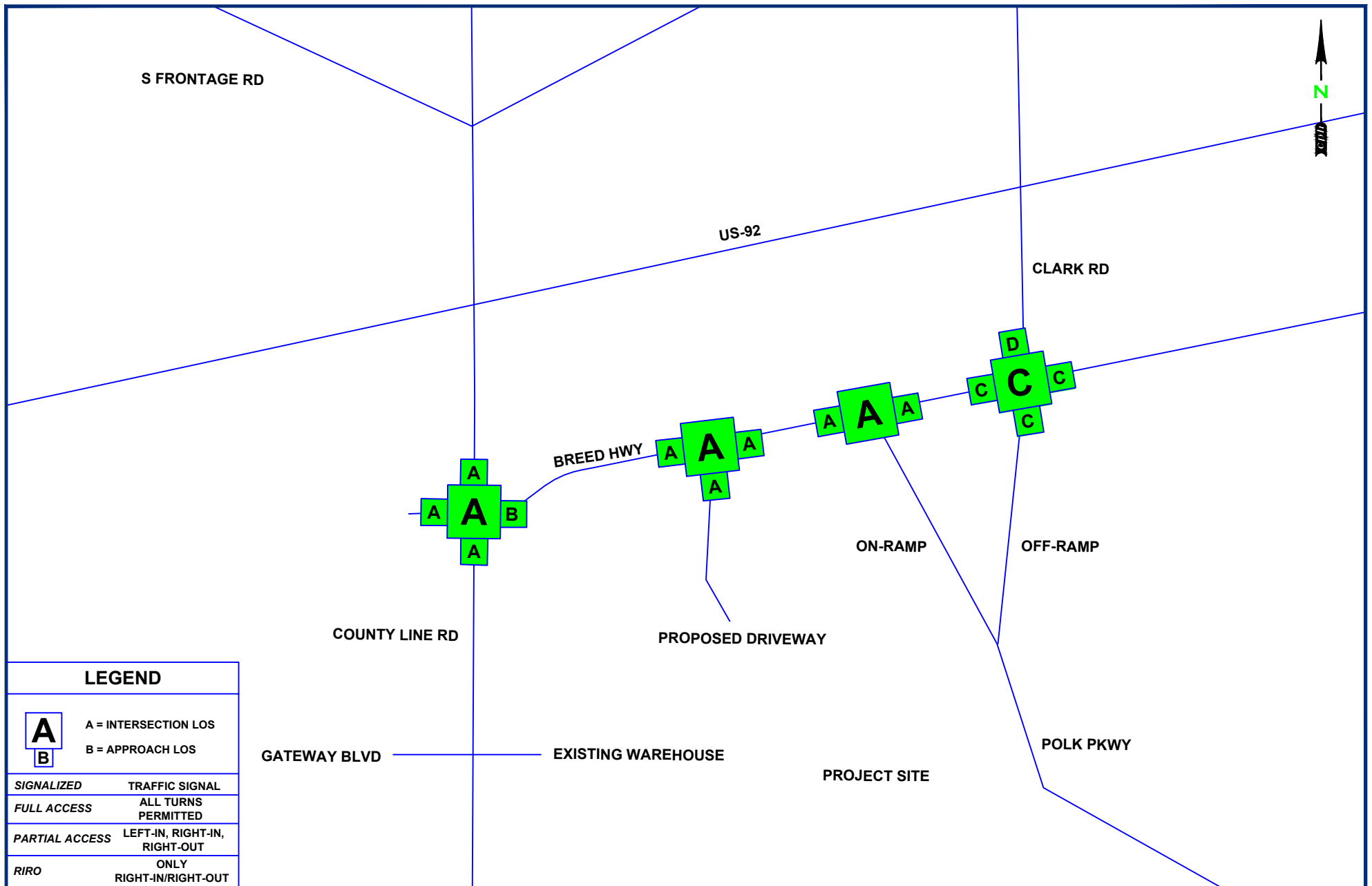


Table 3
Background - AM & PM Peak Hour
Intersection Level of Service

Intersection				Background Conditions		
Name	Traffic Control	Time Period	Approach	Overall LOS (Delay)	Approach LOS	Delay
County Line Rd & Breed Hwy	Stop Sign (Minor Road)	AM	EB	A (0.4)	A	0.00
			WB		B	13.44
			NB		A	0.00
			SB		A	0.00
		PM	EB	A (0.6)	B	12.23
			WB		C	18.39
			NB		A	0.00
			SB		A	0.00
Breed Hwy & Key Logistic Center (Driveway #2)	Stop Sign (Minor Road)	AM	EB	A (0.6)	A	0.00
			WB		A	1.08
			NB		A	9.96
			SB			
		PM	EB	A (0.7)	A	0.00
			WB		A	0.17
			NB		A	9.41
			SB			
Breed Hwy & Polk Pkwy On-Ramp	Unsignalized (Free Flow)	AM	EB	A (0.0)	A	0.00
			WB		A	0.00
			NB			
			SB			
		PM	EB	A (0.0)	A	0.00
			WB		A	0.00
			NB			
			SB			
Breed Hwy & Polk Pkwy Off-Ramp	Signalized	AM	EB	C (26.8)	C	22.20
			WB		C	21.30
			NB		C	24.40
			SB		D	37.90
		PM	EB	D (42.3)	B	17.80
			WB		D	51.50
			NB		D	35.10
			SB		D	44.40



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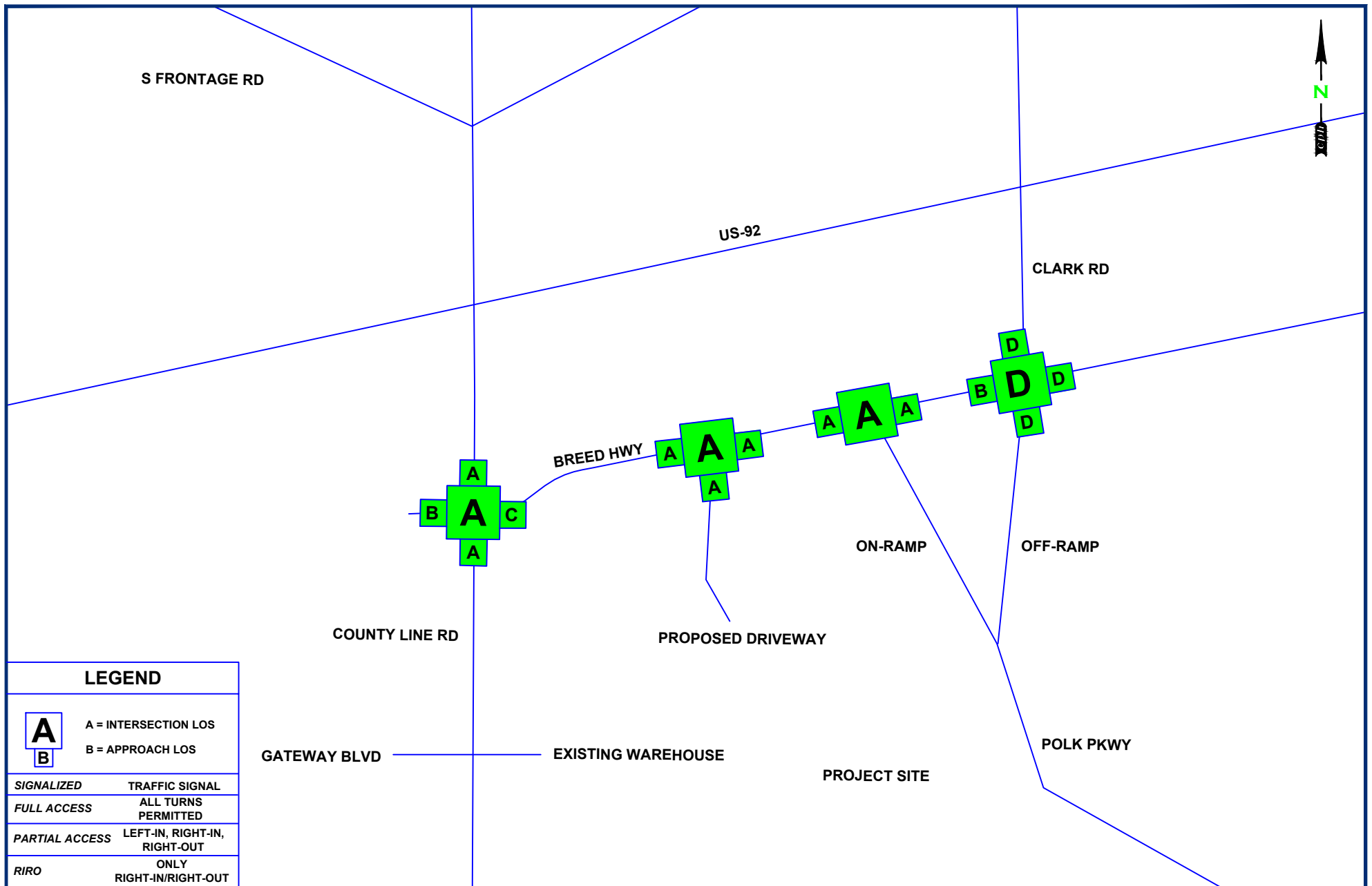
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FIGURE 8 - BACKGROUND LOS MAP A.M.

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FIGURE 9 - BACKGROUND LOS MAP P.M.

**Publix Warehouse Addition
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The Polk County Peak Hour standard is LOS “D.” All intersections will operate within LOS standards with existing geometry under Background Growth conditions.

Queueing and Turn Lane Analyses

Background Growth queue length and turn lane needs were analyzed using *Synchro 12* procedures with existing roadway geometry. **Table 4** summarizes the findings. All turn lanes for Background Growth conditions are sufficient. Detailed *Synchro* worksheets are included in **Appendix**

Table 4
Background - AM & PM Peak Hour
Queue & Turn Lane Analyses

Intersections			Queue Analysis				Turn Lane Analysis				
Name	Time Period	Approach	V/C Ratio	Vehicles	50% Queue Length	95% Queue Length	Speed Limit	Required Deceleration Length	Required Length for 50% Queue	Required Length for 95% Queue	Existing Turn Lane Length*
County Line Rd & Breed Hwy	AM	EBR	0.00	0.00	n/a	0					
		WBR	0.14	0.50	n/a	25					
		NBR	0.00	0.00	n/a	0					
		SBR	0.00	0.00	n/a	0					
	PM	EBR	0.00	0.00	n/a	0					
		WBR	0.23	0.90	n/a	25					
		NBR	0.00	0.00	n/a	0					
		SBR	0.00	0.00	n/a	0					
Breed Hwy & Key Logistic Center (Project Driveway)	AM	EBR	0.00	0.00	n/a	0					
		WBL	0.01	0.00	n/a	0	45	240	n/a	240	350
		NB(L+R)	0.01	0.00	n/a	0					
	PM	EBR	0.00	0.00	n/a	0					
		WBL	0.00	0.00	n/a	0	45	240	n/a	240	350
		NB(L+R)	0.02	0.10	n/a	25					
Breed Hwy & Polk Pkwy On-Ramp	AM	EBR	0.00	0.00	n/a	0	45	240	n/a	240	275
		WBL	0.00	0.00	n/a	0	45	240	n/a	240	350
	PM	EBR	0.00	0.00	n/a	0	45	240	n/a	240	275
		WBL	0.00	0.00	n/a	0	45	240	n/a	240	350
Breed Hwy & Polk Pkwy Off-Ramp	AM	EBL	0.11	0.50	25	n/a	45	240	265	n/a	310
		WBR	0.43	2.00	50	n/a					
		NBL	0.10	0.30	25	n/a	40	185	210	n/a	450
		NBR	0.48	3.20	100	n/a					
		SBL	0.86	3.30	100	n/a	35	155	255	n/a	340
		SBR	0.00	0.00	0	n/a					
	PM	EBL	0.15	0.40	25	n/a	45	240	265	n/a	310
		WBR	0.89	9.00	225	n/a					
		NBL	0.09	0.20	25	n/a	40	185	210	n/a	450
		NBR	0.51	2.70	75	n/a					
		SBL	0.85	4.10	125	n/a	35	155	280	n/a	340
		SBR	0.00	0.00	0	n/a					

4 Project Traffic

Trip Generation

Trip generation for the proposed development was calculated using the most recent rates and equations presented in the Institute of Transportation Engineer's (ITE) *Trip Generation* (11th Edition). As the two warehouses share a single access drive, the gross floor areas are combined. There are no pass-by or internal capture reductions for Land Use Code (LUC) 150 – Warehouse. Trip generation calculations are summarized below in **Table 5**. Detailed trip generation calculations are included in **Appendix F**. The project is anticipated to generate 85 new AM peak hour trips, 88 new PM peak hour trips, and 846 new weekday trips.

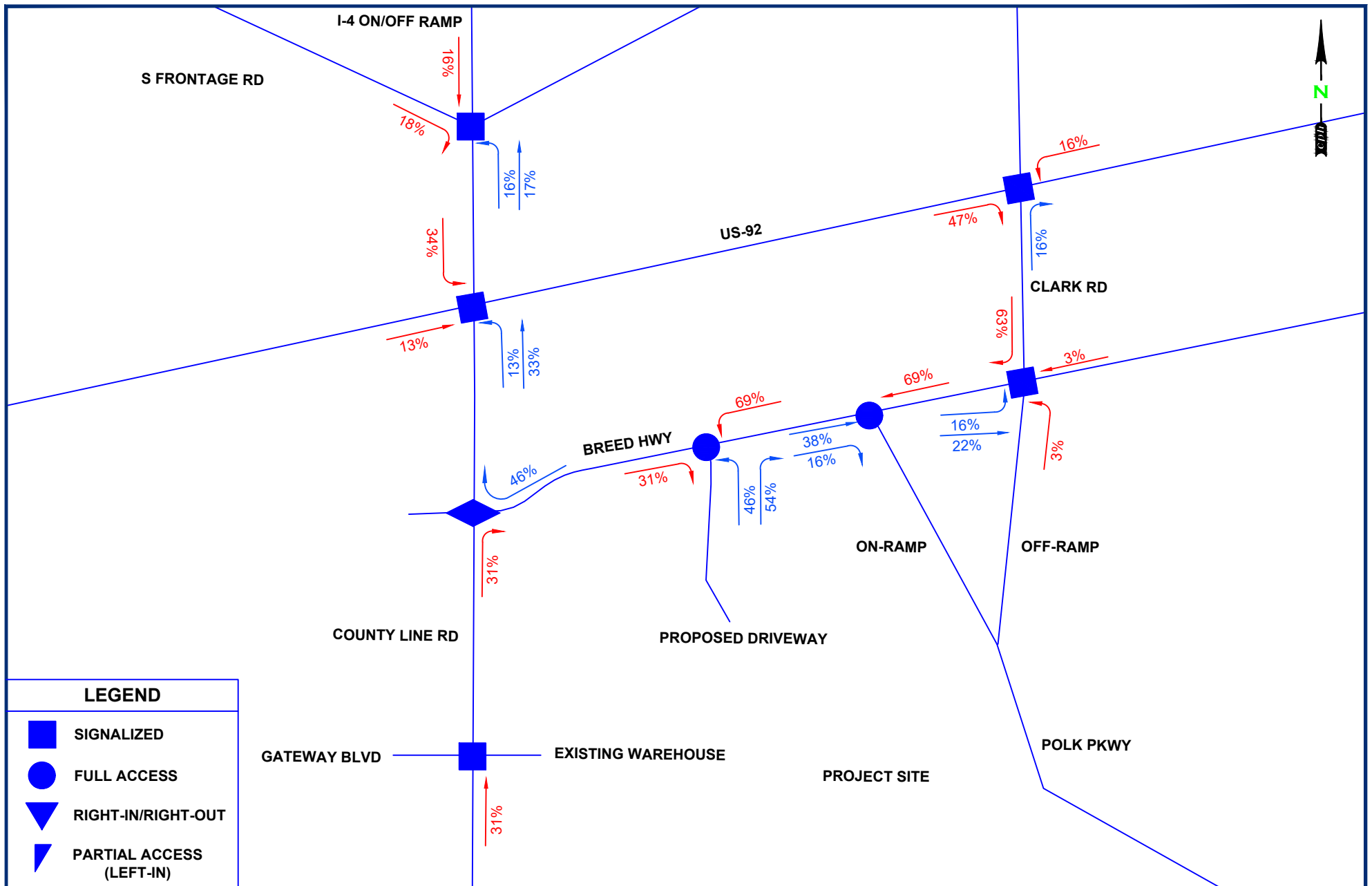
Table 5 Trip Generation Publix Warehouse - Lakeland, Florida											
Land Use	Size (KSF)	Trip Type	Time Periods								
			AM Peak Hour			PM Peak Hour			Weekday Total		
			Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
LUC 150 - Warehouse	511.54	External	65	20	85	25	63	88	423	423	846
Net New Trips			65	20	85	25	63	88	423	423	846

All values are in vehicle trips

Trip Distribution & Assignment

PM Peak Hour site traffic was distributed regionally based on existing traffic patterns in combination with forecasts from the *Central Florida Regional Planning Model* (CFRPM) and can be seen in **Figure 10**.

It should be noted that the center median along County Line Road at Breed Highway prohibits southbound and westbound left turns. This creates differing entry and exit site travel patterns. For example, vehicles originating from the I-4/County Line Road interchange would utilize New Tampa Highway (US 92) and Clark Road to get to the site entrance. However, the return trip would leave the site entrance and use westbound Breed Hwy and northbound County Line Road. **Figure 11** illustrates the project trip assignment for the PM Peak Hour.



