ACCESS MANAGEMENT ANALYSIS

CIRCLE K
DUNDEE ROAD AND BUCKEYE LOOP ROAD
FDOT SECTION:16280000
MP:2.458

Prepared For

PURSUIT DEVELOPMENT

Prepared By

LINCKS & ASSOCIATES, LLC
Engineers - Planners
Tampa, Florida

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Project No. 24014

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_____
_____Date

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EXECUTIVE SUMMARY

Based on the results of the analysis all the proposed accesses are projected to operate at an acceptable level of service. In addition, the turn lanes warranted at the proposed project accesses are identified in the analysis.

INTRODUCTION

The purpose of this report is to provide an Access Management Analysis in conjunction with the development of the proposed property located north of Dundee Road (SR 542) and west of Buckeye Loop Road in Winter Haven, Florida, as shown in Figure 1. The anticipated construction start year is 2025.

The developer proposes to develop the property for the following land uses:

- Circle K – 3,963 Square Feet and 12 Fueling positions
- Medical Office – 15,000 Square Feet
- Mini-Warehouse – 150,000 Square Feet

The access to serve the project is proposed to be as follows:

- One (1) left-in/right-in/right-out access to Dundee Road
- One (1) right-in / right-out access to Dundee Road
- One (1) right-in / right-out access to Buckeye Loop Road
- One (1) full access to Salsbury Drive

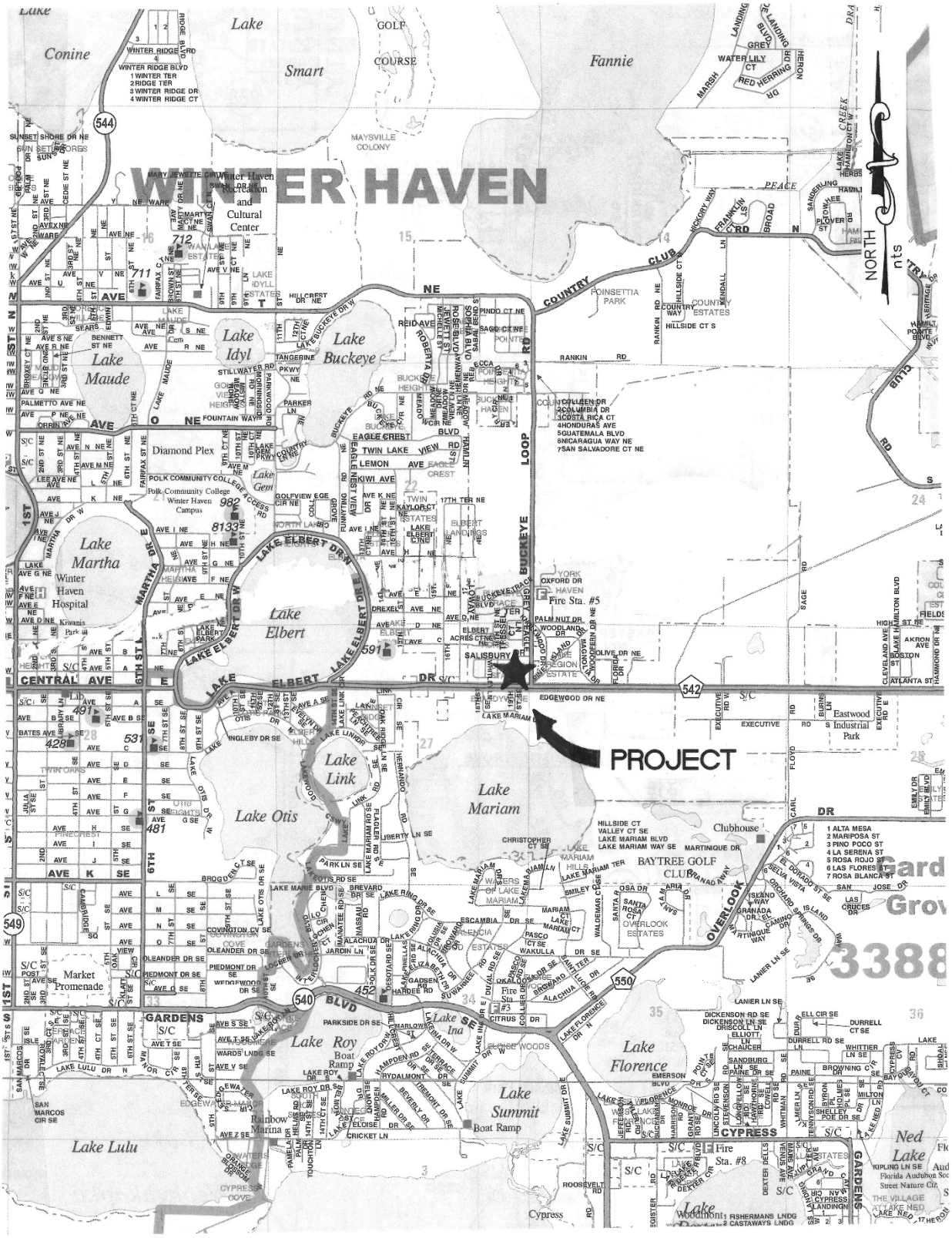


FIGURE 1
PROJECT LOCATION

The Dundee Road (SR 542) characteristics are as follows:

- Access Class – 5
  - Connection Spacing: 245 Feet
  - Full Median Spacing: 2,640 Feet
  - Directional Median Opening Spacing: 660 Feet
- Context Class – C2
- Posted Speed Limit – 30 MPH

Dundee Road is a four (4) lane urban roadway east of Buckeye Loop Road. West of Buckeye Loop Road is a two (2) lane undivided roadway that transitions to a three (3) lane roadway.

Buckeye Loop Road is a two (2) lane undivided roadway with a posted speed limit of 35 MPH.

The site plan for the project is included in the Appendix of this report.

Figure 1A illustrates an aerial of the intersections analyzed in the report.