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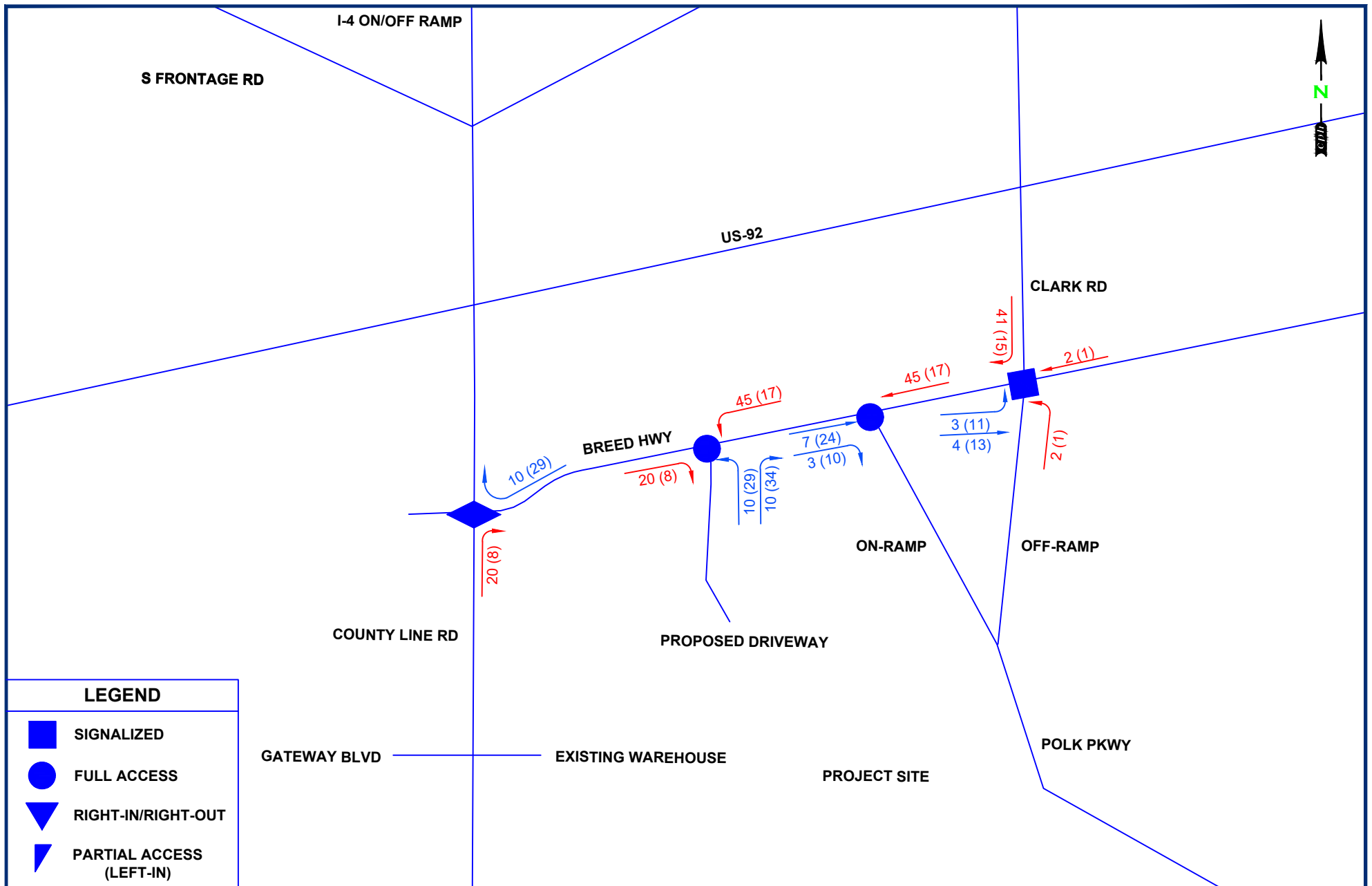
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Date: 1/10/2024

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5 Future Conditions

Future conditions result when site-generated trips are added to the Background Growth traffic volumes. **Figure 12** shows the traffic volumes associated with the Future conditions.

Intersection Analysis

Level of Service (LOS) analysis was performed using *Synchro 12* procedures for existing roadway geometry. **Table 6** summarizes the intersection LOS results for the four Study Area intersections during the AM and PM Peak Hour.

The Future intersection LOS values (see **Figures 13 & 14**) remained the same as the Background Growth conditions. All approach LOS values are LOS “D” or better except the westbound approach at Breed Hwy/Clark Rd intersection. This approach goes from LOS “D” to LOS “E” in the PM Peak Hour only.

The Polk County LOS standard is “D” for peak hour. Therefore, all intersections are operating within LOS standards under existing roadway geometry.

Queueing and Turn Lane Analyses

Future Conditions queue length and turn lane needs were analyzed using *Synchro 12* procedures with existing roadway geometry. All turn lanes for Future Conditions are sufficient as can be seen in **Table 7**. The detailed *Synchro* worksheets are included in **Appendix G**.

6 Conclusion

Based on study findings, the project is not anticipated to generate the need for roadway capacity or other physical improvements. All intersections are anticipated to operate at LOS “D” or better and all existing lane groups are anticipated to accommodate forecast queues.

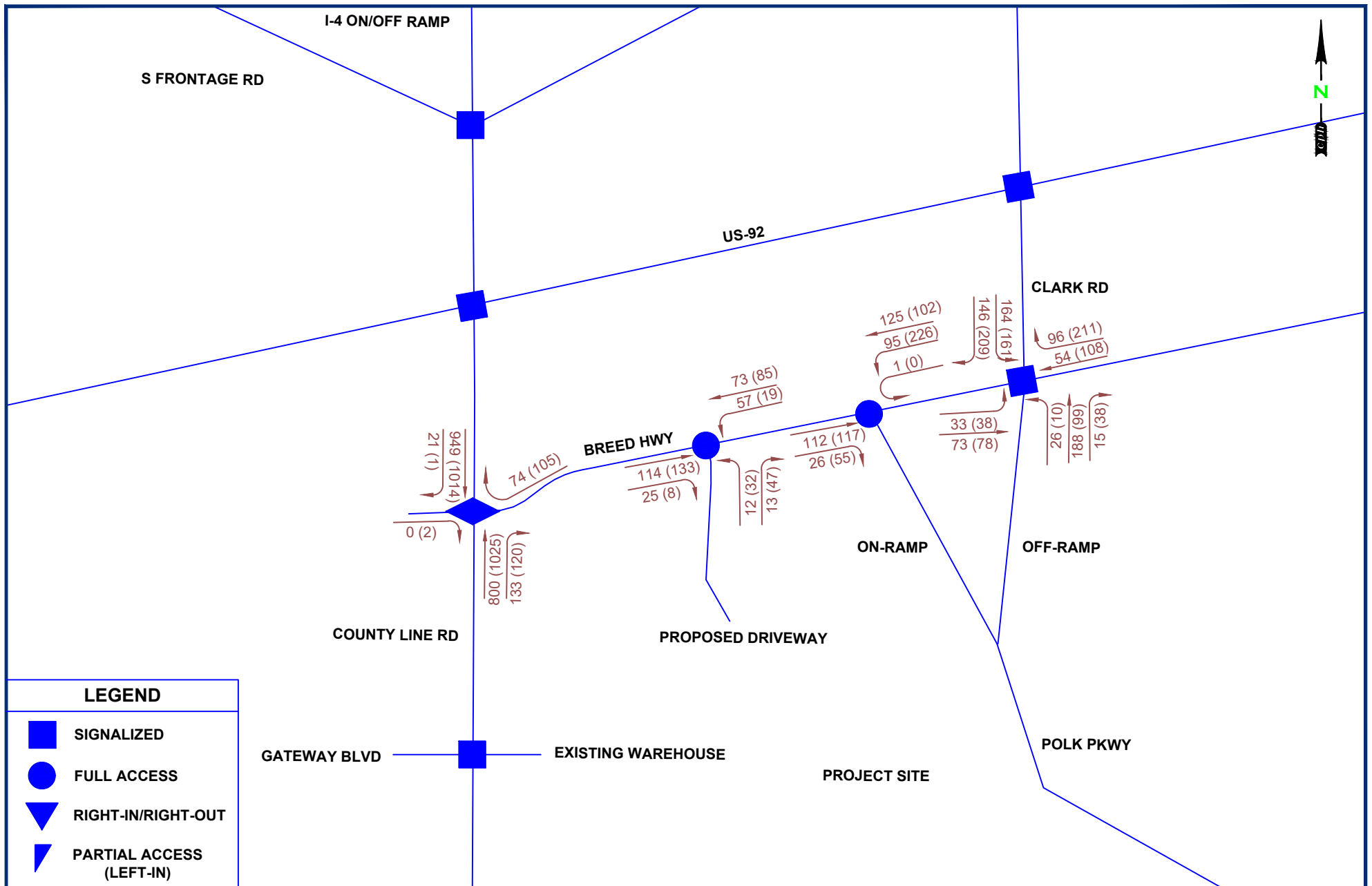
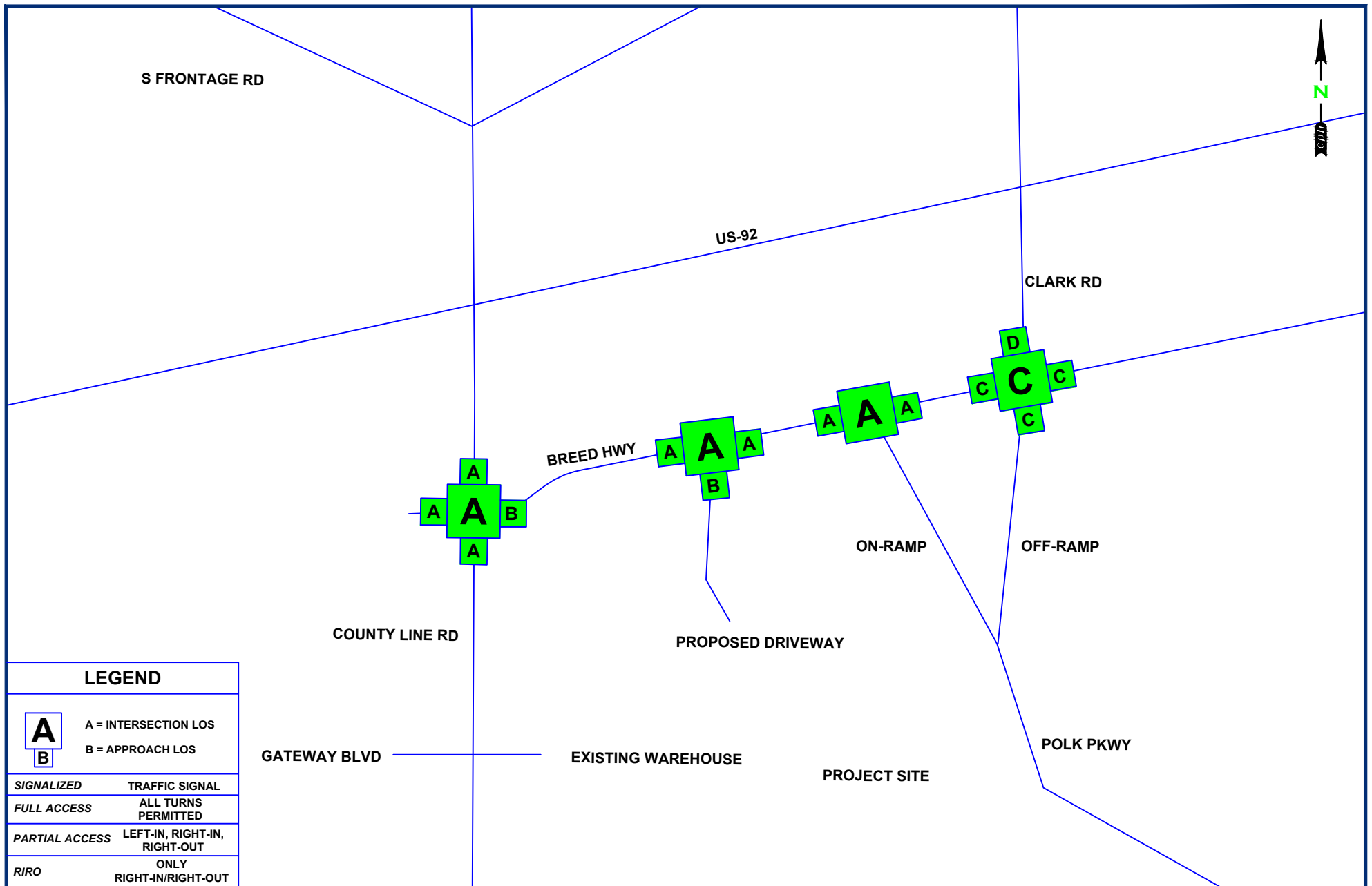


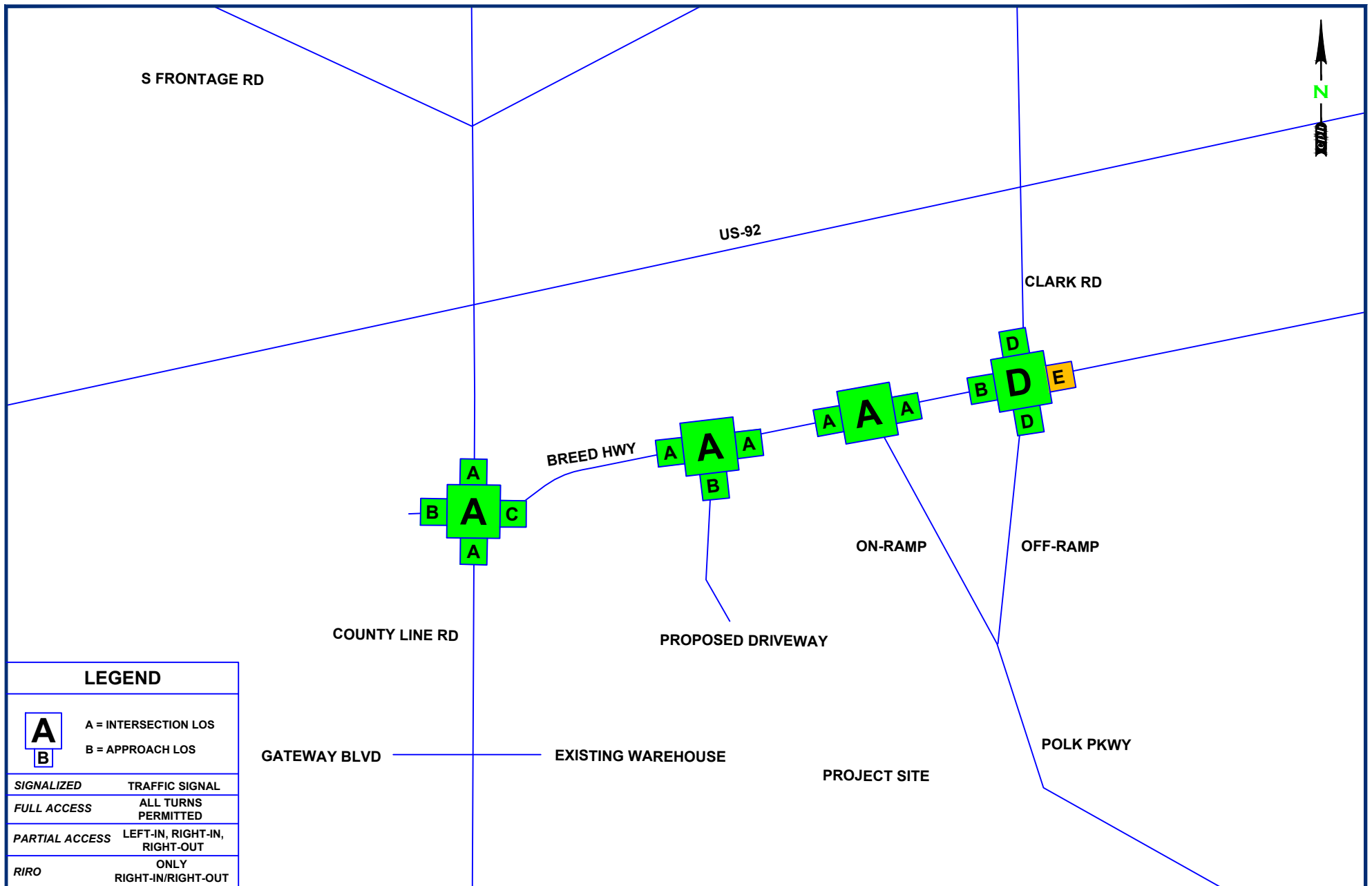
Table 6
Future - AM & PM Peak Hour
Intersection Level of Service

Intersection				Future Conditions		
Name	Traffic Control	Time Period	Approach	Overall LOS (Delay)	Approach LOS	Delay
County Line Rd & Breed Hwy	Stop Sign (Minor Road)	AM	EB	A (0.5)	A	0.00
			WB		B	14.33
			NB		A	0.00
			SB		A	0.00
		PM	EB	A (0.9)	B	12.23
			WB		C	19.43
			NB		A	0.00
			SB		A	0.00
Breed Hwy & Key Logistic Center (Project Driveway)	Stop Sign (Minor Road)	AM	EB	A (2.5)	A	0.00
			WB		A	3.54
			NB		B	11.31
			SB			
		PM	EB	A (3.1)	A	0.00
			WB		A	1.42
			NB		B	10.83
			SB			
Breed Hwy & Polk Pkwy On-Ramp	Unsignalized (Free Flow)	AM	EB	A (0.0)	A	0.00
			WB		A	0.00
			NB			
			SB			
		PM	EB	A (0.0)	A	0.00
			WB		A	0.00
			NB			
			SB			
Breed Hwy & Polk Pkwy Off-Ramp	Signalized	AM	EB	C (27.1)	C	22.60
			WB		C	21.30
			NB		C	24.60
			SB		D	38.70
		PM	EB	D (44.8)	B	18.30
			WB		E	59.20
			NB		D	35.10
			SB		D	44.40



← **TRAFFIC FLOW DIRECTION**
A.M. PEAK HOUR

 www.cphcorp.com	Plan Prepared By: CPH, LLC.	Date: 1/10/2024	FIGURE 13 - FUTURE LOS MAP A.M. Publix Warehouse Addition Lakeland, Polk County, Florida
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FIGURE 14 - FUTURE LOS MAP P.M.

**Publix Warehouse Addition
Lakeland, Polk County, Florida**

Table 7
Future - AM & PM Peak Hour
Queue & Turn Lane Analyses

Intersections			Queue Analysis				Turn Lane Analysis				
Name	Time Period	Approach	V/C Ratio	Vehicles	50% Queue Length	95% Queue Length	Speed Limit	Required Deceleration Length	Required Length for 50% Queue	Required Length for 95% Queue	Existing Turn Lane Length*
County Line Rd & Breed Hwy	AM	EBR	0.00	0.00	n/a	0					
		WBR	0.17	0.60	n/a	25					
		NBR	0.00	0.00	n/a	0					
		SBR	0.00	0.00	n/a	0					
	PM	EBR	0.00	0.00	n/a	0					
		WBR	0.31	1.30	n/a	50					
		NBR	0.00	0.00	n/a	0					
		SBR	0.00	0.00	n/a	0					
Breed Hwy & Key Logistic Center (Project Driveway)	AM	EBR	0.00	0.00	n/a	0					
		WBL	0.05	0.20	n/a	25	45	240	n/a	265	350
		NB(L+R)	0.05	0.10	n/a	25					
	PM	EBR	0.00	0.00	n/a	0					
		WBL	0.02	0.10	n/a	25	45	240	n/a	265	350
		NB(L+R)	0.14	0.50	n/a	25					
Breed Hwy & Polk Pkwy On-Ramp	AM	EBR	0.00	0.00	n/a	0	45	240	n/a	240	275
		WBL	0.00	0.00	n/a	0	45	240	n/a	240	350
	PM	EBR	0.00	0.00	n/a	0	45	240	n/a	240	275
		WBL	0.00	0.00	n/a	0	45	240	n/a	240	350
Breed Hwy & Polk Pkwy Off-Ramp	AM	EBL	0.13	0.50	25	n/a	45	240	265	n/a	310
		WBR	0.44	2.00	50	n/a					
		NBL	0.17	0.30	25	n/a	40	185	210	n/a	450
		NBR	0.48	3.20	100	n/a					
		SBL	0.87	3.30	100	n/a	35	155	255	n/a	340
		SBR	0.00	0.00	0	n/a					
	PM	EBL	0.22	0.60	25	n/a	45	240	265	n/a	310
		WBR	0.93	9.80	250	n/a					
		NBL	0.09	0.20	25	n/a	40	185	210	n/a	450
		NBR	0.51	3.20	100	n/a					
		SBL	0.85	4.10	125	n/a	35	155	280	n/a	340
		SBR	0.00	0.00	0	n/a					

APPENDIX A

Traffic Methodology



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Traffic Study Methodology Publix Warehouse Campus Addition

5300 Allen K. Breed Highway
Lakeland, Florida
October 11, 2023

Introduction

Publix proposes to construct two warehouse buildings as additions to their existing County Line Road facility. The new buildings will be east and northeast of the existing warehouse south of Breed Highway (CR 542) and west of Polk Parkway (SR 570) (see **Appendix A**).

The proposed development consists of a 450,000 square foot warehouse and a 61,535 square foot return center. Employees and trucks bound for these buildings will access the site via a connection to Breed Highway via a new on-site pass gate and guardhouse along this connection. Thus, site-specific traffic will be directed solely to\from Breed Highway (see **Appendix B**).

Trip Generation Analysis

Trip generation was calculated using the rates and equations from the ITE *Trip Generation Manual* (11th Edition). Land Use Code 150 – Warehousing was used in the analysis to represent both proposed buildings. The manual does not provide for Pass-By or Internal Capture trip reduction for this land use.

Table 1 outlines the anticipated trip generation as a result of the proposed development. The project is anticipated to generate 109 AM Peak Hour trips, 114 PM Peak Hour trips and 886 Weekday trips. The detailed trip generation calculations from the OTISS *Traffic Impact Study Software* are attached in **Appendix C**.

Table 1 – ITE Trip Generation

Scenario	Description	Land Use	Size (KSF)	AM			PM Peak Hour			Weekday		
				Entry	Exit	Total	Entry	Exit	Total	Entry	Exit	Total
Proposed	Warehouse	150 - Warehouse	450	60	18	78	23	58	81	375	375	750
Proposed	Return Center	150 - Warehouse	61.54	24	7	31	9	24	33	68	68	136
New Vehicle Trips				84	25	109	32	82	114	443	443	886



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Study Area

The study area will include site access points and adjacent intersections and roadway segments meeting the City\County *Traffic Impact Significance* standard of five percent. Based upon the trip generation and preliminary trip distribution analysis, the Study Area would be limited to Breed Highway from County Line Road to the Polk Parkway eastbound on-ramp. However, as the adjacent segment was determined to have a 4.8% impact, the Study Area is extended to the Polk Parkway westbound off-ramp at Clark Road (see **Table 2**). It is noted that these calculations were performed using Polk County's 2022 *Roadway Network Database* and that the 2023 update is in progress.

Table 2 – Traffic Impact Significance

PM Peak Hour													
Roadway	Segment	Direction	Adopted LOS		Project Traffic		New Project Vehicle Trips				Impact	Impact > 5%	Direct Access
			LOS Standard	Lanes Type	Directional Capacity	Pctg Enter	Pctg Exit	32 Enter	82 Exit	114 Total			
Breed Highway (CR 542)	County Line Rd to New Entrance	EB	C	2B	640	31%		9	0	9	1.4%	No	Yes
		WB			640		46%	0	37	37	5.8%	Yes	
	New Entrance to SR 570 On-Ramp	EB	C	2B	640		54%	0	44	44	6.9%	Yes	Yes
		WB			640	69%		22	0	22	3.4%	No	
	SR 570 On-Ramp to Clark Rd	EB	C	2B	640		38%	0	31	31	4.8%	No	No
		WB			640	69%		22	0	22	3.4%	No	
	Clark Rd to Airport Rd (CR 572)	EB	C	2B	640		22%	0	18	18	2.8%	No	No
		WB			640	3%		0	0	0	0.0%	No	
Clark Road	Breed Hwy to New Tampa Hwy (US 92)	NB	C	2U	750		16%	0	13	13	1.7%	No	No
		SB			750	63%		20	0	20	2.7%	No	
County Line Road	Interstate 4 to New Tampa Hwy (US 92)	NB	C	4D	1,800		33%	0	27	27	1.5%	No	No
		SB			1,800	34%		10	0	10	0.6%	No	
	New Tampa Hwy (US 92) to Breed Hwy (CR 542)	NB	C	4D	1,800		46%	0	37	37	2.1%	No	No
		SB			1,800			0	0	0	0.0%	No	
	Breed Hwy (CR 542) to Gateway Blvd	NB	C	4D	1,800	31%		9	0	9	0.5%	No	No
		SB			1,800			0	0	0	0.0%	No	
Interstate 4	West of County Line Rd	EB	C	8F	8,550	18%		5	0	5	0.1%	No	No
		WB			8,550	16%		0	13	13	0.2%	No	
	County Line Rd to Polk Pkwy (SR 570)	EB	C	8F	8,550	17%		0	13	13	0.2%	No	No
		WB			8,550	16%		5	0	5	0.1%	No	
New Tampa Hwy (US 92)	Webb Rd to County Line Rd	EB	C	2U	880	13%		4	0	4	0.5%	No	No
		WB			880		13%	0	10	10	1.1%	No	
	County Line Rd to Clark Rd	EB	C	2U	880	47%		15	0	15	1.7%	No	No
		WB			880			0	0	0	0.0%	No	
	Clark Rd to McCue Rd	EB	C	2U	880		16%	0	13	13	1.5%	No	No
		WB			880	16%		5	0	5	0.6%	No	
Polk Parkway (SR 570)	South of Breed Hwy (CR 542)	EB	C	4F	3,740		16%	0	13	13	0.3%	No	No
		WB			3,740	3%		0	0	0	0.0%	No	

Data Collection

Turning movement counts will be obtained from field data at the existing project driveways and the study intersection for the AM & PM Peak Period (7:00 AM – 9:00 AM & 4:00 PM – 6:00 PM) on a Tuesday, Wednesday or Thursday of a non-holiday week. Turning movement counts will be seasonally adjusted using the most recent data published by FDOT for Polk County. Segment counts for the adjacent roadway segment will be obtained from the *Florida Traffic Information Online Database* or the most recent *Polk County Concurrency Report*.



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Background Growth and Vested Trips

The aforementioned *2022 Roadway Network Database* indicates a 2.0% annual growth rate for impacted roadway segments. Opening Year for the project is assumed to be 2025, therefore, two years of compounded traffic growth (4.04%) will be added to existing volumes. This will account for Background Growth. In addition, Vested Trips associated with the nearby *Lakeland Central Park* development east of Polk Parkway will be added to arrive at a projected *Background + Vested Traffic* volumes.

Trip Distribution and Assignment

Project traffic will be distributed based on the observed traffic patterns in the area (see **Appendix D**). It should be noted that the center median along County Line Road at Breed Highway prohibits southbound and westbound left turns. This creates differing entry and exit site travel patterns. For example, vehicles originating from the I-4\County Line Road interchange would utilize New Tampa Highway (US 92) and Clark Road to get to the site entrance. However, the return trip would leave the site entrance and use westbound Breed Highway and northbound County Line Road.

Intersection Analysis

Analysis will be performed for Existing, Background + Vested, and Future (the preceding plus Project Traffic) Conditions for the AM and PM Peak periods. Synchro 12 will be used to conduct the intersection analysis.

Roadway Analysis

The available roadway capacity will be analyzed based on the data reported in *2023 Roadway Network Database* and Level of Service tables in the latest edition of the *FDOT Quality of Service Handbook*.

Multimodal Interaction

Other modes of travel and their respective availability will be addressed in the TIS. These modes will include pedestrian, bicycle and transit and their potential interactions with the site.



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Report

A Traffic Impact Statement will be prepared for submittal to Polk County and will include the following information:

- Introduction
- Existing Conditions
- Background Conditions
- Trip Generation Analysis
- Trip Distribution and Trip Assignment
- Future Conditions
- Transportation Assessment
- Roadway Analysis
- Conclusions



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Environmental
M/E/P
Surveyors

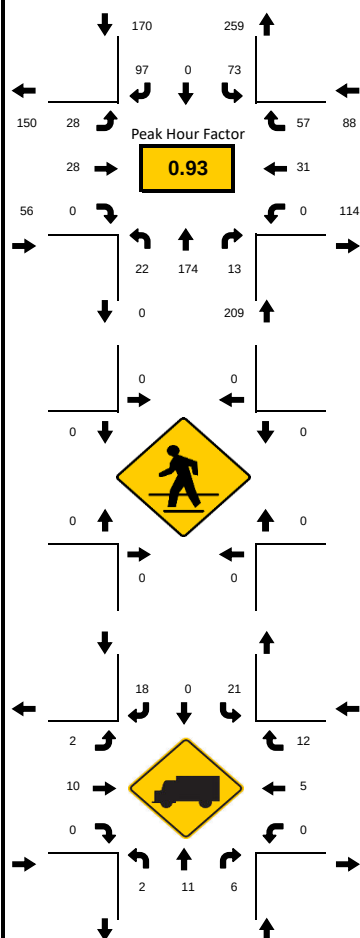
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Traffic Study Methodology Appendices have been omitted

APPENDIX B

Turning Movement Count Worksheets & Peak Season Factor

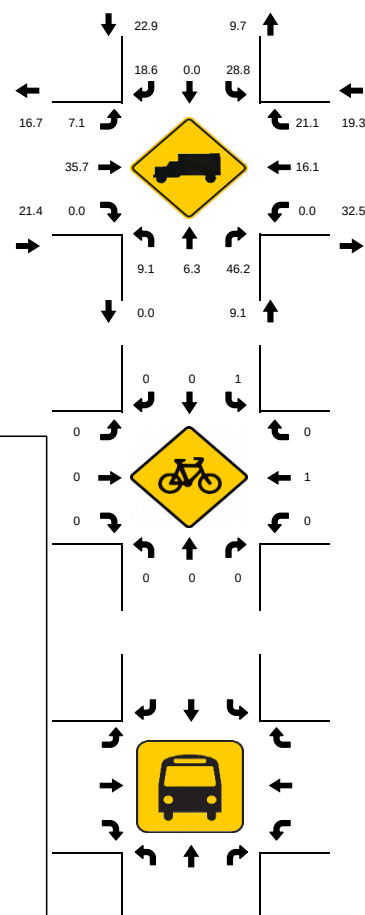
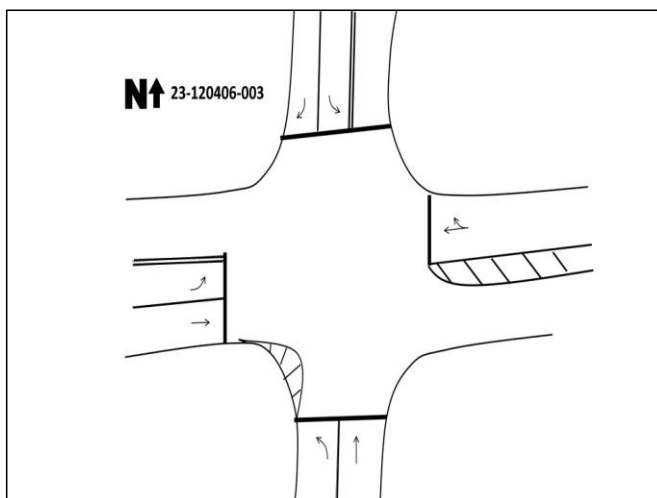
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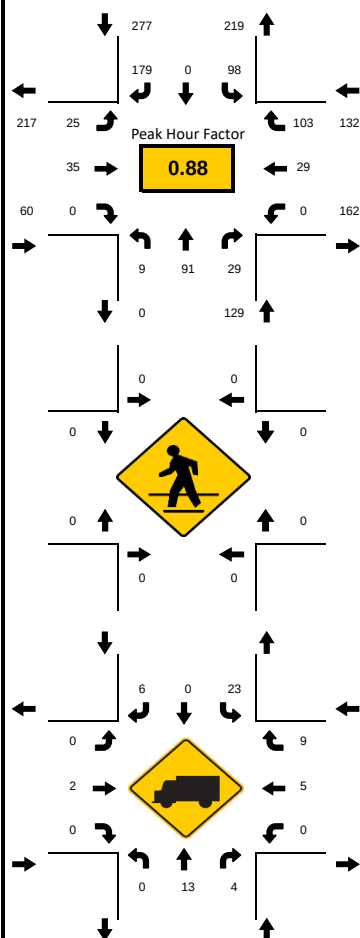
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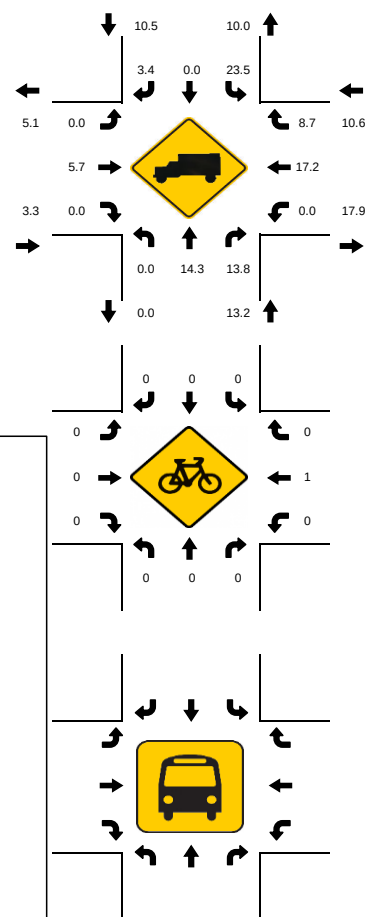
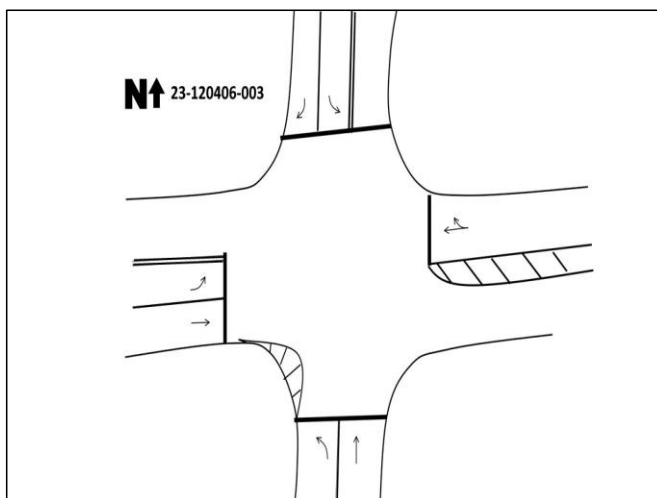
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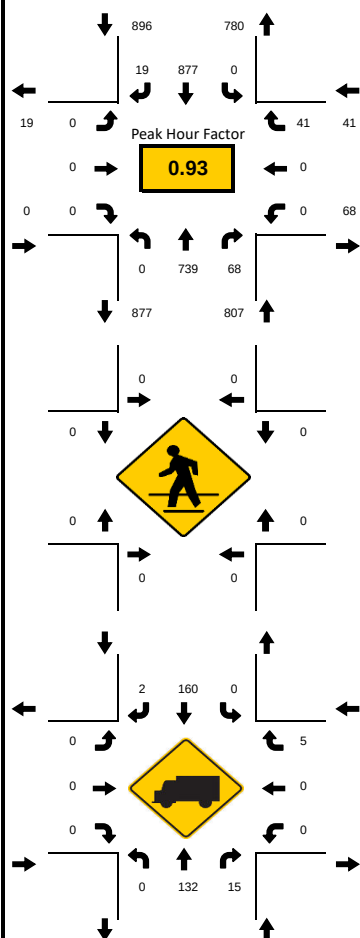
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National Data & Surveying Services