ESTIMATED PROJECT AVERAGE DAILY TRAFFIC

The trip rates utilized in this report were obtained from the latest computerized version of "OTISS" which utilizes the Institute of Transportation Engineers' (ITE) Trip Generation Manual, 11th Edition, 2021, as its database. Based on these trip rates, it is estimated that the proposed project would attract approximately 3,532 daily trip ends, as shown in Table 1.

FIGURE 1A
AERIAL ACCESS

TABLE 1

ESTIMATED DAILY PROJECT TRIP ENDS

Land Use	ITE LUC	Size	Daily Trip Ends (1)	Passerby Trip Ends (2)	New Daily Trip Ends
Circle K	945	3,963 SF	2,774	2,080	694
Medical Office	720	15,000 SF	540	0	540
Mini-Warehouse	151	150,000 SF	218	0	218
		Total	3,532	2,080	1,452

(1) Source: ITE Trip Generation Manual, 11th Edition, 2021.

(2) Source: ITE Trip Generation Manual, 11th Edition, 2021.

- Passerby Trips: 75%

  2,774 x 0.75 = 2,080

- The passerby capture should not exceed 10% of the adjacent street traffic.

  28,211 (a) x 0.10 = 2,821 > 2,080

  (a) PM peak hour background traffic at the intersection of Dundee Road and Buckeye Loop Road and K = 0.09.

Studies contained in the ITE Trip Generation Manual, 11th Edition, indicate that 75% of the Circle K trips are already present on the adjacent roadway system - passerby capture. The passerby trip ends should not exceed 10 percent of the daily traffic on the adjacent roadways. Therefore, the new daily trip ends attracted to the proposed project would be 1,452 trip ends, as shown in Table 1.

PROJECT PEAK HOUR TRAFFIC

Again, based on the data contained in the ITE Trip Generation Manual, 11th Edition, the proposed project would attract approximately 282 trip ends during the AM peak hour with 155 inbound and 127 outbound, as shown in Table 2. During the PM peak hour, the proposed project would attract approximately 302 trip ends with 139 inbound and 163 outbound, as shown in Table 3.

As stated previously, studies contained in the ITE Trip Generation Manual, 11th Edition, indicate that a percentage of Circle K trip ends already exist on the adjacent roadways – passerby capture. To account for this passerby capture, it was estimated that 76% of the AM and 75% of the PM peak hour project's trips are already present on the adjacent roadway system. The passerby trip ends should not exceed 10 percent of the peak hour traffic on the adjacent roadways. Therefore, the new AM peak hour trip ends attracted to the proposed project would be 112 trip ends with 70 inbound and 42 outbound, as shown in Table 2. The new PM peak hour trip ends attracted to the proposed project would be 137 trip ends with 56 inbound and 81 outbound, as shown in Table 3.

TABLE 2

ESTIMATED AM PEAK HOUR PROJECT TRIP ENDS

Land Use	ITE LUC	Size	AM Peak Hour Trip Ends (1)			Passerby Capture (2)			New AM Peak Hour Trip Ends		
			In	Out	Total	In	Out	Total	In	Out	Total
Circle K	945	3,963 SF	112	112	224	85	85	170	27	27	54
Medical Office	720	15,000 SF	35	9	44	0	0	0	35	9	44
Mini-Warehouse	151	150,000 SF	8	6	14	0	0	0	8	6	14
		Total	155	127	282	85	85	170	70	42	112

(1) Source: ITE Trip Generation Manual, 11th Edition, 2021.

(2) Source: ITE Trip Generation Manual, 11th Edition, 2021.

- Passerby Trips: 76%
  In: 112 x 0.76 = 85
  Out: 112 x 0.76 = 85
- The passerby capture should not exceed 10% of the adjacent street traffic.
  2,461 (a) x 0.10 = 246 > 170
  (a) AM peak hour background traffic at the intersection of Dundee Road and Buckeye Loop Road.

TABLE 3

ESTIMATED PM PEAK HOUR PROJECT TRIP ENDS

Land Use	ITE LUC	Size	PM Peak Hour Trip Ends (1)			Passerby Capture (2)			New PM Peak Hour Trip Ends		
			In	Out	Total	In	Out	Total	In	Out	Total
Circle K	945	12 FP	111	110	221	83	82	165	28	28	56
Medical Office	720	15,000 SF	17	41	58	0	0	0	17	41	58
Mini-Warehouse	151	150,000 SF	11	12	23	0	0	0	11	12	23
		Total	139	163	302	83	82	165	56	81	137

(1) Source: ITE Trip Generation Manual, 11th Edition, 2021.

(2) Source: ITE Trip Generation Manual, 11th Edition, 2021.

- Passerby Trips: 75%
  In: 111 x 0.75 = 83
  Out: 110 x 0.75 = 82
- The passerby capture should not exceed 10% of the adjacent street traffic.
  2,539 (a) x 0.10 = 254 > 165
  (a) Existing PM peak hour background traffic at the intersection of Dundee Rd and Buckeye Loop Road.

PROJECT TRIP DISTRIBUTION

The following distribution for the project traffic was estimated based on existing development and travel patterns in the vicinity of the project:

- 20% to and from the north (via Buckeye Loop Road)
- 40% to and from the west (via Dundee Road)
- 40% to and from the east (via Dundee Road)

Table 4 shows the distribution of the new AM and PM peak hour project trip ends. Figure 2 illustrates the AM peak hour project trip ends and Figure 3 illustrates the PM peak hour project trip ends on the adjacent roadways.

ADJACENT ROADWAYS

As stated previously, the project is located north of Dundee Road and west of Buckeye Loop Road in Winter Haven, Florida. Dundee Road is a four (4) lane divided roadway east of Buckeye Loop Road and two (2) lane undivided roadway that transition to three (3) lane roadway west of Buckeye Loop Road. Buckeye Loop Road is a two (2) lane undivided roadway. According to the FDOT Work Program, there are no capacity adding improvements budgeted for construction in the vicinity of the project.