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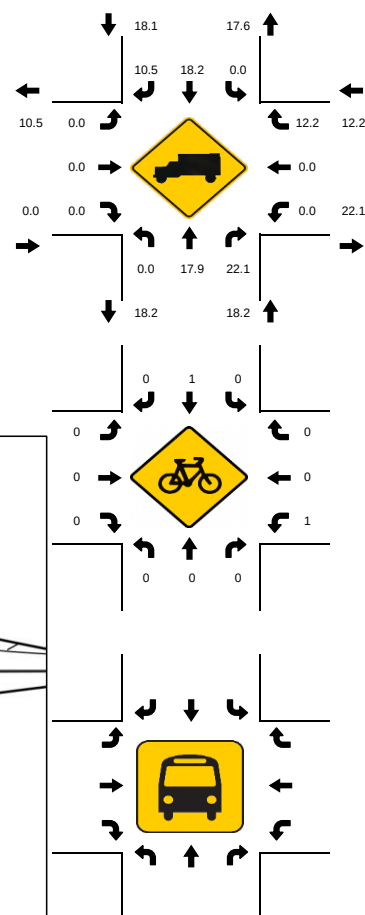
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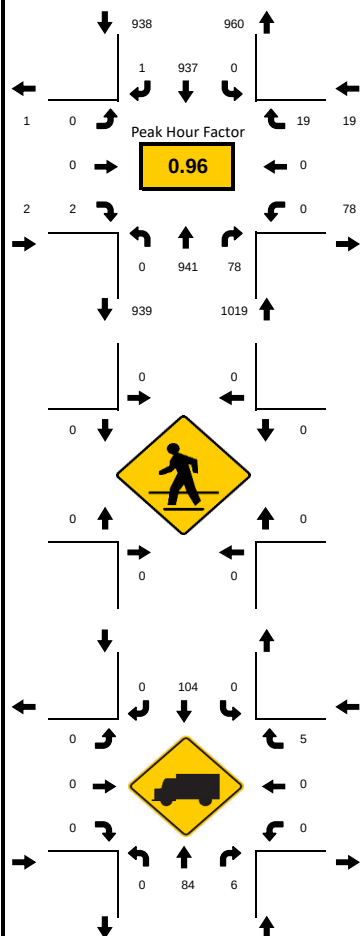
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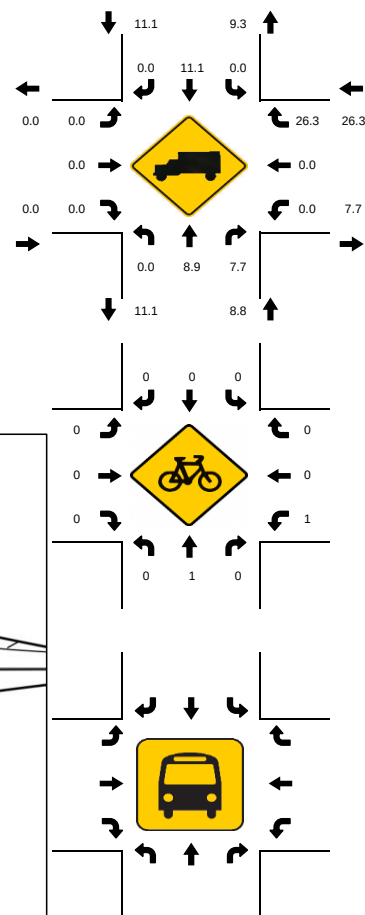
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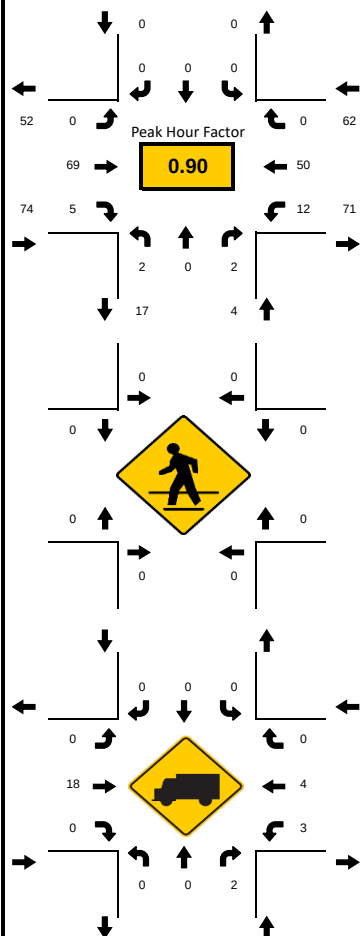
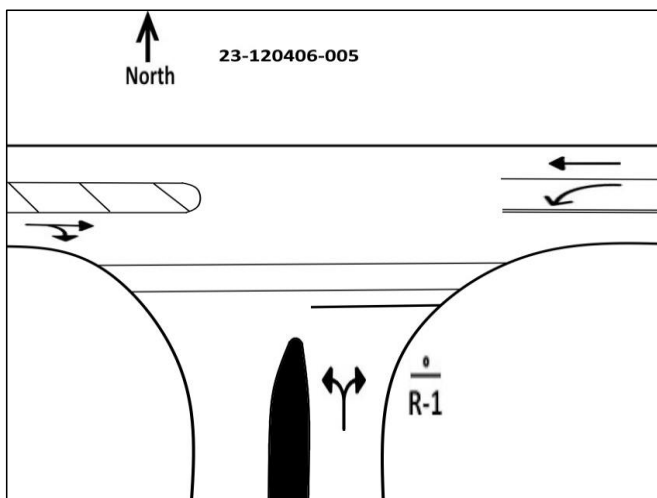
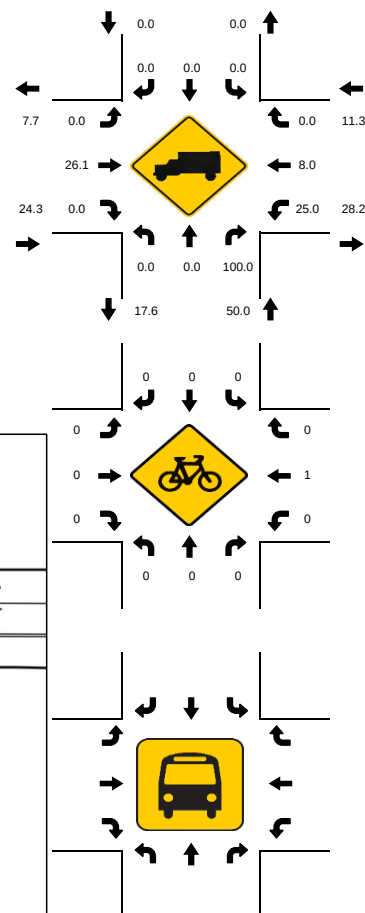
LOCATION: Dhl Ikea Supply Chain Warehouse Dwy & Old Tampa Hwy/CR 542/Allen K Breed Hwy
CITY/STATE: Lakeland, FL

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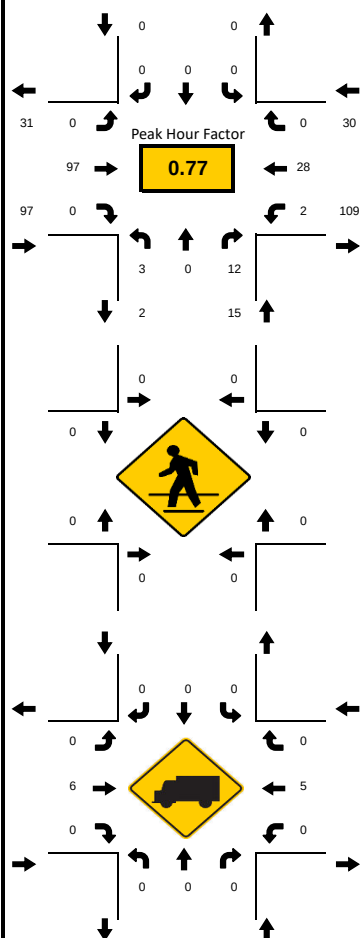


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15-Min Count Period Beginning At	Ikea Supply Chain Warehouse Dwy Northbound					Ikea Supply Chain Warehouse Dwy Southbound					Tampa Hwy/CR 542/Allen K Breed Hwy Eastbound					Tampa Hwy/CR 542/Allen K Breed Hwy Westbound					Total	Hourly Total
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
7:00 AM	0	0	0	0		0	0	0	0		0	21	0	0		3	5	0	0		29	138
7:15 AM	1	0	1	0		0	0	0	0		0	22	0	0		2	13	0	0		39	140
7:30 AM	0	0	1	0		0	0	0	0		0	16	1	0		1	13	0	0		32	130
7:45 AM	0	0	0	0		0	0	0	0		0	19	1	0		6	12	0	0		38	120
8:00 AM	1	0	0	0		0	0	0	0		0	12	3	0		3	12	0	0		31	97
8:15 AM	0	0	2	0		0	0	0	0		0	13	3	0		2	9	0	0		29	66
8:30 AM	1	0	3	0		0	0	0	0		0	5	4	0		4	5	0	0		22	37
8:45 AM	2	0	0	0		0	0	0	0		0	9	0	0		0	4	0	0		15	15
Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total	
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
All Vehicles	4	0	4	0		0	0	0	0		0	88	12	0		24	52	0	0		184	
Heavy Trucks	0	0	4	0		0	0	0	0		0	36	0	0		4	8	0	0		52	
Pedestrians		0						0				0					0				0	
Bicycles	0	0	0	0		0	0	0	0		0	0	0	0		0	4	0	0		4	
Buses																						
Stopped Buses																						

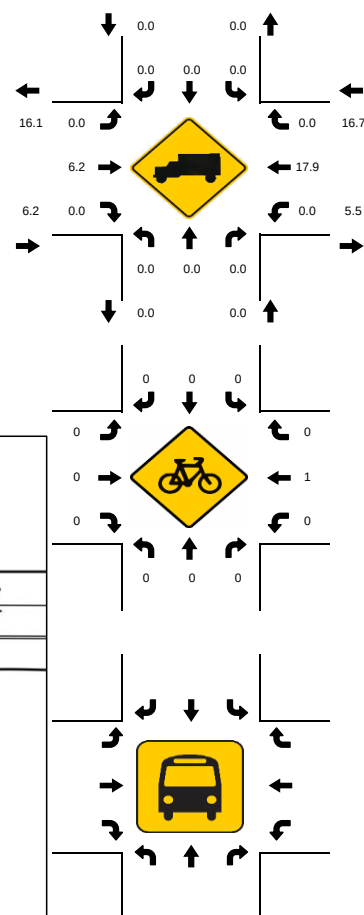
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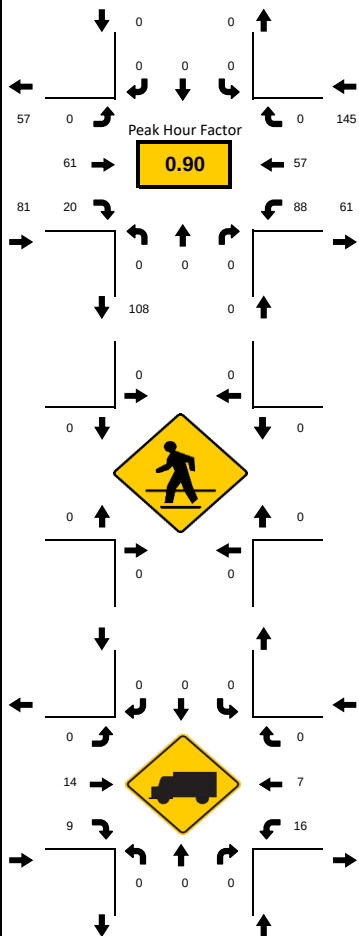


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LOCATION: SR 570/Polk Pkwy & Old Tampa Hwy/CR 542/Allen K Breed Hwy
CITY/STATE: Lakeland, FL

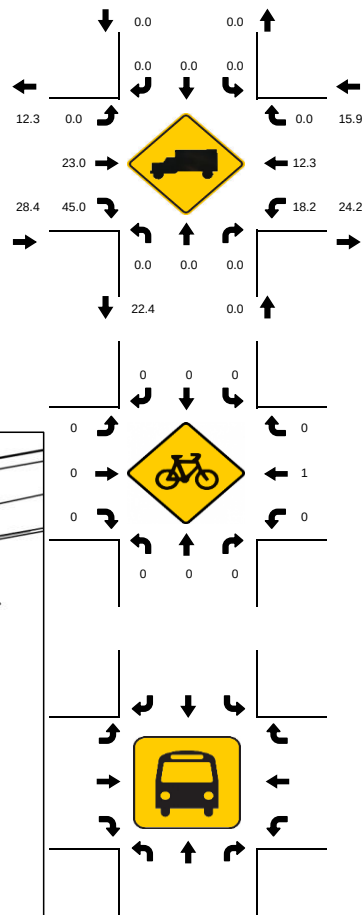
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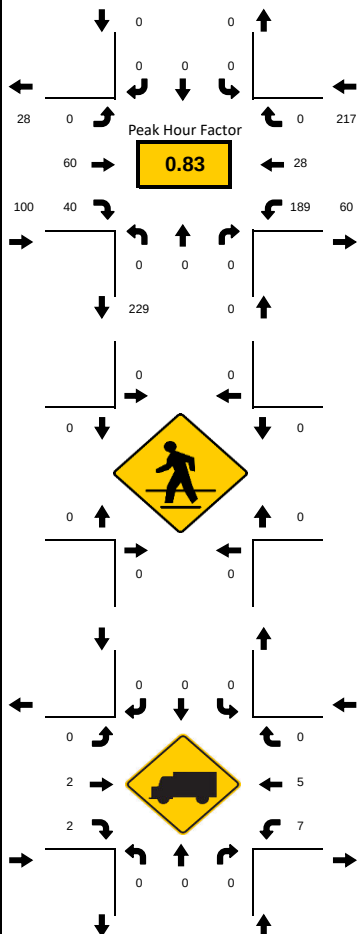


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CITY/STATE: Lakeland, FL

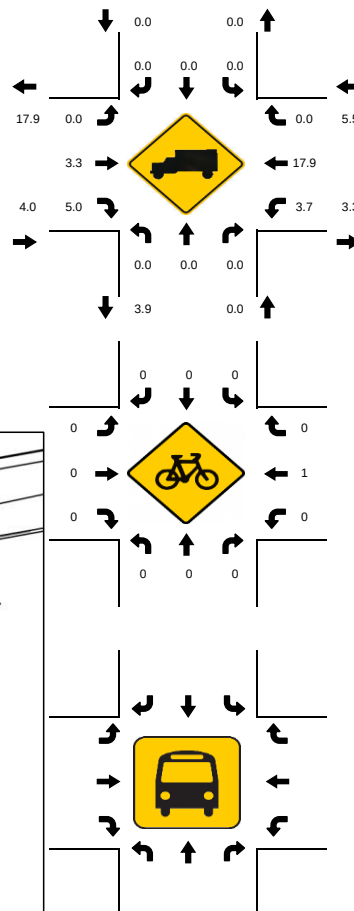
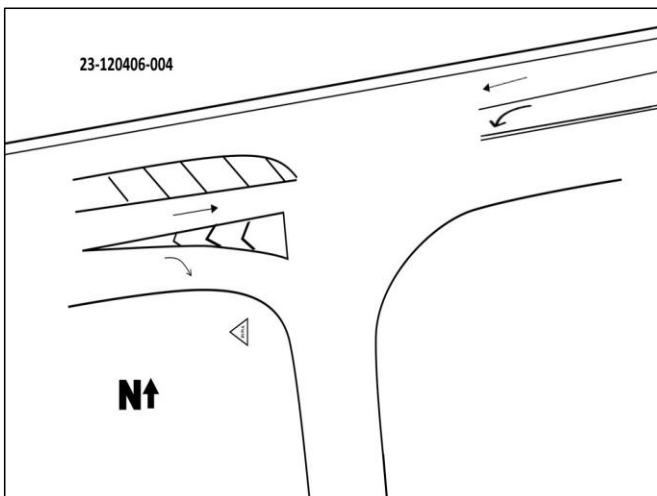
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National Data & Surveying Services

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2022 PEAK SEASON FACTOR CATEGORY REPORT - REPORT TYPE: ALL
 CATEGORY: 1600 POLK COUNTYWIDE

WEEK	DATES	SF	MOCF: 0.95 PSCF
1	01/01/2022 - 01/01/2022	0.99	1.04
2	01/02/2022 - 01/08/2022	1.01	1.06
3	01/09/2022 - 01/15/2022	1.03	1.08
4	01/16/2022 - 01/22/2022	1.02	1.07
5	01/23/2022 - 01/29/2022	1.00	1.05
* 6	01/30/2022 - 02/05/2022	0.98	1.03
* 7	02/06/2022 - 02/12/2022	0.96	1.01
* 8	02/13/2022 - 02/19/2022	0.94	0.99
* 9	02/20/2022 - 02/26/2022	0.94	0.99
*10	02/27/2022 - 03/05/2022	0.94	0.99
*11	03/06/2022 - 03/12/2022	0.94	0.99
*12	03/13/2022 - 03/19/2022	0.94	0.99
*13	03/20/2022 - 03/26/2022	0.94	0.99
*14	03/27/2022 - 04/02/2022	0.95	1.00
*15	04/03/2022 - 04/09/2022	0.96	1.01
*16	04/10/2022 - 04/16/2022	0.96	1.01
*17	04/17/2022 - 04/23/2022	0.97	1.02
*18	04/24/2022 - 04/30/2022	0.98	1.03
19	05/01/2022 - 05/07/2022	0.99	1.04
20	05/08/2022 - 05/14/2022	1.00	1.05
21	05/15/2022 - 05/21/2022	1.01	1.06
22	05/22/2022 - 05/28/2022	1.02	1.07
23	05/29/2022 - 06/04/2022	1.03	1.08
24	06/05/2022 - 06/11/2022	1.04	1.09
25	06/12/2022 - 06/18/2022	1.05	1.11
26	06/19/2022 - 06/25/2022	1.05	1.11
27	06/26/2022 - 07/02/2022	1.06	1.12
28	07/03/2022 - 07/09/2022	1.06	1.12
29	07/10/2022 - 07/16/2022	1.06	1.12
30	07/17/2022 - 07/23/2022	1.06	1.12
31	07/24/2022 - 07/30/2022	1.05	1.11
32	07/31/2022 - 08/06/2022	1.05	1.11
33	08/07/2022 - 08/13/2022	1.05	1.11
34	08/14/2022 - 08/20/2022	1.04	1.09
35	08/21/2022 - 08/27/2022	1.05	1.11
36	08/28/2022 - 09/03/2022	1.06	1.12
37	09/04/2022 - 09/10/2022	1.07	1.13
38	09/11/2022 - 09/17/2022	1.07	1.13
39	09/18/2022 - 09/24/2022	1.04	1.09
40	09/25/2022 - 10/01/2022	1.02	1.07
41	10/02/2022 - 10/08/2022	0.99	1.04
42	10/09/2022 - 10/15/2022	0.96	1.01
43	10/16/2022 - 10/22/2022	0.97	1.02
44	10/23/2022 - 10/29/2022	0.98	1.03
45	10/30/2022 - 11/05/2022	0.99	1.04
46	11/06/2022 - 11/12/2022	1.00	1.05
47	11/13/2022 - 11/19/2022	1.01	1.06
48	11/20/2022 - 11/26/2022	1.00	1.05
49	11/27/2022 - 12/03/2022	1.00	1.05
50	12/04/2022 - 12/10/2022	0.99	1.04
51	12/11/2022 - 12/17/2022	0.99	1.04
52	12/18/2022 - 12/24/2022	1.01	1.06
53	12/25/2022 - 12/31/2022	1.03	1.08

* PEAK SEASON

23-FEB-2023 09:11:19

830UPD

1_1600_PKSEASON.TXT

TRAFFIC VOLUMES FOR PROPOSED PROJECT AT STUDY INTERSECTIONS

INTERSECTION: County Line Rd & Breed Hwy
 COUNT DATE: 10/5/2023
 TIME PERIOD: 7:15 AM - 8:15 AM
 PEAK HOUR FACTOR: 0.930

"EXISTING TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Raw Turning Movements	0	0	0	0	0	41	0	739	68	0	877	19
100th Highest Hour Factor	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040

EXISTING PEAK SEASON	0	0	0	0	0	43	0	769	71	0	912	20
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"BACKGROUND TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Years To Buildout	2	2	2	2	2	2	2	2	2	2	2	2
Yearly Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
BACKGROUND TRAFFIC GROWTH	0	0	0	0	0	2	0	31	3	0	37	1
VESTED TRIPS	0	0	0	0	0	19	0	0	39	0	0	0

NON-PROJECT TRAFFIC	0	0	0	0	0	64	0	800	113	0	949	21
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"PROJECT TRAFFIC"		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	TOTAL
LAND USE	TRIP TYPE													
Proposed Project	%Pass-By - Enter													
	Pass - By - Enter	0	0	0	0	0	0	0	0	0	0	0	0	
	%Pass-By - Exit													
	Pass - By - Exit	0	0	0	0	0	0	0	0	0	0	0	0	
	% New Trips - Enter									31%				
	New Trips - Enter	0	0	0	0	0	0	0	0	20	0	0	0	20
	% New Trips - Exit						46%							
	New Trips - Exit	0	0	0	0	0	10	0	0	0	0	0	0	10
TOTAL PROJECT TRAFFIC		0	0	0	0	0	10	0	0	20	0	0	0	30

TOTAL TRAFFIC	0	0	0	0	0	74	0	800	133	0	949	21
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Project Traffic	Entering	65
	Exiting	20
Pass By Traffic	Entering	0
	Exiting	0

TRAFFIC VOLUMES FOR PROPOSED PROJECT AT STUDY INTERSECTIONS

INTERSECTION: County Line Rd & Breed Hwy
 COUNT DATE: 10/5/2023
 TIME PERIOD: 4:30 PM - 5:30 PM
 PEAK HOUR FACTOR: 0.960

"EXISTING TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Raw Turning Movements	0	0	2	0	0	19	0	941	78	0	937	1
100th Highest Hour Factor	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040

EXISTING PEAK SEASON	0	0	2	0	0	20	0	979	81	0	974	1
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"BACKGROUND TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Years To Buildout	2	2	2	2	2	2	2	2	2	2	2	2
Yearly Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
BACKGROUND TRAFFIC GROWTH	0	0	0	0	0	1	0	40	3	0	39	0
VESTED TRIPS	0	0	0	0	0	55	0	6	28	0	1	0

NON-PROJECT TRAFFIC	0	0	2	0	0	76	0	1025	112	0	1014	1
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"PROJECT TRAFFIC"		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	TOTAL
LAND USE	TRIP TYPE													
Proposed Project	%Pass-By - Enter													
	Pass - By - Enter	0	0	0	0	0	0	0	0	0	0	0	0	
	%Pass-By - Exit													
	Pass - By - Exit	0	0	0	0	0	0	0	0	0	0	0	0	
	% New Trips - Enter									31%				8
	New Trips - Enter	0	0	0	0	0	0	0	0	8	0	0	0	
	% New Trips - Exit						46%							29
	New Trips - Exit	0	0	0	0	0	29	0	0	0	0	0	0	37
TOTAL PROJECT TRAFFIC		0	0	0	0	0	29	0	0	8	0	0	0	

TOTAL TRAFFIC	0	0	2	0	0	105	0	1025	120	0	1014	1
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Project Traffic	Entering	25
	Exiting	63
Pass By Traffic	Entering	0
	Exiting	0

TRAFFIC VOLUMES FOR PROPOSED PROJECT AT STUDY INTERSECTIONS

INTERSECTION: Breed Hwy & Proposed Driveway (Logistics Center Driveway)
 COUNT DATE: 10/5/2023
 TIME PERIOD: 7:15 AM - 8:15 AM
 PEAK HOUR FACTOR: 0.900

"EXISTING TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Raw Turning Movements	0	69	5	12	50	0	2	0	2	0	0	0
100th Highest Hour Factor	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040

EXISTING PEAK SEASON	0	72	5	12	52	0	2	0	2	0	0	0
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"BACKGROUND TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Years To Buildout	2	2	2	2	2	2	2	2	2	2	2	2
Yearly Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
BACKGROUND TRAFFIC GROWTH	0	3	0	0	2	0	0	0	0	0	0	0
VESTED TRIPS	0	39	0	0	19	0	0	0	0	0	0	0

NON-PROJECT TRAFFIC	0	114	5	12	73	0	2	0	2	0	0	0
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"PROJECT TRAFFIC"		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	TOTAL
LAND USE	TRIP TYPE													
Proposed Project	%Pass-By - Enter													
	Pass - By - Enter	0	0	0	0	0	0	0	0	0	0	0	0	
	%Pass-By - Exit													
	Pass - By - Exit	0	0	0	0	0	0	0	0	0	0	0	0	
	% New Trips - Enter			31%	69%									65
	New Trips - Enter	0	0	20	45	0	0	0	0	0	0	0	0	
	% New Trips - Exit							46%		54%				20
	New Trips - Exit	0	0	0	0	0	0	10	0	10	0	0	0	85
TOTAL PROJECT TRAFFIC		0	0	20	45	0	0	10	0	10	0	0	0	

TOTAL TRAFFIC	0	114	25	57	73	0	12	0	12	0	0	0
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Project Traffic	Entering	65
	Exiting	20
Pass By Traffic	Entering	0
	Exiting	0

TRAFFIC VOLUMES FOR PROPOSED PROJECT AT STUDY INTERSECTIONS

INTERSECTION: Breed Hwy & Proposed Driveway (Logistics Center Driveway)
COUNT DATE: 10/5/2023
TIME PERIOD: 4:00 PM - 5:00 PM
PEAK HOUR FACTOR: 0.770

"EXISTING TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Raw Turning Movements	0	97	0	2	28	0	3	0	12	0	0	0
100th Highest Hour Factor	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040

EXISTING PEAK SEASON	0	101	0	2	29	0	3	0	12	0	0	0
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"BACKGROUND TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Years To Buildout	2	2	2	2	2	2	2	2	2	2	2	2
Yearly Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
BACKGROUND TRAFFIC GROWTH	0	4	0	0	1	0	0	0	0	0	0	0
VESTED TRIPS	0	28	0	0	55	0	0	0	0	0	0	0

NON-PROJECT TRAFFIC	0	133	0	2	85	0	3	0	12	0	0	0
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"PROJECT TRAFFIC"		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	TOTAL
LAND USE	TRIP TYPE													
Proposed Project	%Pass-By - Enter													
	Pass - By - Enter	0	0	0	0	0	0	0	0	0	0	0	0	
	%Pass-By - Exit													
	Pass - By - Exit	0	0	0	0	0	0	0	0	0	0	0	0	
	% New Trips - Enter			31%	69%									25
	New Trips - Enter	0	0	8	17	0	0	0	0	0	0	0	0	
	% New Trips - Exit							46%		54%				63
	New Trips - Exit	0	0	0	0	0	0	29	0	34	0	0	0	88
TOTAL PROJECT TRAFFIC		0	0	8	17	0	0	29	0	34	0	0	0	

TOTAL TRAFFIC	0	133	8	19	85	0	32	0	46	0	0	0
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Project Traffic	Entering	25
	Exiting	63
Pass By Traffic	Entering	0
	Exiting	0

TRAFFIC VOLUMES FOR PROPOSED PROJECT AT STUDY INTERSECTIONS

INTERSECTION: Breed Hwy & Polk Parkway On-Ramp
 COUNT DATE: 10/5/2023
 TIME PERIOD: 7:00 AM - 8:00 AM
 PEAK HOUR FACTOR: 0.900

"EXISTING TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Raw Turning Movements	0	61	20	88	57	0	0	0	0	0	0	0
100th Highest Hour Factor	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040

EXISTING PEAK SEASON	0	63	21	92	59	0	0	0	0	0	0	0
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"BACKGROUND TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Years To Buildout	2	2	2	2	2	2	2	2	2	2	2	2
Yearly Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
BACKGROUND TRAFFIC GROWTH	0	3	1	4	2	0	0	0	0	0	0	0
VESTED TRIPS	0	39	0	0	19	0	0	0	0	0	0	0

NON-PROJECT TRAFFIC	0	105	22	96	80	0	0	0	0	0	0	0
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"PROJECT TRAFFIC"		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	TOTAL
LAND USE	TRIP TYPE													
Proposed Project	%Pass-By - Enter													
	Pass - By - Enter	0	0	0	0	0	0	0	0	0	0	0	0	
	%Pass-By - Exit													
	Pass - By - Exit	0	0	0	0	0	0	0	0	0	0	0	0	
	% New Trips - Enter					69%								
	New Trips - Enter	0	0	0	0	45	0	0	0	0	0	0	0	45
	% New Trips - Exit		38%	16%										
	New Trips - Exit	0	7	3	0	0	0	0	0	0	0	0	0	10
TOTAL PROJECT TRAFFIC		0	7	3	0	45	0	0	0	0	0	0	0	55

TOTAL TRAFFIC	0	112	25	96	125	0	0	0	0	0	0	0	0	
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Project Traffic	Entering	65
	Exiting	20
Pass By Traffic	Entering	0
	Exiting	0

TRAFFIC VOLUMES FOR PROPOSED PROJECT AT STUDY INTERSECTIONS

INTERSECTION: Breed Hwy & Polk Parkway On-Ramp
COUNT DATE: 10/5/2023
TIME PERIOD: 4:15 PM - 5:15 PM
PEAK HOUR FACTOR: 0.830

"EXISTING TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Raw Turning Movements	0	60	40	189	28	0	0	0	0	0	0	0
100th Highest Hour Factor	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040

EXISTING PEAK SEASON	0	62	42	197	29	0	0	0	0	0	0	0
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"BACKGROUND TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Years To Buildout	2	2	2	2	2	2	2	2	2	2	2	2
Yearly Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
BACKGROUND TRAFFIC GROWTH	0	3	2	8	1	0	0	0	0	0	0	0
VESTED TRIPS	0	28	0	21	55	0	0	0	0	0	0	0

NON-PROJECT TRAFFIC	0	93	44	226	85	0	0	0	0	0	0	0
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"PROJECT TRAFFIC"		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	TOTAL
LAND USE	TRIP TYPE													
Proposed Project	%Pass-By - Enter													
	Pass - By - Enter	0	0	0	0	0	0	0	0	0	0	0	0	
	%Pass-By - Exit													
	Pass - By - Exit	0	0	0	0	0	0	0	0	0	0	0	0	
	% New Trips - Enter					69%								
	New Trips - Enter	0	0	0	0	17	0	0	0	0	0	0	0	17
	% New Trips - Exit		38%	16%										
	New Trips - Exit	0	24	10	0	0	0	0	0	0	0	0	0	34
TOTAL PROJECT TRAFFIC		0	24	10	0	17	0	0	0	0	0	0	0	51

TOTAL TRAFFIC	0	117	54	226	102	0	0	0	0	0	0	0	0
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Project Traffic	Entering	25
	Exiting	63
Pass By Traffic	Entering	0
	Exiting	0

TRAFFIC VOLUMES FOR PROPOSED PROJECT AT STUDY INTERSECTIONS

INTERSECTION: Breed Hwy & Clark Rd
COUNT DATE: 10/5/2023
TIME PERIOD: 7:15 AM - 8:15 AM
PEAK HOUR FACTOR: 0.930

"EXISTING TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Raw Turning Movements	28	28	0	0	31	57	22	174	13	73	0	97
100th Highest Hour Factor	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040

EXISTING PEAK SEASON	29	29	0	0	32	59	23	181	14	76	0	101
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"BACKGROUND TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Years To Buildout	2	2	2	2	2	2	2	2	2	2	2	2
Yearly Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
BACKGROUND TRAFFIC GROWTH	1	1	0	0	1	2	1	7	1	3	0	4
VESTED TRIPS	0	39	0	0	19	35	0	0	0	85	0	0

NON-PROJECT TRAFFIC	30	69	0	0	52	96	24	188	15	164	0	105
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"PROJECT TRAFFIC"		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	TOTAL
LAND USE	TRIP TYPE													
Proposed Project	%Pass-By - Enter													
	Pass - By - Enter	0	0	0	0	0	0	0	0	0	0	0	0	
	%Pass-By - Exit													
	Pass - By - Exit	0	0	0	0	0	0	0	0	0	0	0	0	
	% New Trips - Enter					3%		3%					63%	
	New Trips - Enter	0	0	0	0	2	0	2	0	0	0	0	41	45
	% New Trips - Exit	16%	22%											
	New Trips - Exit	3	4	0	0	0	0	0	0	0	0	0	0	7
TOTAL PROJECT TRAFFIC		3	4	0	0	2	0	2	0	0	0	0	41	52

TOTAL TRAFFIC	33	73	0	0	54	96	26	188	15	164	0	146
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Project Traffic	Entering	65
	Exiting	20
Pass By Traffic	Entering	0
	Exiting	0

TRAFFIC VOLUMES FOR PROPOSED PROJECT AT STUDY INTERSECTIONS

INTERSECTION: Breed Hwy & Clark Rd
COUNT DATE: 10/5/2023
TIME PERIOD: 4:15 PM - 5:15 PM
PEAK HOUR FACTOR: 0.880

"EXISTING TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Raw Turning Movements	25	35	0	0	29	103	9	91	29	98	0	179
100th Highest Hour Factor	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040	1.040

EXISTING PEAK SEASON	26	36	0	0	30	107	9	95	30	102	0	186
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"BACKGROUND TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Years To Buildout	2	2	2	2	2	2	2	2	2	2	2	2
Yearly Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
BACKGROUND TRAFFIC GROWTH	1	1	0	0	1	4	0	4	1	4	0	8
VESTED TRIPS	0	28	0	0	76	100	0	0	7	55	0	0

NON-PROJECT TRAFFIC	27	65	0	0	107	211	9	99	38	161	0	194
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"PROJECT TRAFFIC"		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	TOTAL
LAND USE	TRIP TYPE													
Proposed Project	%Pass-By - Enter													
	Pass - By - Enter	0	0	0	0	0	0	0	0	0	0	0	0	
	%Pass-By - Exit													
	Pass - By - Exit	0	0	0	0	0	0	0	0	0	0	0	0	
	% New Trips - Enter					3%		3%					63%	
	New Trips - Enter	0	0	0	0	1	0	1	0	0	0	0	15	17
	% New Trips - Exit	16%	22%											
	New Trips - Exit	11	13	0	0	0	0	0	0	0	0	0	0	24
TOTAL PROJECT TRAFFIC		11	13	0	0	1	0	1	0	0	0	0	15	41

TOTAL TRAFFIC	38	78	0	0	108	211	10	99	38	161	0	209
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Project Traffic	Entering	25
	Exiting	63
Pass By Traffic	Entering	0
	Exiting	0

APPENDIX C

Signal Timings & Vested Trips

FDOT - DISTRICT 1
 801 N Broadway Ave, Bartow, FL 33830
Signal Timing Report
 (For isolated traffic signal)

Drawn By:	KEB
Date:	8/2022
Checked By:	
Date:	

on the date adjacent to the seal.

Printed Copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies

Revisions	Location Details	
8/2022 Updated Yellow, All Red and RR Preemption.	Section: 16470006	Mile Post: 0.232
	Major Street: SR 570/Polk Parkway	Orientation: North bound
	Minor Street: Old Tampa Highway	Orientation: East/West
	Sig ID: 833	

Disclaimer Statement

The revisions noted above are the only timing parameters being approved. The remaining timing data was previously approved as part of previous revisions or as part of previous retiming efforts or other projects.

Controller Timings									
Movement # (Controller Phase Ø)	1	2	3	4	5	6	7	8	Notes
Direction	EBL	WB	SBL	NB		EB	NBL	SBR	
Turn Type	Pro/Perm		Prot				Prot		
Min Green	7	20	7	7		20	7	7	
Ext	3.0	4.0	5.0	3.0		4.0	3.0	3.0	
Yellow	4.9	4.9	4.1	4.1		4.9	4.1	4.1	
All Red	2.7	2.0	2.0	2.0		2.0	2.2	2.0	
Max I	15	35	30	30		35	25	30	
Max II									
Max Limit									
Adjust By									
Walk									
Flashing Don't Walk									
Detector Memory									
Det. Cross Switch.	YES								
Dual Entry		ON				ON			
Recall		MIN				MIN			

Ring 1	1	2	3	4
Ring 2	6	7	8	

Notes:

- 1) Program 8 Seconds detection delay for minor street right turn movements.
- 2) Controller type: Naztec
- 3) Emergency Vehicle Preemption included (Page 2)

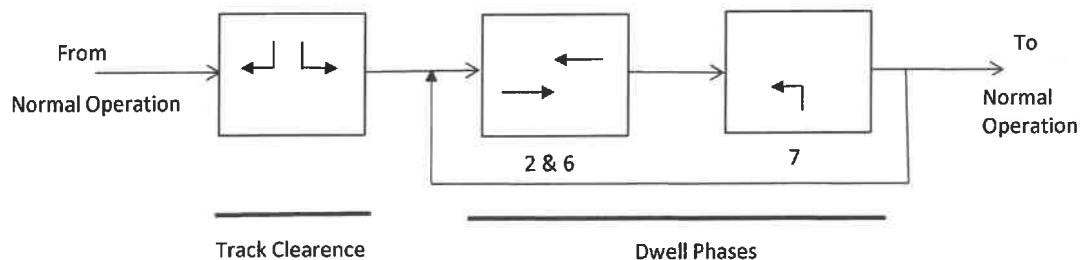
Designed By: **KEB**
 Date: **8/2022**

Checked By:
 Date:

Major Street: **SR 570/Polk Parkway**
 Minor Street: **Old Tampa Highway**

Preemption

Preemption Timing Plan	1					
Priority	1					
Delay Before Preemption (Sec)	0					
Minimum Green Before Preemption (Sec)	0					
Lock Call	OFF					
Maximum Presence (sec)	0					
Yellow Clearance (Sec)	**					
Red Clearance (Sec)	**					
Track Clearance Phase(s)	3 & 8					
Track Clearance Green	10					
Dwell Phase(s)	2, 6, 7					
Minimum Dwell (Sec)	20					
Yellow Clearance (Sec)**	**					
Red Clearance (Sec)**	**					
Exit Phases	2 & 6					



Notes:

- 1) * Entry into preemption shall not violate minimum green or pedestrian clearance intervals.
- 2) ** YELLOW and ALL RED intervals during preemption shall be the same values used during normal controller operations.