BACKGROUND TRAFFIC

It is anticipated the buildout of the project will be 2026. The 2026 background traffic utilized in this report was calculated as follows:

TABLE 4

ESTIMATED PEAK HOUR PROJECT TRAFFIC DISTRIBUTION

Time	North (20%)		West (40%)		East (40%)		Total	
Period	In	Out	In	Out	In	Out	In	Out
AM	14	8	28	17	28	17	70	42
PM	12	17	22	32	22	32	56	81

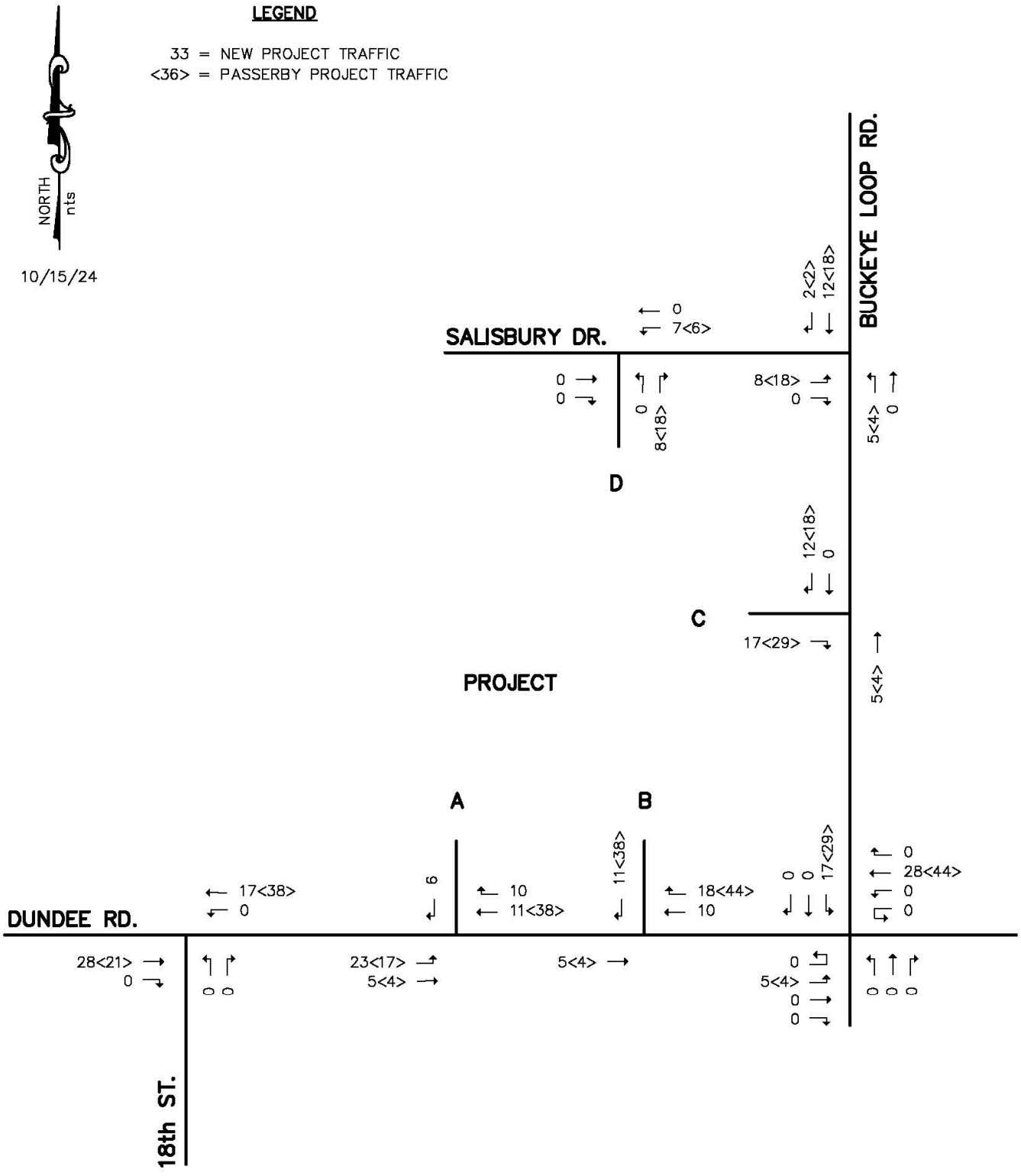


FIGURE 2
AM PEAK HOUR
PROJECT TRAFFIC

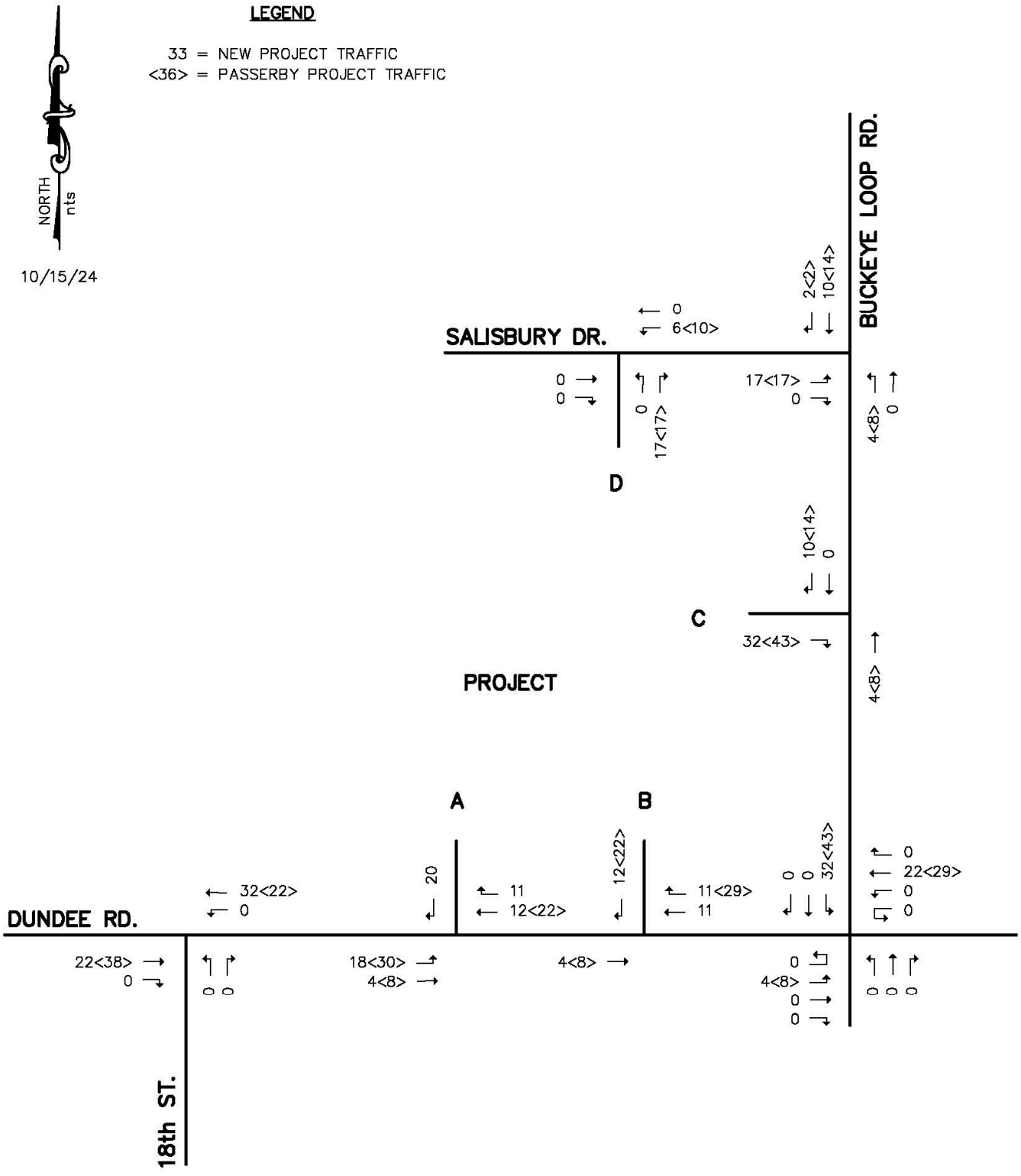


FIGURE 3
PM PEAK HOUR
PROJECT TRAFFIC

1. AM (7:00 to 9:00) and PM (4:00 to 6:00) peak hour turning movement counts were conducted at the following intersections:

    - Dundee Road and Buckeye Loop Road
    - Dundee Road and 18th Street
    - Buckeye Loop Road and Salisbury Drive

Figure 4 illustrates the existing traffic.

2. The counts were adjusted to peak season based on the 2023 FDOT Peak Season Adjustment Factors for Polk County.

Figure 5 illustrates the peak season traffic.

3. The peak season volumes were factored to the buildout year of 2026 utilizing 2.0% per year growth rate.

4. The project traffic from the Dundee Road Medical Office was added to the 2026 background traffic in #3 above.

Figure 6 illustrates the 2026 background traffic. Figures 7 and 8 illustrate the 2026 background plus project traffic for the AM and PM peak hours, respectively.

INTERSECTION ANALYSIS

A capacity analysis was conducted for the AM and PM peak hours at the following intersections:

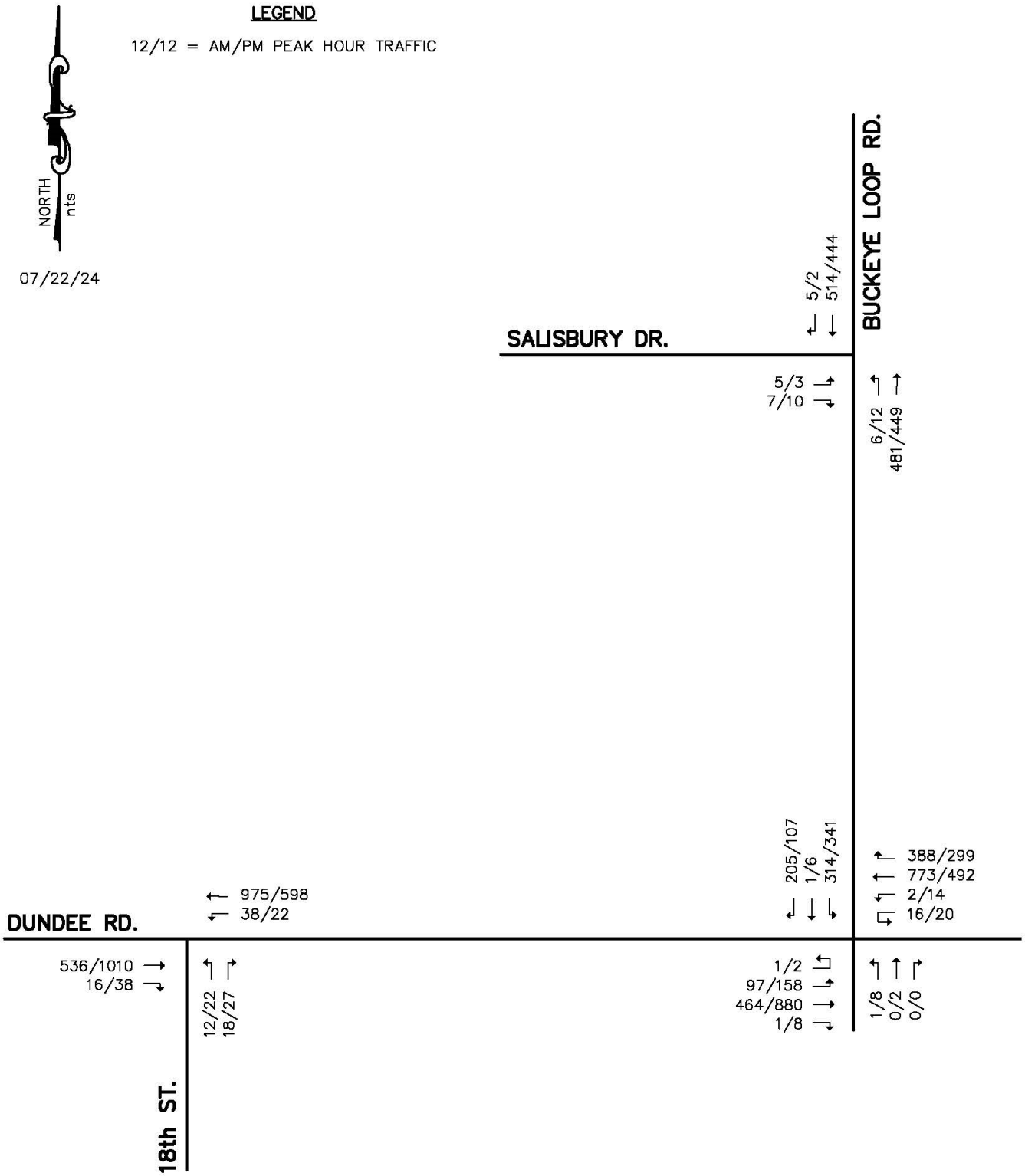


FIGURE 4
2024 EXISTING TRAFFIC

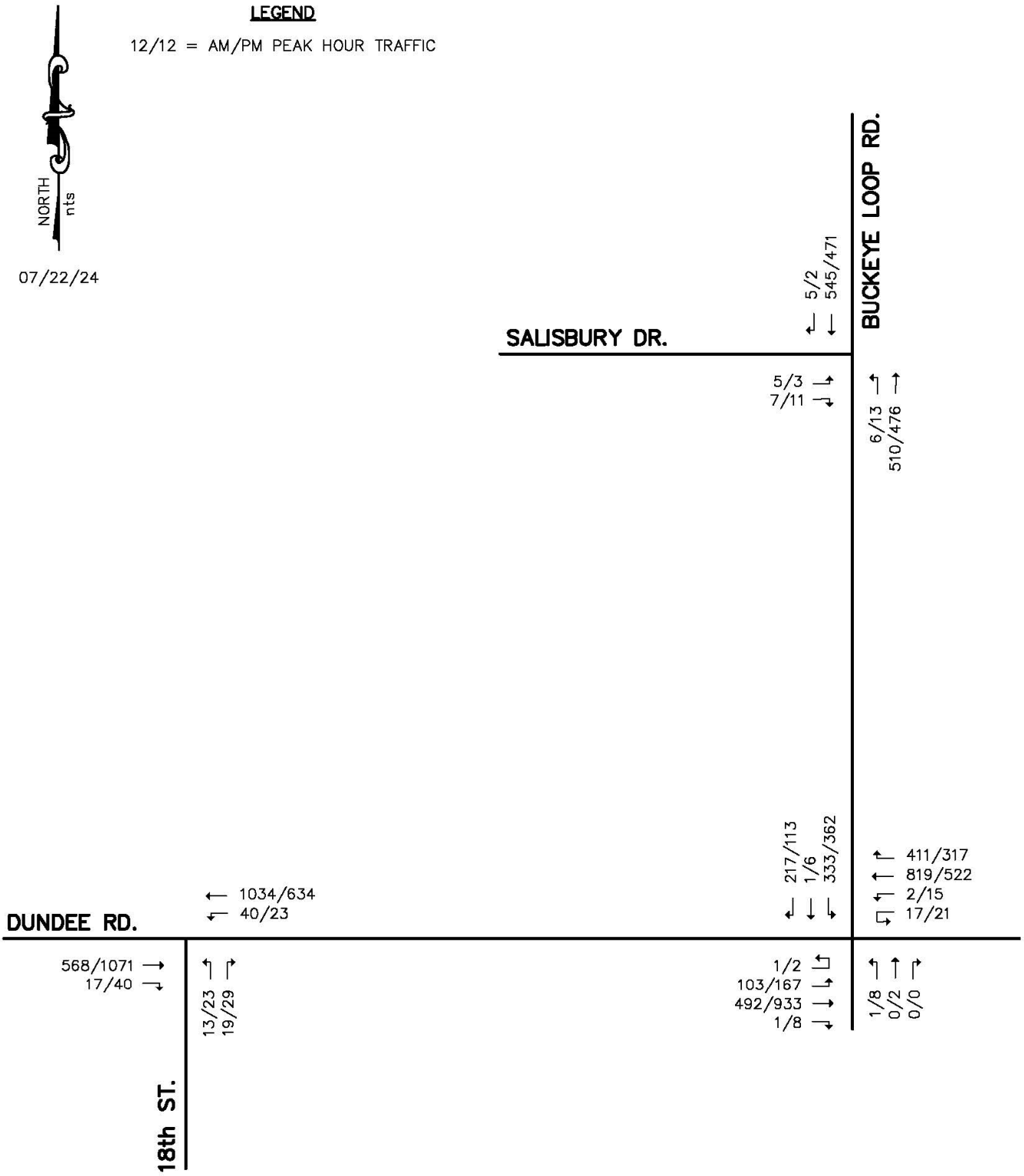


FIGURE 5
2024 PEAK
SEASON TRAFFIC

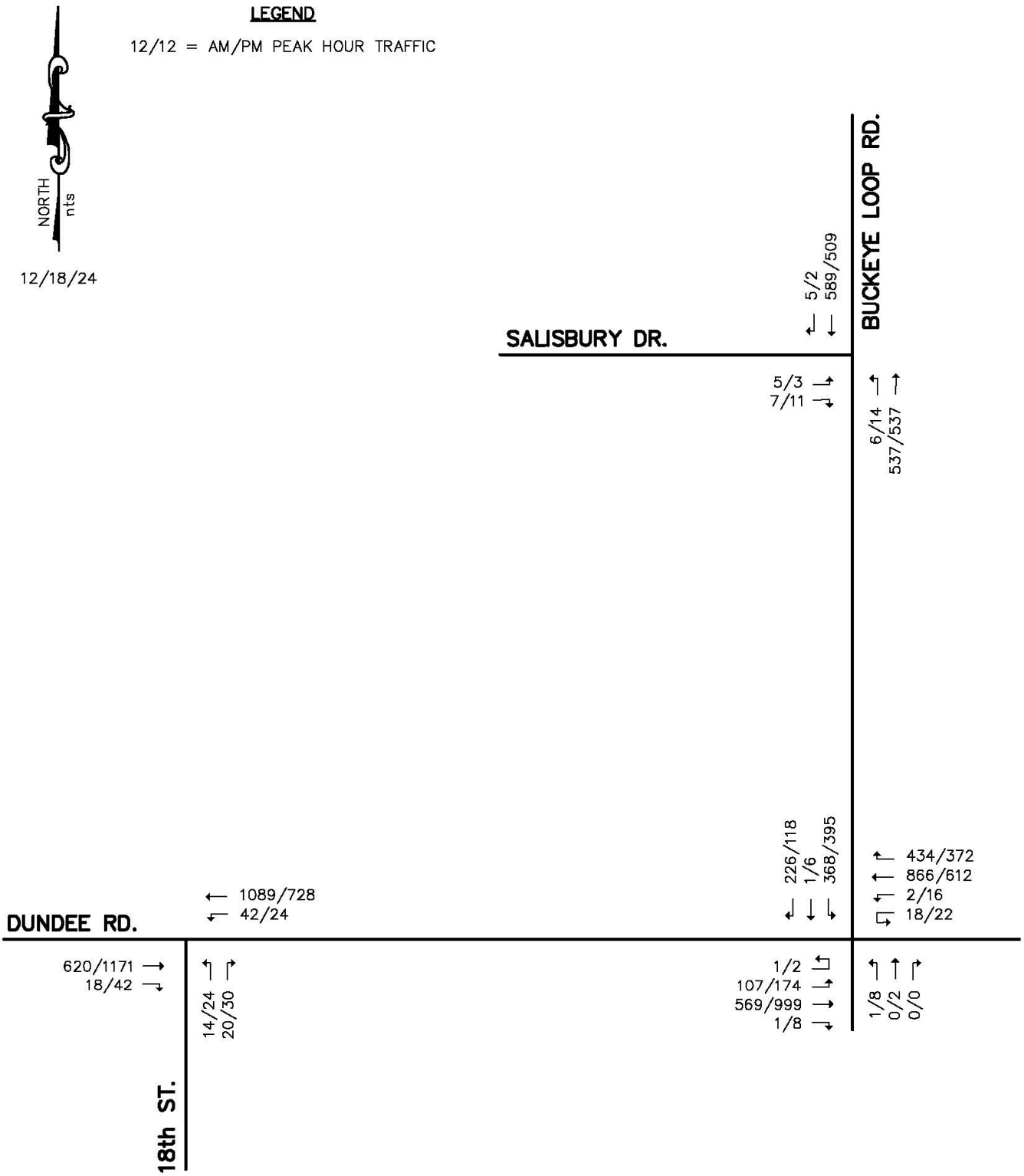


FIGURE 6
2026 BACKGROUND TRAFFIC

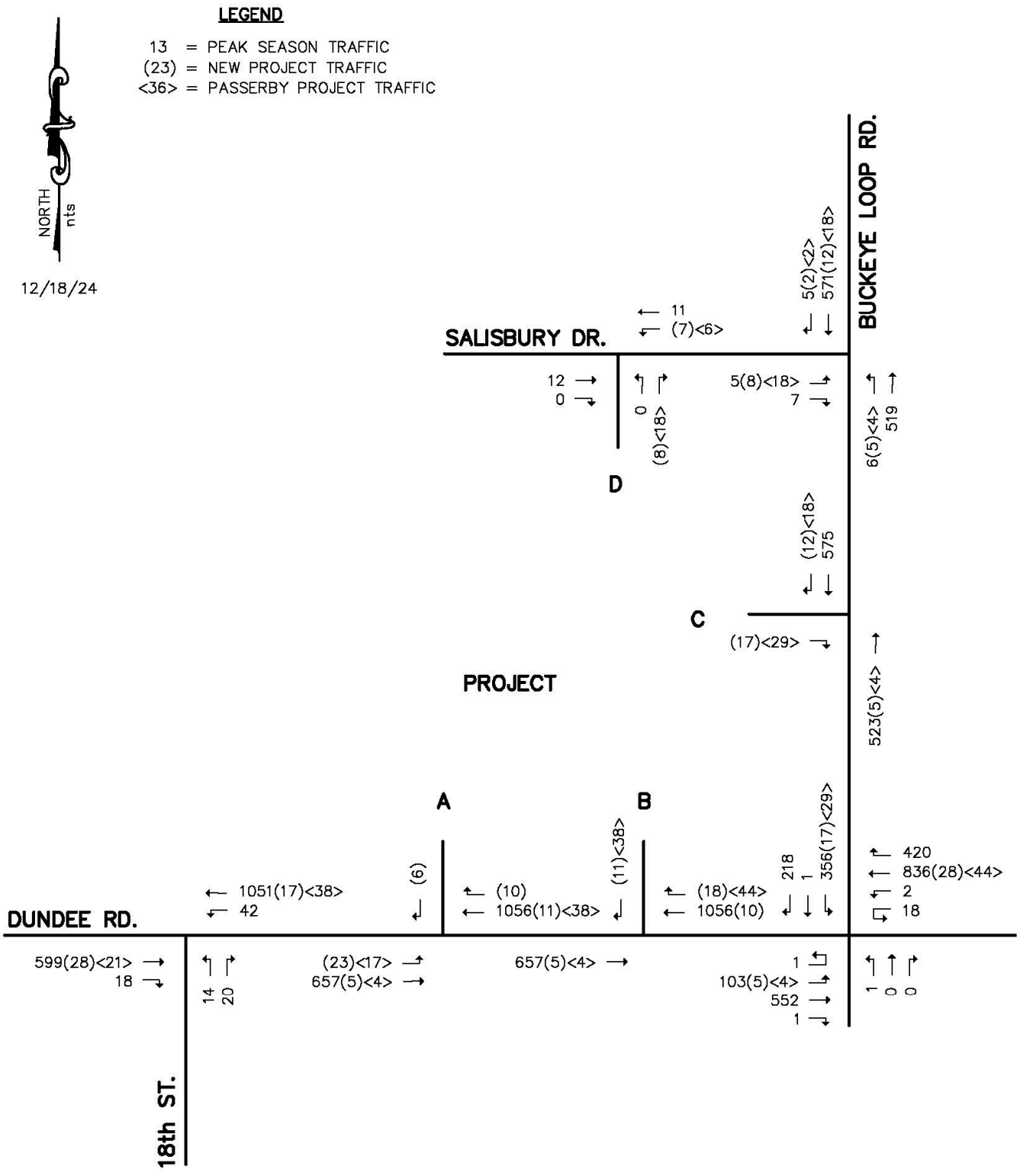


FIGURE 7
AM PEAK HOUR
2026 BACKGROUND PLUS
PROJECT TRAFFIC

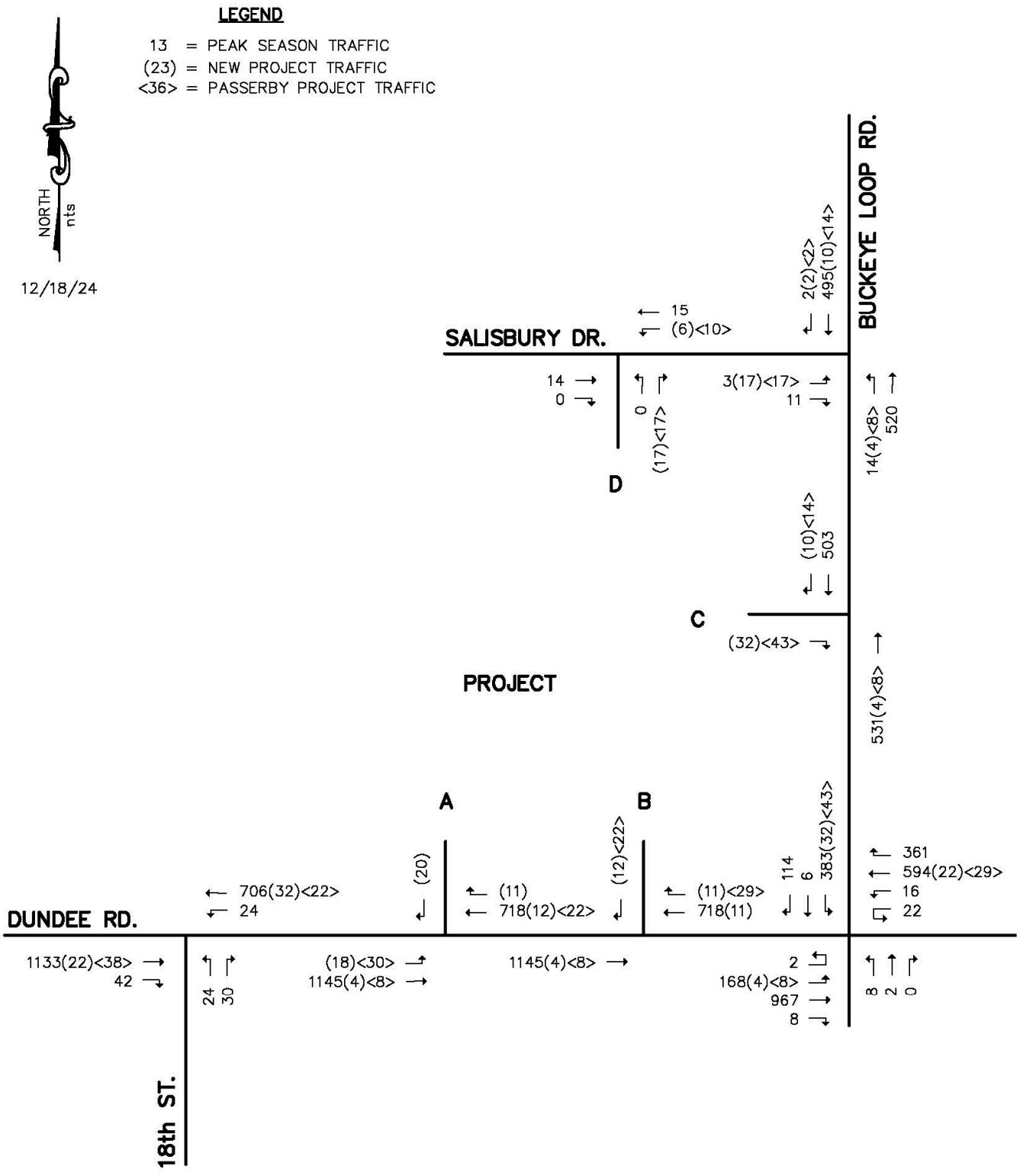


FIGURE 8
PM PEAK HOUR
2026 BACKGROUND PLUS
PROJECT TRAFFIC

- Dundee Road (SR 542) and Buckeye Loop Road
- Buckeye Loop Road and Salisbury Drive
- Dundee Road (SR 542) and Project Accesses
- Buckeye Loop Road and Project Access

The signalized intersection analysis was based on the Synchro software and the unsignalized intersection analysis was based on the Highway Capacity Software (HCS). Tables 5, 6 and 7 summarize the results of the analyses and the results are described in the following paragraphs:

Dundee Road and Buckeye Loop Road

This intersection is currently signalized. Signalized intersection analysis indicates that all movements within this intersection should operate within an acceptable delay and V/C ratio except for the westbound through, the southbound left and through movements during the AM and PM peak hours with the background traffic and the background plus project traffic, as shown in Tables 5 and 6. As shown in the tables, the proposed project would have minimal impact to these movements.