Intersection #: 1

Name: County Line Road and Old Tampa Highway

Scenario	Year	Peak	Northbound				Southbound				Eastbound				Westbound			
			Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn
Existing	2019	AM								0		0				0		
Existing	2019	PM	1	956	108	0	88	1026	8	0	6	3	2	0	43	0	44	0
PSCF			1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Adjusted	2019	AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Adjusted	2019	PM	1	1013	114	0	93	1088	8	0	6	3	2	0	46	0	47	0
Compound Annual Background Growth Rate			2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Apply Growth Rate?			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Grown Count	2029	AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grown Count	2029	PM	0	1216	137	0	0	1306	10	0	0	0	13	0	0	0	56	0
Future Background Developments																		
Airport Commerce Park	2029	AM																
Airport Commerce Park	2029	PM		6				1										
Rooms to Go	2029	AM																
Rooms to Go	2029	PM			3												10	
Lakes at Laurel Highlands	2029	AM																
Lakes at Laurel Highlands	2029	PM																
Amazon Gateway	2029	AM																
Amazon Gateway	2029	PM																
Southern Wine	2029	AM																
Southern Wine	2029	PM																
Total Background Dev	2029	AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Background Dev	2029	PM	0	6	3	0	0	1	0	0	0	0	0	0	0	0	10	0
No-Build	2029	AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No-Build	2029	PM	0	1222	140	0	0	1307	10	0	0	0	13	0	0	0	66	0
Site Trips	2029	AM	0	0	39	0	0	0	0	0	0	0	0	0	0	0	19	0
Site Trips	2029	PM	0	0	25	0	0	0	0	0	0	0	0	0	0	0	55	0
Pass-By Trips	2029	AM																
Pass-By Trips	2029	PM																
Total Site Trips	2029	AM																
Total Site Trips	2029	PM																
Total Future Build	2029	AM	0	0	39	0	0	0	0	0	0	0	0	0	0	0	19	0
Total Future Build	2029	PM	0	1222	165	0	0	1307	10	0	0	0	13	0	0	0	121	0

Intersection #: 2

Name: Old Tampa Highway and Clark Road

Scenario	Year	Peak	Northbound				Southbound				Eastbound				Westbound			
			Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn
Existing	2019	AM																
Existing	2019	PM	25	73	19	0	66	0	168	0	66	88	0	0	0	51	70	0
PSCF			1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Adjusted	2019	AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Adjusted	2019	PM	27	77	20	0	70	0	178	0	70	93	0	0	0	54	74	0
Compound Annual Background Growth Rate			2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Apply Growth Rate?			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Grown Count	2029	AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grown Count	2029	PM	32	92	24	0	84	0	214	0	84	112	0	0	0	65	89	0
Future Background Developments																		
Airport Commerce Park	2029	AM																
Airport Commerce Park	2029	PM																
Rooms to Go	2029	AM																
Rooms to Go	2029	PM										6				19		
Lakes at Laurel Highlands	2029	AM																
Lakes at Laurel Highlands	2029	PM										4				2		
Amazon Gateway	2029	AM																
Amazon Gateway	2029	PM																
Southern Wine	2029	AM																
Southern Wine	2029	PM																
Total Background Dev	2029	AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Background Dev	2029	PM	0	0	0	0	0	0	0	0	0	10	0	0	0	21	0	0
No-Build	2029	AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No-Build	2029	PM	32	92	24	0	84	0	214	0	84	122	0	0	0	86	89	0
Site Trips	2029	AM	0	0	0	0	85	0	0	0	0	39	0	0	0	19	35	0
Site Trips	2029	PM	0	0	0	0	55	0	0	0	0	25	0	0	0	55	100	0
Pass-By Trips	2029	AM																
Pass-By Trips	2029	PM																
Total Site Trips	2029	AM																
Total Site Trips	2029	PM																
Total Future Build	2029	AM	0	0	0	0	85	0	0	0	0	39	0	0	0	19	35	0
Total Future Build	2029	PM	32	92	24	0	139	0	214	0	84	147	0	0	0	141	189	0

APPENDIX D

Synchro Reports: Existing Conditions

HCM 7th Signalized Intersection Summary 13: Polk Pkwy Off-Ramp/Clark Rd & Allen K. Breed Hwy

01/09/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	29	0	0	32	59	23	181	14	76	0	101
Future Volume (veh/h)	29	29	0	0	32	59	23	181	14	76	0	101
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1574	1085	0	0	1455	1485	1707	1707	1307	1233	0	1589
Adj Flow Rate, veh/h	31	31	0	0	34	63	25	195	15	82	0	109
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	22	55	0	0	30	28	13	13	40	45	0	21
Cap, veh/h	395	340	0	0	143	266	289	462	36	109	0	0
Arrive On Green	0.31	0.31	0.00	0.00	0.31	0.31	0.11	0.30	0.30	0.09	0.00	0.00
Sat Flow, veh/h	1093	1085	0	0	457	846	1626	1565	120	1174	82	
Grp Volume(v), veh/h	31	31	0	0	0	97	25	0	210	82	38.2	
Grp Sat Flow(s),veh/h/ln	1093	1085	0	0	0	1303	1626	0	1686	1174	D	
Q Serve(g_s), s	1.4	1.3	0.0	0.0	0.0	3.5	0.9	0.0	6.4	4.4		
Cycle Q Clear(g_c), s	4.9	1.3	0.0	0.0	0.0	3.5	0.9	0.0	6.4	4.4		
Prop In Lane	1.00		0.00	0.00		0.65	1.00		0.07	1.00		
Lane Grp Cap(c), veh/h	395	340	0	0	0	409	289	0	497	109		
V/C Ratio(X)	0.08	0.09	0.00	0.00	0.00	0.24	0.09	0.00	0.42	0.75		
Avail Cap(c_a), veh/h	395	340	0	0	0	409	663	0	497	402		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00		
Uniform Delay (d), s/veh	18.1	15.5	0.0	0.0	0.0	16.3	25.7	0.0	18.2	28.3		
Incr Delay (d2), s/veh	0.4	0.5	0.0	0.0	0.0	0.3	0.1	0.0	2.6	9.9		
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.3	0.3	0.0	0.0	0.0	0.9	0.3	0.0	2.6	1.4		
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	18.5	16.1	0.0	0.0	0.0	16.6	25.9	0.0	20.8	38.2		
LnGrp LOS	B	B				B	C		C	D		
Approach Vol, veh/h	62			97			235					
Approach Delay, s/veh	17.3			16.6			21.3					
Approach LOS	B			B			C					
Timer - Assigned Phs	2		3	4		6		7				
Phs Duration (G+Y+Rc), s	27.0		12.1	25.0		27.0		13.3				
Change Period (Y+Rc), s	6.9		6.1	6.1		6.9		6.3				
Max Green Setting (Gmax), s	20.1		21.9	18.9		20.1		21.7				
Max Q Clear Time (g_c+I1), s	5.5		6.4	8.4		6.9		2.9				
Green Ext Time (p_c), s	0.3		0.2	0.7		0.1		0.0				
Intersection Summary												
HCM 7th Control Delay, s/veh	22.7											
HCM 7th LOS	C											

HCM 7th TWSC
3: County Line Rd & Allen K. Breed Hwy

01/09/2024

Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↕			↕	
Traffic Vol, veh/h	0	0	0	0	0	43	0	769	71	0	912	20
Future Vol, veh/h	0	0	0	0	0	43	0	769	71	0	912	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	13	0	19	33	0	20	13
Mvmt Flow	0	0	0	0	0	46	0	827	76	0	981	22

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	-	-	501	-	-	452	-	0
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.9	-	-	7.16	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	-	-	3.43	-	-
Pot Cap-1 Maneuver	0	0	521	0	0	526	0	-
Stage 1	0	0	-	0	0	-	0	-
Stage 2	0	0	-	0	0	-	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	521	-	-	526	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	12.5	0	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1WBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	526	-
HCM Lane V/C Ratio	-	-	-	0.088	-
HCM Control Delay (s/veh)	-	-	0	12.5	-
HCM Lane LOS	-	-	A	B	-
HCM 95th %tile Q(veh)	-	-	-	0.3	-

Intersection						
Int Delay, s/veh	0.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	72	5	12	52	2	2
Future Vol, veh/h	72	5	12	52	2	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	350	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	41	0	17	15	0	100
Mvmt Flow	80	6	13	58	2	2

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	86	0	167	83
Stage 1	-	-	-	-	83	-
Stage 2	-	-	-	-	84	-
Critical Hdwy	-	-	4.27	-	6.4	7.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.353	-	3.5	4.2
Pot Cap-1 Maneuver	-	-	1421	-	828	762
Stage 1	-	-	-	-	946	-
Stage 2	-	-	-	-	944	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1421	-	820	762
Mov Cap-2 Maneuver	-	-	-	-	820	-
Stage 1	-	-	-	-	946	-
Stage 2	-	-	-	-	935	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	1.42	9.58
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	790	-	-	1421	-
HCM Lane V/C Ratio	0.006	-	-	0.009	-
HCM Control Delay (s/veh)	9.6	-	-	7.6	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

HCM 7th Signalized Intersection Summary

13: Polk Pkwy Off-Ramp/Clark Rd & Allen K. Breed Hwy

01/09/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	36	0	0	30	107	9	95	30	102	0	186
Future Volume (veh/h)	26	36	0	0	30	107	9	95	30	102	0	186
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1900	1781	0	0	1633	1693	1900	1441	1604	1515	0	1841
Adj Flow Rate, veh/h	30	41	0	0	34	122	10	108	34	116	0	211
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	0	8	0	0	18	14	0	31	20	26	0	4
Cap, veh/h	428	770	0	0	92	332	244	244	77	145	0	0
Arrive On Green	0.04	0.43	0.00	0.00	0.30	0.30	0.09	0.23	0.23	0.10	0.00	0.00
Sat Flow, veh/h	1810	1781	0	0	312	1120	1810	1050	331	1443	116	
Grp Volume(v), veh/h	30	41	0	0	0	156	10	0	142	116	45.5	
Grp Sat Flow(s),veh/h/ln	1810	1781	0	0	0	1432	1810	0	1381	1443	D	
Q Serve(g_s), s	0.9	1.1	0.0	0.0	0.0	7.0	0.3	0.0	7.1	6.4		
Cycle Q Clear(g_c), s	0.9	1.1	0.0	0.0	0.0	7.0	0.3	0.0	7.1	6.4		
Prop In Lane	1.00		0.00	0.00		0.78	1.00		0.24	1.00		
Lane Grp Cap(c), veh/h	428	770	0	0	0	424	244	0	321	145		
V/C Ratio(X)	0.07	0.05	0.00	0.00	0.00	0.37	0.04	0.00	0.44	0.80		
Avail Cap(c_a), veh/h	516	770	0	0	0	424	683	0	321	478		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00		
Uniform Delay (d), s/veh	17.3	13.4	0.0	0.0	0.0	22.6	21.2	0.0	26.7	35.8		
Incr Delay (d2), s/veh	0.1	0.1	0.0	0.0	0.0	0.5	0.1	0.0	4.4	9.8		
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.3	0.4	0.0	0.0	0.0	2.2	0.1	0.0	2.6	2.6		
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	17.3	13.5	0.0	0.0	0.0	23.1	21.2	0.0	31.0	45.5		
LnGrp LOS	B	B				C	C		C	D		
Approach Vol, veh/h	71			156			152					
Approach Delay, s/veh	15.1			23.1			30.4					
Approach LOS	B			C			C					
Timer - Assigned Phs	1	2	3	4		6	7					
Phs Duration (G+Y+Rc), s	11.0	31.0	14.3	25.0		42.0	13.3					
Change Period (Y+Rc), s	* 7.6	6.9	6.1	6.1		6.9	6.3					
Max Green Setting (Gmax), s	* 7.4	20.1	26.9	18.9		35.1	26.7					
Max Q Clear Time (g_c+I1), s	2.9	9.0	8.4	9.1		3.1	2.3					
Green Ext Time (p_c), s	0.0	0.5	0.3	0.4		0.1	0.0					

Intersection Summary

HCM 7th Control Delay, s/veh	29.5
HCM 7th LOS	C

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↕			↕	
Traffic Vol, veh/h	0	0	2	0	0	20	0	979	81	0	974	1
Future Vol, veh/h	0	0	2	0	0	20	0	979	81	0	974	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	50	0	10	13	0	12	0
Mvmt Flow	0	0	2	0	0	21	0	1020	84	0	1015	1

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	-	-	508	-	-	552	-	0
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.9	-	-	7.9	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	-	-	3.8	-	-
Pot Cap-1 Maneuver	0	0	516	0	0	372	0	-
Stage 1	0	0	-	0	0	-	0	-
Stage 2	0	0	-	0	0	-	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	516	-	-	372	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v12.01		15.24	0	0
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1WBLn1	SBT	SBR
Capacity (veh/h)	-	-	516 372	-	-
HCM Lane V/C Ratio	-	-	0.004 0.056	-	-
HCM Control Delay (s/veh)	-	-	12 15.2	-	-
HCM Lane LOS	-	-	B C	-	-
HCM 95th %tile Q(veh)	-	-	0 0.2	-	-

Intersection						
Int Delay, s/veh	1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	101	0	2	29	3	12
Future Vol, veh/h	101	0	2	29	3	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	350	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	7	0	0	22	0	0
Mvmt Flow	131	0	3	38	4	16
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	131	0	174	131
Stage 1	-	-	-	-	131	-
Stage 2	-	-	-	-	43	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1467	-	821	924
Stage 1	-	-	-	-	900	-
Stage 2	-	-	-	-	985	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1467	-	819	924
Mov Cap-2 Maneuver	-	-	-	-	819	-
Stage 1	-	-	-	-	900	-
Stage 2	-	-	-	-	983	-
Approach	EB	WB		NB		
HCM Control Delay, s/v	0	0.48		9.09		
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	901	-	-	1467	-	
HCM Lane V/C Ratio	0.022	-	-	0.002	-	
HCM Control Delay (s/veh)	9.1	-	-	7.5	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	0.1	-	-	0	-	

APPENDIX E

Synchro Report: Background Growth

HCM 7th Signalized Intersection Summary 13: Polk Pkwy Off-Ramp/Clark Rd & Allen K. Breed Hwy

01/09/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	69	0	0	52	96	24	188	15	164	0	105
Future Volume (veh/h)	30	69	0	0	52	96	24	188	15	164	0	105
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1574	1085	0	0	1455	1485	1707	1707	1307	1233	0	1589
Adj Flow Rate, veh/h	32	74	0	0	56	103	26	202	16	176	0	113
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	22	55	0	0	30	28	13	13	40	45	0	21
Cap, veh/h	294	310	0	0	131	241	264	419	33	206	0	0
Arrive On Green	0.29	0.29	0.00	0.00	0.29	0.29	0.10	0.27	0.27	0.18	0.00	0.00
Sat Flow, veh/h	1033	1085	0	0	459	844	1626	1561	124	1174	176	
Grp Volume(v), veh/h	32	74	0	0	0	159	26	0	218	176	37.9	
Grp Sat Flow(s),veh/h/ln	1033	1085	0	0	0	1303	1626	0	1685	1174	D	
Q Serve(g_s), s	1.8	3.7	0.0	0.0	0.0	7.0	0.7	0.0	7.7	10.2		
Cycle Q Clear(g_c), s	8.8	3.7	0.0	0.0	0.0	7.0	0.7	0.0	7.7	10.2		
Prop In Lane	1.00		0.00	0.00		0.65	1.00		0.07	1.00		
Lane Grp Cap(c), veh/h	294	310	0	0	0	372	264	0	452	206		
V/C Ratio(X)	0.11	0.24	0.00	0.00	0.00	0.43	0.10	0.00	0.48	0.86		
Avail Cap(c_a), veh/h	294	310	0	0	0	372	603	0	452	365		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00		
Uniform Delay (d), s/veh	24.1	19.3	0.0	0.0	0.0	20.5	16.8	0.0	21.7	28.2		
Incr Delay (d2), s/veh	0.7	1.8	0.0	0.0	0.0	0.8	0.2	0.0	3.6	9.8		
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.5	1.0	0.0	0.0	0.0	2.0	0.3	0.0	3.2	3.3		
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	24.8	21.1	0.0	0.0	0.0	21.3	17.0	0.0	25.3	37.9		
LnGrp LOS	C	C				C	B		C	D		
Approach Vol, veh/h	106			159			244					
Approach Delay, s/veh	22.2			21.3			24.4					
Approach LOS	C			C			C					
Timer - Assigned Phs	2		3	4		6		7				
Phs Duration (G+Y+Rc), s	27.0		18.4	25.0		27.0		13.3				
Change Period (Y+Rc), s	6.9		6.1	6.1		6.9		6.3				
Max Green Setting (Gmax), s	20.1		21.9	18.9		20.1		21.7				
Max Q Clear Time (g_c+I1), s	9.0		12.2	9.7		10.8		2.7				
Green Ext Time (p_c), s	0.6		0.3	0.7		0.2		0.0				
Intersection Summary												
HCM 7th Control Delay, s/veh			26.8									
HCM 7th LOS			C									

Intersection												
Int Delay, s/veh	0.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↕			↕	
Traffic Vol, veh/h	0	0	0	0	0	64	0	800	113	0	949	21
Future Vol, veh/h	0	0	0	0	0	64	0	800	113	0	949	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	13	0	19	33	0	20	13
Mvmt Flow	0	0	0	0	0	69	0	860	122	0	1020	23

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	-	-	522	-	-	491	-	0
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.9	-	-	7.16	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	-	-	3.43	-	-
Pot Cap-1 Maneuver	0	0	505	0	0	495	0	-
Stage 1	0	0	-	0	0	-	0	-
Stage 2	0	0	-	0	0	-	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	505	-	-	495	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	13.44	0	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1WBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	495	-
HCM Lane V/C Ratio	-	-	-	0.139	-
HCM Control Delay (s/veh)	-	-	0	13.4	-
HCM Lane LOS	-	-	A	B	-
HCM 95th %tile Q(veh)	-	-	-	0.5	-

HCM 7th TWSC
16: Logistics Dwy & Allen K. Breed Hwy

01/09/2024

Intersection						
Int Delay, s/veh	0.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	114	5	12	73	2	2
Future Vol, veh/h	114	5	12	73	2	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	350	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	41	0	17	15	0	100
Mvmt Flow	127	6	13	81	2	2

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	132	0	237
Stage 1	-	-	-	-	129
Stage 2	-	-	-	-	108
Critical Hdwy	-	-	4.27	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.353	-	3.5
Pot Cap-1 Maneuver	-	-	1365	-	755
Stage 1	-	-	-	-	901
Stage 2	-	-	-	-	922
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1365	-	748
Mov Cap-2 Maneuver	-	-	-	-	748
Stage 1	-	-	-	-	901
Stage 2	-	-	-	-	913

Approach	EB	WB	NB
HCM Control Delay, s/v	0	1.08	9.96
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	730	-	-	1365	-
HCM Lane V/C Ratio	0.006	-	-	0.01	-
HCM Control Delay (s/veh)	10	-	-	7.7	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

HCM 7th Signalized Intersection Summary

13: Polk Pkwy Off-Ramp/Clark Rd & Allen K. Breed Hwy

01/09/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	65	0	0	107	211	9	99	38	161	0	194
Future Volume (veh/h)	27	65	0	0	107	211	9	99	38	161	0	194
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1900	1781	0	0	1633	1693	1900	1441	1604	1515	0	1841
Adj Flow Rate, veh/h	31	74	0	0	122	240	10	112	43	183	0	220
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	0	8	0	0	18	14	0	31	20	26	0	4
Cap, veh/h	201	727	0	0	136	268	115	218	84	216	0	0
Arrive On Green	0.04	0.41	0.00	0.00	0.28	0.28	0.02	0.22	0.22	0.15	0.00	0.00
Sat Flow, veh/h	1810	1781	0	0	492	967	1810	991	381	1443	183	
Grp Volume(v), veh/h	31	74	0	0	0	362	10	0	155	183	44.4	
Grp Sat Flow(s),veh/h/ln	1810	1781	0	0	0	1459	1810	0	1372	1443	D	
Q Serve(g_s), s	1.0	2.2	0.0	0.0	0.0	20.5	0.4	0.0	8.5	10.6		
Cycle Q Clear(g_c), s	1.0	2.2	0.0	0.0	0.0	20.5	0.4	0.0	8.5	10.6		
Prop In Lane	1.00		0.00	0.00		0.66	1.00		0.28	1.00		
Lane Grp Cap(c), veh/h	201	727	0	0	0	405	115	0	302	216		
V/C Ratio(X)	0.15	0.10	0.00	0.00	0.00	0.89	0.09	0.00	0.51	0.85		
Avail Cap(c_a), veh/h	280	727	0	0	0	405	646	0	302	451		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00		
Uniform Delay (d), s/veh	21.9	15.7	0.0	0.0	0.0	29.9	27.2	0.0	29.5	35.6		
Incr Delay (d2), s/veh	0.4	0.3	0.0	0.0	0.0	21.7	0.3	0.0	6.1	8.8		
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.4	0.9	0.0	0.0	0.0	9.0	0.2	0.0	3.2	4.1		
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	22.3	16.0	0.0	0.0	0.0	51.5	27.6	0.0	35.6	44.4		
LnGrp LOS	C	B				D	C		D	D		
Approach Vol, veh/h	105			362			165					
Approach Delay, s/veh	17.8			51.5			35.1					
Approach LOS	B			D			D					
Timer - Assigned Phs	1	2	3	4		6	7					
Phs Duration (G+Y+Rc), s	11.3	30.7	19.0	25.0		42.0	7.8					
Change Period (Y+Rc), s	* 7.6	6.9	6.1	6.1		6.9	6.3					
Max Green Setting (Gmax), s	* 7.4	20.1	26.9	18.9		35.1	26.7					
Max Q Clear Time (g_c+I1), s	3.0	22.5	12.6	10.5		4.2	2.4					
Green Ext Time (p_c), s	0.0	0.0	0.4	0.4		0.3	0.0					
Intersection Summary												
HCM 7th Control Delay, s/veh	42.3											
HCM 7th LOS	D											
Notes												
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.												

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↕			↕	
Traffic Vol, veh/h	0	0	2	0	0	76	0	1025	112	0	1014	1
Future Vol, veh/h	0	0	2	0	0	76	0	1025	112	0	1014	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	50	0	10	13	0	12	0
Mvmt Flow	0	0	2	0	0	79	0	1068	117	0	1056	1
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	-	529	-	-	592	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.9	-	-	7.9	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	-	-	3.8	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	500	0	0	347	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	500	-	-	347	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v12.23			18.39		0		0					
HCM LOS	B		C									
Minor Lane/Major Mvmt	NBT		NBR EBLn1WBLn1		SBT		SBR					
Capacity (veh/h)	-		500 347		-		-					
HCM Lane V/C Ratio	-		0.004 0.228		-		-					
HCM Control Delay (s/veh)	-		12.2 18.4		-		-					
HCM Lane LOS	-		B C		-		-					
HCM 95th %tile Q(veh)	-		0 0.9		-		-					

Intersection						
Int Delay, s/veh	0.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	133	0	2	85	3	12
Future Vol, veh/h	133	0	2	85	3	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	350	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	7	0	0	22	0	0
Mvmt Flow	173	0	3	110	4	16
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	173	0	288	173
Stage 1	-	-	-	-	173	-
Stage 2	-	-	-	-	116	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1416	-	706	876
Stage 1	-	-	-	-	862	-
Stage 2	-	-	-	-	914	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1416	-	705	876
Mov Cap-2 Maneuver	-	-	-	-	705	-
Stage 1	-	-	-	-	862	-
Stage 2	-	-	-	-	913	-
Approach	EB	WB		NB		
HCM Control Delay, s/v	0	0.17		9.41		
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	836	-	-	1416	-	
HCM Lane V/C Ratio	0.023	-	-	0.002	-	
HCM Control Delay (s/veh)	9.4	-	-	7.5	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	0.1	-	-	0	-	

APPENDIX F

Trip Generation Report

PROJECT DETAILS

Project Name:	Publix Warehouse Addition	Type of Project:	
Project No:	P14820.1	City:	Lakeland
Country:	United States	Built-up Area(Sq.ft):	
Analyst Name:	Brian Wacker	Clients Name:	
Date:	9/23/2023	ZIP/Postal Code:	
State/Province:	Florida	No. of Scenarios:	3
Analysis Region:			

SCENARIO SUMMARY

Scenarios	Name	No. of Land Uses	Phases of Development	No. of Years to Project Traffic	User Group	Estimated New Vehicle Trips		
						Entry	Exit	Total
Scenario - 1	Prop. Warehouse PM	1	1	2		25	63	88
Scenario - 2	Prop. Warehouse WKDY	1	1	2		423	423	846
Scenario - 3	Prop. Warehouse AM	1	1	2		65	20	85

Scenario - 1

Scenario Name: Prop. Warehouse PM

User Group:

Dev. phase: 1

No. of Years to Project 2

Traffic :

Analyst Note:

Warning:

VEHICLE TRIPS BEFORE REDUCTION

Land Use & Data Source	Location	IV	Size	Time Period	Method	Entry	Exit	Total
					Rate/Equation	Split%	Split%	
150 - Warehousing	General Urban/Suburban	1000 Sq. Ft. GFA	511.54	Weekday, Peak Hour of Adjacent Street Traffic,	Best Fit (LIN)	25	63	88
Data Source: Trip Generation Manual, 11th Ed					T = 0.12(X) + 26.48	28%	72%	

VEHICLE TO PERSON TRIP CONVERSION**BASELINE SITE VEHICLE CHARACTERISTICS:**

Land Use	Baseline Site Vehicle Mode Share		Baseline Site Vehicle Occupancy		Baseline Site Vehicle Directional Split	
	Entry (%)	Exit (%)	Entry	Exit	Entry (%)	Exit (%)
150 - Warehousing	100	100	1.3	1.3	28	72

ESTIMATED BASELINE SITE PERSON TRIPS:

Land Use	Person Trips by Vehicle		Person Trips by Other Modes		Total Baseline Site Person Trips	
	Entry	Exit	Entry	Exit	Entry	Exit
150 - Warehousing	32	82	0	0	32	82
	114		0		114	

INTERNAL VEHICLE TRIP REDUCTION**LAND USE GROUP ASSIGNMENT:**

Land Use	Land Use Group
150 - Warehousing	Others

BALANCED PERSON TRIPS:**INTERNAL PERSON TRIPS:****150 - Warehousing**

Internal Person Trips From	Entry	Exit	Total
Total Internal Person Trips	0	0	0

INTERNAL VEHICLE TRIPS AND CAPTURE:**150 - Warehousing**

Total Internal Person Trips	0	0	0
Vehicle Mode Share	100%	100%	-
Vehicle Occupancy	1.00	1.00	-
Total Vehicle Internal Trips	0	0	0
Total External Vehicle Trips	25	63	88
Internal Vehicle Trip Capture	0%	0%	0%

PASS-BY VEHICLE TRIP REDUCTION

Land Use	External Vehicle Trips		Pass-by Vehicle Trip %		Pass-by Vehicle Trips	
	Entry	Exit	Entry (%)	Exit (%)	Entry	Exit
150 - Warehousing	25	63	0.00%	0.00%	0	0

DIVERTED VEHICLE TRIP REDUCTION

Land Use	External Vehicle Trips		Diverted Vehicle Trip %		Diverted Vehicle Trips	
	Entry	Exit	Entry (%)	Exit (%)	Entry	Exit
150 - Warehousing	25	63	0.00%	0.00%	0	0

EXTRA VEHICLE TRIP REDUCTION

Land Use	(External - (Pass-by + Diverted)) Vehicle Trips		Extra Vehicle Trip Reduction %		Extra Reduced Vehicle Trips	
	Entry	Exit	Entry (%)	Exit (%)	Entry	Exit
150 - Warehousing	25	63	0.00%	0.00%	0	0

NEW VEHICLE TRIPS

Land Use	New Vehicle Trips		
	Entry	Exit	Total
150 - Warehousing	25	63	88

RESULTS

Site Totals	Entry	Exit	Total
Vehicle Trips Before Reduction	25	63	88
Internal Vehicle Trips	0	0	0
External Vehicle Trips	25	63	88
Internal Vehicle Trip Capture	0%	0%	0%
Pass-by Vehicle Trips	0	0	0
Diverted Vehicle Trips	0	0	0
Extra Reduced Vehicle Trips	0	0	0
New Vehicle Trips	25	63	88

Scenario - 2

Scenario Name: Prop. Warehouse WKDY

User Group:

Dev. phase: 1

No. of Years to Project 2

Traffic :

Analyst Note:

Warning:

VEHICLE TRIPS BEFORE REDUCTION

Land Use & Data Source	Location	IV	Size	Time Period	Method	Entry	Exit	Total
					Rate/Equation	Split%	Split%	
150 - Warehousing	General Urban/Suburban	1000 Sq. Ft. GFA	511.54	Weekday	Best Fit (LIN)	423	423	846
Data Source: Trip Generation Manual, 11th Ed					T = 1.58(X) + 38.29	50%	50%	

VEHICLE TO PERSON TRIP CONVERSION**BASELINE SITE VEHICLE CHARACTERISTICS:**

Land Use	Baseline Site Vehicle Mode Share		Baseline Site Vehicle Occupancy		Baseline Site Vehicle Directional Split	
	Entry (%)	Exit (%)	Entry	Exit	Entry (%)	Exit (%)
150 - Warehousing	100	100	1.3	1.3	50	50

ESTIMATED BASELINE SITE PERSON TRIPS:

Land Use	Person Trips by Vehicle		Person Trips by Other Modes		Total Baseline Site Person Trips	
	Entry	Exit	Entry	Exit	Entry	Exit
150 - Warehousing	550	550	0	0	550	550
	1100		0		1100	

INTERNAL VEHICLE TRIP REDUCTION**LAND USE GROUP ASSIGNMENT:**

Land Use	Land Use Group
150 - Warehousing	Others

BALANCED PERSON TRIPS:**INTERNAL PERSON TRIPS:****150 - Warehousing**

Internal Person Trips From	Entry	Exit	Total
Total Internal Person Trips	0	0	0

INTERNAL VEHICLE TRIPS AND CAPTURE:**150 - Warehousing**

Total Internal Person Trips	0	0	0
Vehicle Mode Share	100%	100%	-
Vehicle Occupancy	1.00	1.00	-
Total Vehicle Internal Trips	0	0	0
Total External Vehicle Trips	423	423	846
Internal Vehicle Trip Capture	0%	0%	0%

PASS-BY VEHICLE TRIP REDUCTION

Land Use	External Vehicle Trips		Pass-by Vehicle Trip %		Pass-by Vehicle Trips	
	Entry	Exit	Entry (%)	Exit (%)	Entry	Exit
150 - Warehousing	423	423	0.00%	0.00%	0	0

DIVERTED VEHICLE TRIP REDUCTION

Land Use	External Vehicle Trips		Diverted Vehicle Trip %		Diverted Vehicle Trips	
	Entry	Exit	Entry (%)	Exit (%)	Entry	Exit
150 - Warehousing	423	423	0.00%	0.00%	0	0

EXTRA VEHICLE TRIP REDUCTION

Land Use	(External - (Pass-by + Diverted)) Vehicle Trips		Extra Vehicle Trip Reduction %		Extra Reduced Vehicle Trips	
	Entry	Exit	Entry (%)	Exit (%)	Entry	Exit
150 - Warehousing	423	423	0.00%	0.00%	0	0

NEW VEHICLE TRIPS

Land Use	New Vehicle Trips		
	Entry	Exit	Total
150 - Warehousing	423	423	846

RESULTS

Site Totals	Entry	Exit	Total
Vehicle Trips Before Reduction	423	423	846
Internal Vehicle Trips	0	0	0
External Vehicle Trips	423	423	846
Internal Vehicle Trip Capture	0%	0%	0%
Pass-by Vehicle Trips	0	0	0
Diverted Vehicle Trips	0	0	0
Extra Reduced Vehicle Trips	0	0	0
New Vehicle Trips	423	423	846

Scenario - 3

Scenario Name: Prop. Warehouse AM

User Group:

Dev. phase: 1

No. of Years to Project 2

Traffic :

Analyst Note:

Warning:

VEHICLE TRIPS BEFORE REDUCTION

Land Use & Data Source	Location	IV	Size	Time Period	Method	Entry	Exit	Total
					Rate/Equation	Split%	Split%	
150 - Warehousing	General Urban/Suburban	1000 Sq. Ft. GFA	511.54	Weekday, Peak Hour of Adjacent Street Traffic,	Best Fit (LIN)	65	20	85
Data Source: Trip Generation Manual, 11th Ed					$T = 0.12(X) + 23.62$	77%	23%	

VEHICLE TO PERSON TRIP CONVERSION**BASELINE SITE VEHICLE CHARACTERISTICS:**

Land Use	Baseline Site Vehicle Mode Share		Baseline Site Vehicle Occupancy		Baseline Site Vehicle Directional Split	
	Entry (%)	Exit (%)	Entry	Exit	Entry (%)	Exit (%)
150 - Warehousing	100	100	1.3	1.3	77	23

ESTIMATED BASELINE SITE PERSON TRIPS:

Land Use	Person Trips by Vehicle		Person Trips by Other Modes		Total Baseline Site Person Trips	
	Entry	Exit	Entry	Exit	Entry	Exit
150 - Warehousing	85	25	0	0	85	25
	110		0		110	

INTERNAL VEHICLE TRIP REDUCTION**LAND USE GROUP ASSIGNMENT:**

Land Use	Land Use Group
150 - Warehousing	Others

BALANCED PERSON TRIPS:**INTERNAL PERSON TRIPS:****150 - Warehousing**

Internal Person Trips From	Entry	Exit	Total
Total Internal Person Trips	0	0	0

INTERNAL VEHICLE TRIPS AND CAPTURE:**150 - Warehousing**

Total Internal Person Trips	0	0	0
Vehicle Mode Share	100%	100%	-
Vehicle Occupancy	1.00	1.00	-
Total Vehicle Internal Trips	0	0	0
Total External Vehicle Trips	65	20	85
Internal Vehicle Trip Capture	0%	0%	0%

PASS-BY VEHICLE TRIP REDUCTION

Land Use	External Vehicle Trips		Pass-by Vehicle Trip %		Pass-by Vehicle Trips	
	Entry	Exit	Entry (%)	Exit (%)	Entry	Exit
150 - Warehousing	65	20	0.00%	0.00%	0	0

DIVERTED VEHICLE TRIP REDUCTION

Land Use	External Vehicle Trips		Diverted Vehicle Trip %		Diverted Vehicle Trips	
	Entry	Exit	Entry (%)	Exit (%)	Entry	Exit
150 - Warehousing	65	20	0.00%	0.00%	0	0

EXTRA VEHICLE TRIP REDUCTION

Land Use	(External - (Pass-by + Diverted)) Vehicle Trips		Extra Vehicle Trip Reduction %		Extra Reduced Vehicle Trips	
	Entry	Exit	Entry (%)	Exit (%)	Entry	Exit
150 - Warehousing	65	20	0.00%	0.00%	0	0

NEW VEHICLE TRIPS

Land Use	New Vehicle Trips		
	Entry	Exit	Total
150 - Warehousing	65	20	85

RESULTS

Site Totals	Entry	Exit	Total
Vehicle Trips Before Reduction	65	20	85
Internal Vehicle Trips	0	0	0
External Vehicle Trips	65	20	85
Internal Vehicle Trip Capture	0%	0%	0%
Pass-by Vehicle Trips	0	0	0
Diverted Vehicle Trips	0	0	0
Extra Reduced Vehicle Trips	0	0	0
New Vehicle Trips	65	20	85

APPENDIX G

Synchro Report: Future Conditions

HCM 7th Signalized Intersection Summary

13: Polk Pkwy Off-Ramp/Clark Rd & Allen K. Breed Hwy

01/10/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	73	0	0	54	96	26	188	15	164	0	146
Future Volume (veh/h)	33	73	0	0	54	96	26	188	15	164	0	146
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1455	1040	0	0	1441	1485	1678	1707	1307	1233	0	1500
Adj Flow Rate, veh/h	35	78	0	0	58	103	28	202	16	176	0	157
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	30	58	0	0	31	28	15	13	40	45	0	27
Cap, veh/h	278	298	0	0	133	236	169	420	33	203	0	0
Arrive On Green	0.29	0.29	0.00	0.00	0.29	0.29	0.04	0.27	0.27	0.17	0.00	0.00
Sat Flow, veh/h	953	1040	0	0	465	826	1598	1561	124	1174	176	
Grp Volume(v), veh/h	35	78	0	0	0	161	28	0	218	176	38.7	
Grp Sat Flow(s),veh/h/ln	953	1040	0	0	0	1292	1598	0	1685	1174	D	
Q Serve(g_s), s	2.2	4.1	0.0	0.0	0.0	7.1	0.9	0.0	7.6	10.2		
Cycle Q Clear(g_c), s	9.3	4.1	0.0	0.0	0.0	7.1	0.9	0.0	7.6	10.2		
Prop In Lane	1.00		0.00	0.00		0.64	1.00		0.07	1.00		
Lane Grp Cap(c), veh/h	278	298	0	0	0	370	169	0	453	203		
V/C Ratio(X)	0.13	0.26	0.00	0.00	0.00	0.44	0.17	0.00	0.48	0.87		
Avail Cap(c_a), veh/h	278	298	0	0	0	370	596	0	453	366		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00		
Uniform Delay (d), s/veh	24.3	19.4	0.0	0.0	0.0	20.5	19.5	0.0	21.6	28.3		
Incr Delay (d2), s/veh	0.9	2.1	0.0	0.0	0.0	0.8	0.5	0.0	3.6	10.5		
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.5	1.1	0.0	0.0	0.0	2.0	0.3	0.0	3.2	3.3		
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	25.2	21.5	0.0	0.0	0.0	21.3	20.0	0.0	25.2	38.7		
LnGrp LOS	C	C				C	B		C	D		
Approach Vol, veh/h	113			161			246					
Approach Delay, s/veh	22.6			21.3			24.6					
Approach LOS	C			C			C					
Timer - Assigned Phs	2		3	4		6		7				
Phs Duration (G+Y+Rc), s	27.0		18.3	25.0		27.0		9.2				
Change Period (Y+Rc), s	6.9		6.1	6.1		6.9		6.3				
Max Green Setting (Gmax), s	20.1		21.9	18.9		20.1		21.7				
Max Q Clear Time (g_c+I1), s	9.1		12.2	9.6		11.3		2.9				
Green Ext Time (p_c), s	0.6		0.3	0.7		0.3		0.0				
Intersection Summary												
HCM 7th Control Delay, s/veh	27.1											
HCM 7th LOS	C											

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↕			↕	
Traffic Vol, veh/h	0	0	0	0	0	74	0	800	133	0	949	21
Future Vol, veh/h	0	0	0	0	0	74	0	800	133	0	949	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	22	0	19	34	0	20	14
Mvmt Flow	0	0	0	0	0	80	0	860	143	0	1020	23

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	-	-	522	-	-	502	-	0
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.9	-	-	7.34	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	-	-	3.52	-	-
Pot Cap-1 Maneuver	0	0	505	0	0	465	0	-
Stage 1	0	0	-	0	0	-	0	-
Stage 2	0	0	-	0	0	-	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	505	-	-	465	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	14.33	0	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1WBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	465	-
HCM Lane V/C Ratio	-	-	-	0.171	-
HCM Control Delay (s/veh)	-	-	0	14.3	-
HCM Lane LOS	-	-	A	B	-
HCM 95th %tile Q(veh)	-	-	-	0.6	-

HCM 7th TWSC
16: Logistics Dwy & Allen K. Breed Hwy

01/10/2024

Intersection						
Int Delay, s/veh	2.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	114	25	57	73	12	13
Future Vol, veh/h	114	25	57	73	12	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	350	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	41	32	37	15	67	92
Mvmt Flow	127	28	63	81	13	14
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	154	0	348	141
Stage 1	-	-	-	-	141	-
Stage 2	-	-	-	-	208	-
Critical Hdwy	-	-	4.47	-	7.07	7.12
Critical Hdwy Stg 1	-	-	-	-	6.07	-
Critical Hdwy Stg 2	-	-	-	-	6.07	-
Follow-up Hdwy	-	-	2.533	-	4.103	4.128
Pot Cap-1 Maneuver	-	-	1238	-	536	715
Stage 1	-	-	-	-	749	-
Stage 2	-	-	-	-	694	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1238	-	509	715
Mov Cap-2 Maneuver	-	-	-	-	509	-
Stage 1	-	-	-	-	749	-
Stage 2	-	-	-	-	659	-
Approach	EB		WB		NB	
HCM Control Delay, s/v	0		3.54		11.31	
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1		EBT	EBR	WBL	WBT
Capacity (veh/h)	599		-	-	1238	-
HCM Lane V/C Ratio	0.046		-	-	0.051	-
HCM Control Delay (s/veh)	11.3		-	-	8.1	-
HCM Lane LOS	B		-	-	A	-
HCM 95th %tile Q(veh)	0.1		-	-	0.2	-

HCM 7th Signalized Intersection Summary

13: Polk Pkwy Off-Ramp/Clark Rd & Allen K. Breed Hwy

01/10/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	78	0	0	108	211	10	99	38	161	0	209
Future Volume (veh/h)	38	78	0	0	108	211	10	99	38	161	0	209
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1781	1752	0	0	1633	1693	1900	1441	1589	1515	0	1826
Adj Flow Rate, veh/h	43	89	0	0	123	240	11	112	43	183	0	238
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	8	10	0	0	18	14	0	31	21	26	0	5
Cap, veh/h	197	715	0	0	132	258	118	218	84	216	0	0
Arrive On Green	0.05	0.41	0.00	0.00	0.27	0.27	0.02	0.22	0.22	0.15	0.00	0.00
Sat Flow, veh/h	1697	1752	0	0	495	965	1810	991	381	1443	183	
Grp Volume(v), veh/h	43	89	0	0	0	363	11	0	155	183	44.4	
Grp Sat Flow(s),veh/h/ln	1697	1752	0	0	0	1460	1810	0	1372	1443	D	
Q Serve(g_s), s	1.5	2.7	0.0	0.0	0.0	20.8	0.4	0.0	8.5	10.6		
Cycle Q Clear(g_c), s	1.5	2.7	0.0	0.0	0.0	20.8	0.4	0.0	8.5	10.6		
Prop In Lane	1.00		0.00	0.00		0.66	1.00		0.28	1.00		
Lane Grp Cap(c), veh/h	197	715	0	0	0	391	118	0	302	216		
V/C Ratio(X)	0.22	0.12	0.00	0.00	0.00	0.93	0.09	0.00	0.51	0.85		
Avail Cap(c_a), veh/h	254	715	0	0	0	391	646	0	302	451		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00		
Uniform Delay (d), s/veh	22.2	15.9	0.0	0.0	0.0	30.7	27.1	0.0	29.5	35.6		
Incr Delay (d2), s/veh	0.6	0.4	0.0	0.0	0.0	28.5	0.3	0.0	6.1	8.8		
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.6	1.1	0.0	0.0	0.0	9.8	0.2	0.0	3.2	4.1		
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	22.8	16.2	0.0	0.0	0.0	59.2	27.5	0.0	35.6	44.4		
LnGrp LOS	C	B				E	C		D	D		
Approach Vol, veh/h	132		363				166					
Approach Delay, s/veh	18.3		59.2				35.1					
Approach LOS	B		E				D					
Timer - Assigned Phs	1	2	3	4		6	7					
Phs Duration (G+Y+Rc), s	12.1	29.9	19.0	25.0		42.0	7.9					
Change Period (Y+Rc), s	* 7.6	6.9	6.1	6.1		6.9	6.3					
Max Green Setting (Gmax), s	* 7.4	20.1	26.9	18.9		35.1	26.7					
Max Q Clear Time (g_c+I1), s	3.5	22.8	12.6	10.5		4.7	2.4					
Green Ext Time (p_c), s	0.0	0.0	0.4	0.4		0.4	0.0					
Intersection Summary												
HCM 7th Control Delay, s/veh	44.8											
HCM 7th LOS	D											
Notes												
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.												

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↕			↕	
Traffic Vol, veh/h	0	0	2	0	0	105	0	1025	120	0	1014	1
Future Vol, veh/h	0	0	2	0	0	105	0	1025	120	0	1014	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	43	0	10	14	0	12	0
Mvmt Flow	0	0	2	0	0	109	0	1068	125	0	1056	1

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	-	-	529	-	-	596	-	0
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.9	-	-	7.76	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	-	-	3.73	-	-
Pot Cap-1 Maneuver	0	0	500	0	0	358	0	-
Stage 1	0	0	-	0	0	-	0	-
Stage 2	0	0	-	0	0	-	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	500	-	-	358	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v12.23		19.43	0	0
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1WBLn1	SBT	SBR
Capacity (veh/h)	-	-	500	358	-
HCM Lane V/C Ratio	-	-	0.004	0.306	-
HCM Control Delay (s/veh)	-	-	12.2	19.4	-
HCM Lane LOS	-	-	B	C	-
HCM 95th %tile Q(veh)	-	-	0	1.3	-

HCM 7th TWSC
16: Logistics Dwy & Allen K. Breed Hwy

01/10/2024

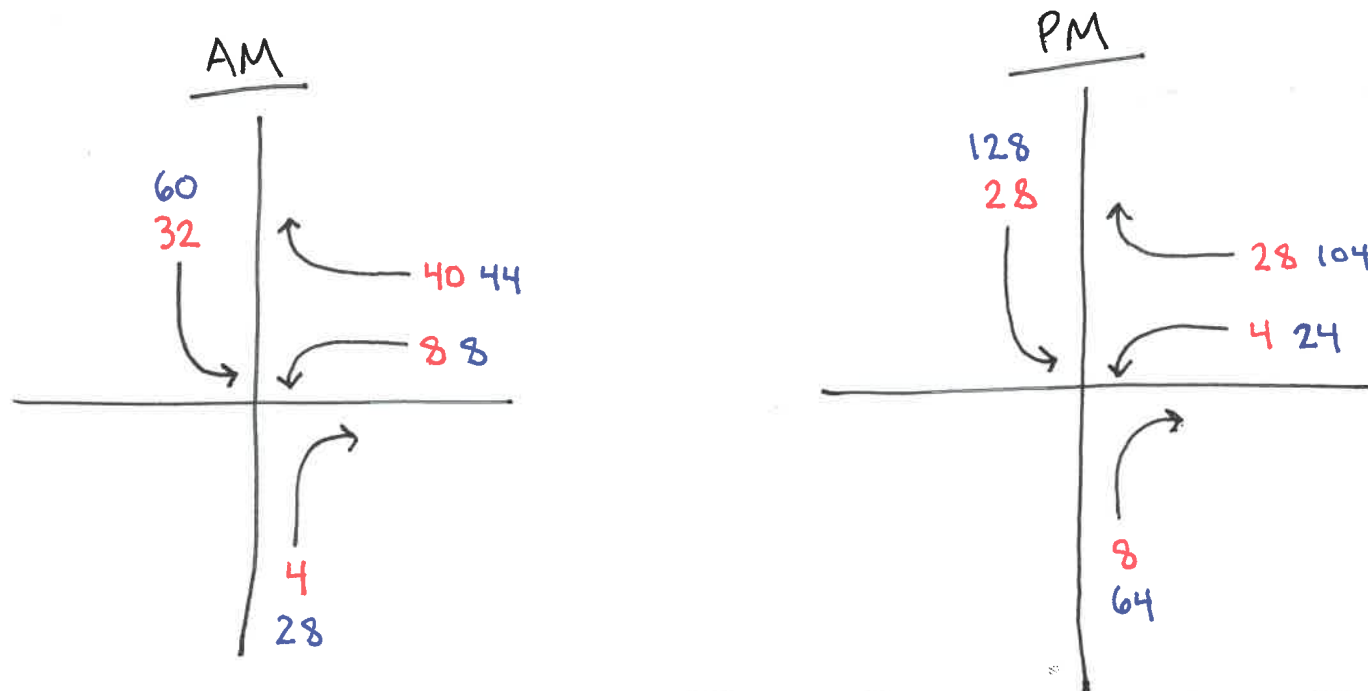
Intersection						
Int Delay, s/veh	3.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	133	8	19	85	32	47
Future Vol, veh/h	133	8	19	85	32	47
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	350	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	7	25	16	22	22	19
Mvmt Flow	173	10	25	110	42	61
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	183	0	338	178
Stage 1	-	-	-	-	178	-
Stage 2	-	-	-	-	160	-
Critical Hdwy	-	-	4.26	-	6.62	6.39
Critical Hdwy Stg 1	-	-	-	-	5.62	-
Critical Hdwy Stg 2	-	-	-	-	5.62	-
Follow-up Hdwy	-	-	2.344	-	3.698	3.471
Pot Cap-1 Maneuver	-	-	1312	-	619	823
Stage 1	-	-	-	-	807	-
Stage 2	-	-	-	-	823	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1312	-	608	823
Mov Cap-2 Maneuver	-	-	-	-	608	-
Stage 1	-	-	-	-	807	-
Stage 2	-	-	-	-	807	-
Approach	EB		WB		NB	
HCM Control Delay, s/v	0		1.42		10.83	
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	720	-	-	1312	-	
HCM Lane V/C Ratio	0.143	-	-	0.019	-	
HCM Control Delay (s/veh)	10.8	-	-	7.8	-	
HCM Lane LOS	B	-	-	A	-	
HCM 95th %tile Q(veh)	0.5	-	-	0.1	-	

APPENDIX H

Truck Percentage Calculations

EXISTING COUNTS AT COUNTY LINE RD/GATEWAY BLVD

- only entering/exiting existing site
- /// = truck volumes
- /// = total vehicle volumes (including trucks)



TRUCKS

	Enter	Exit	Total
AM	36	48	84
PM	36	32	68

$$\text{Rate (AM Enter)} = \frac{36}{88} = 0.409$$

$$\text{Rate (PM Enter)} = \frac{36}{192} = 0.188$$

$$\text{Rate (AM Exit)} = \frac{48}{52} = 0.923$$

$$\text{Rate (PM Exit)} = \frac{32}{128} = 0.250$$

PROPOSED DEVELOPMENT

OTISS: 511.54 KSF

	Enter	Exit	Total
AM	65	20	85
PM	25	63	88

$$\text{Rate (AM Enter)} = (0.409)(65) = 27$$

$$\text{Rate (AM Exit)} = (0.923)(20) = 18$$

$$\text{Rate (PM Enter)} = (0.188)(25) = 5$$

$$\text{Rate (PM Exit)} = (0.250)(63) = 16$$

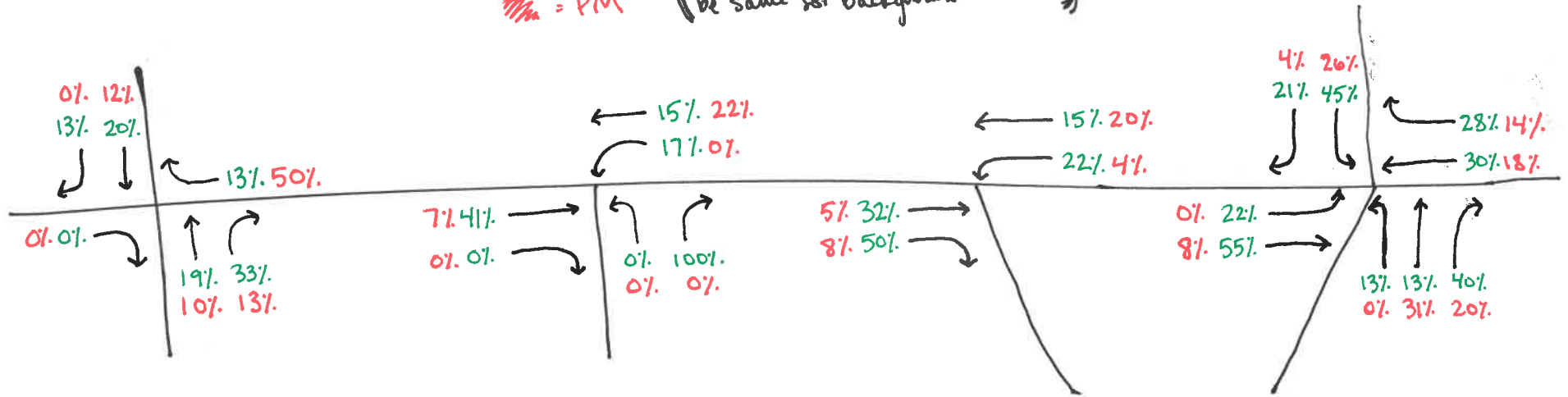
PROPOSED TRUCKS

	Enter	Exit	Total
AM	27	18	45
PM	5	16	21

PROPOSED TRUCK/CAR SPLIT		Enter	Exit
Total		65	20
AM 85	<	45	27
	<	40	38
PM 88	<	21	5
	<	67	20
		25	63

EXISTING TRUCK PERCENTAGES

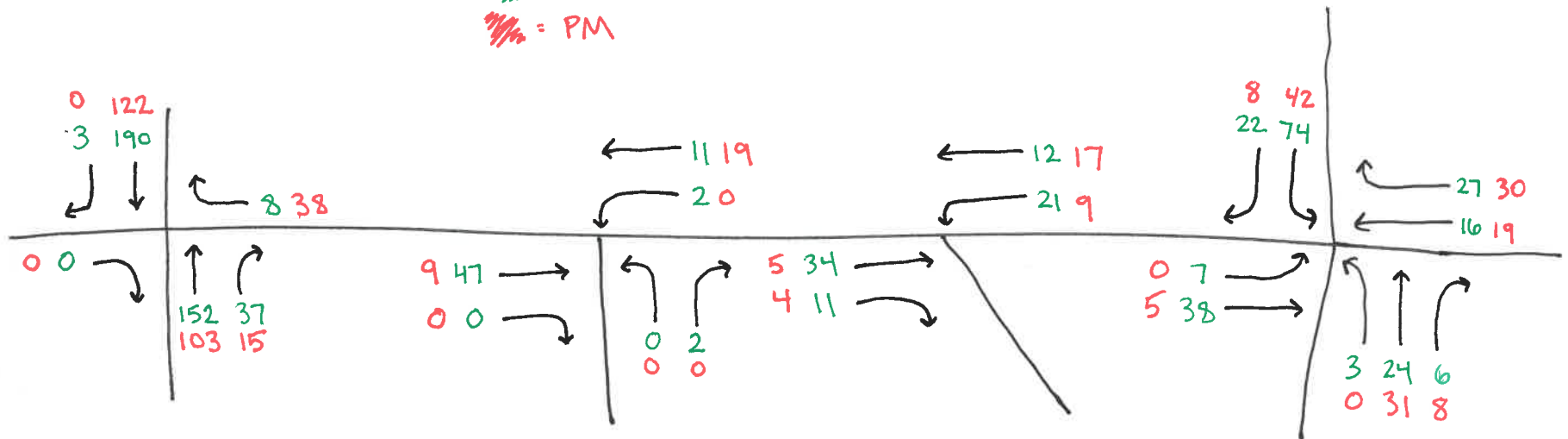
/// = AM
/// = PM - (calculated from counts, %'s will be same for background)



BACKGROUND TRUCK VOLUMES

-(existing %) x (background volume)

/// = AM
/// = PM



TRIP GEN

	Enter	Exit	Total
AM	65	20	85
PM	25	63	88

Trucks

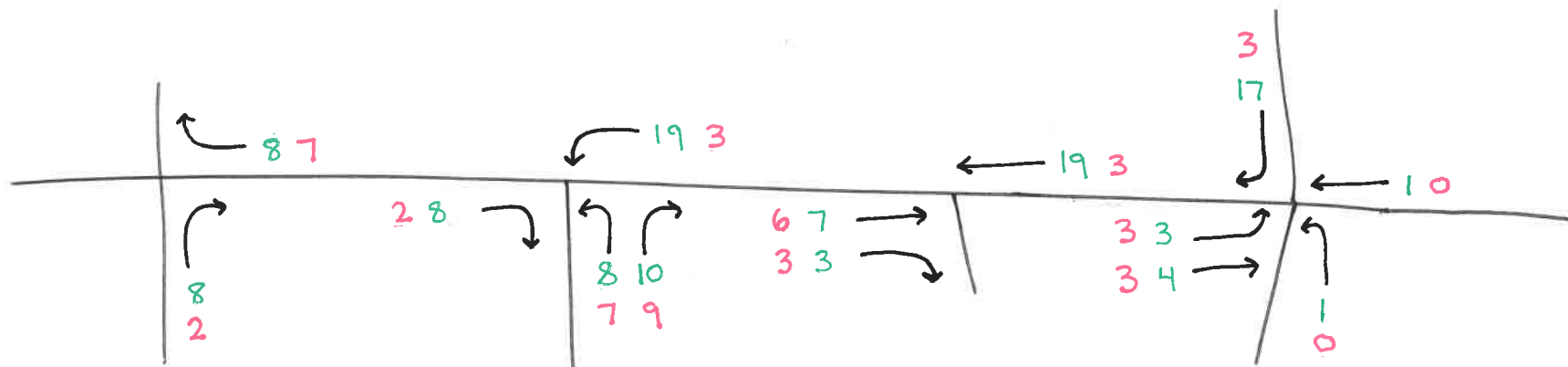
	Enter	Exit	Total
AM	27	18	45
PM	5	16	21

PROJECT TRUCK ASSIGNMENT

- BASED ON EXISTING WAREHOUSE VOLUMES
AND TRIP DISTRIBUTION

/// = AM

/// = PM



FUTURE TRUCK VOLUMES + PERCENTAGES

- BACKGROUND VOLUMES + PROJECT ASSIGNMENT
- % calculated by dividing volume with total volume