Buckeye Loop Road and Salisbury Drive

Salisbury Drive has full access to Buckeye Loop Road. Based on the unsignalized intersection analysis, all movements within the intersection should operate within the acceptable delay and V/C ratio during the AM and PM peak hours with the background plus project traffic, as shown in Table 7.

TABLE 5

ESTIMATED INTERSECTION ANALYSIS
(SIGNALIZED)

		AM Peak Hour Peak Season Traffic									AM Peak Hour 2026 Background Traffic									AM Peak Hour 2026 Background Plus Project Traffic								
		Left			Through			Right			Left			Through			Right			Left			Through			Right		
Intersection	Movement	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C
Dundee Rd and	EB	15.4	B	0.43	9.5	A	0.23	9.5	A	0.23	21.0	C	0.47	9.7	A	0.27	9.7	A	0.27	22.0	C	0.49	9.7	A	0.26	9.7	A	0.26
Buckeye Loop Rd	WB	6.8	A	0.04	36.4	D	0.90	6.2	A	0.45	6.8	A	0.04	44.0	D	0.95	6.9	A	0.48	6.9	A	0.04	54.5	D	1.00	7.3	A	0.47
	NB	48.0	D	0.01	48.0	D	0.01	48.0	D	0.01	48.0	D	0.01	48.0	D	0.01	48.0	D	0.01	48.0	D	0.01	48.0	D	0.01	48.0	D	0.01
	SB	267.7	F	1.47	267.7	F	1.47	11.1	B	0.55	333.7	F	1.63	333.7	F	1.63	11.2	B	0.56	399.6	F	1.79	399.6	F	1.79	14.0	B	0.57

TABLE 6

ESTIMATED INTERSECTION ANALYSIS
(SIGNALIZED)

		PM Peak Hour Peak Season Traffic									PM Peak Hour 2026 Background Traffic									PM Peak Hour 2026 Background Plus Project Traffic								
		Left			Through			Right			Left			Through			Right			Left			Through			Right		
Intersection	Movement	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C
Dundee Rd and	EB	11.1	B	0.48	15.9	B	0.56	15.9	B	0.56	16.4	B	0.56	15.4	B	0.56	15.4	B	0.56	19.9	B	0.59	14.6	B	0.53	14.6	B	0.53
Buckeye Loop Rd	WB	8.3	A	0.13	31.6	C	0.81	3.6	A	0.43	8.1	A	0.15	34.4	C	0.85	4.3	A	0.47	7.8	A	0.14	35.3	D	0.87	4.7	A	0.45
	NB	43.8	D	0.07	43.8	D	0.07	43.8	D	0.07	46.4	D	0.07	46.4	D	0.07	46.4	D	0.07	47.7	D	0.08	47.7	D	0.08	47.7	D	0.08
	SB	175.3	F	1.27	175.3	F	1.27	4.8	A	0.30	275.8	F	1.51	275.8	F	1.51	5.7	A	0.33	408.2	F	1.82	408.2	F	1.82	5.2	A	0.32

TABLE 7

ESTIMATED INTERSECTION ANALYSIS
(UNSIGNALIZED)

Intersection	Movement	AM Peak Hour 2026 Background Plus Project Traffic									PM Peak Hour 2026 Background Plus Project Traffic								
		Left			Through			Right			Left			Through			Right		
		Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C
Buckeye Rd and Salisbury Dr	EB	28.6	D	0.18	-	-	-	12.9	B	0.02	25.2	D	0.18	-	-	-	11.8	B	0.02
	NB	9.0	A	0.02	*	*	*	-	-	-	8.6	A	0.03	*	*	*	-	-	-
Dundee Rd and Project Access A	EB	11.6	B	0.07	*	*	*	-	-	-	9.8	A	0.07	*	*	*	-	-	-
	SB	-	-	-	-	-	-	21.0	C	0.03	-	-	-	-	-	-	15.2	C	0.06
Dundee Rd and Project Access B	SB	-	-	-	-	-	-	23.5	C	0.21	-	-	-	-	-	-	15.2	C	0.10
Buckeye Loop Road and Project Access C	EB	-	-	-	-	-	-	13.1	B	0.10	-	-	-	-	-	-	12.9	B	0.15

* Free flow movement, therefore the delay and V/C were not calculated.

Dundee Road and Project Access A

This driveway is proposed to have left-in/right-in/right-out access to Dundee Road. Based on the unsignalized intersection analysis, all movements within the intersection should operate within the acceptable delay and V/C ratio during the AM and PM peak hours with the background plus project traffic, as shown in Table 7.

Dundee Road and Project Access B

This driveway is proposed to have right-in/right-out access to Dundee Road. Based on the unsignalized intersection analysis, all movements within the intersection should operate at an acceptable delay and V/C ratio during the AM and PM peak hours with the background plus project traffic, as shown in Table 7.

Buckeye Loop Road and Project Access C

This driveway is proposed to have right-in/right-out access to Buckeye Loop Road. Based on the unsignalized intersection analysis, all movements within the intersection should operate at an acceptable delay and V/C ratio during the AM and PM peak hours with the background plus project traffic, as shown in Table 7.

ACCESS RECOMMENDATIONS

The recommendations included in this report are based on a field review of the site, the proposed site plan and the Access Management Analysis. The methodology utilized to determine the need for a right and/or left turn lanes along Dundee Road was based on the Multi Modal Access Management Guidebook, 2023. The methodology utilized to determine the need for a right and/or left turn lanes on Buckeye Loop Road was based

Table 8

ACCESS RECOMMENDATIONS

Intersection	Movement	Volume (1)	Turn Lane Warranted? (2)	Queue Storage (3)	Deceleration Length (4)	Total Length	Existing Length	Recommended Length
Dundee Rd and Buckeye Loop Rd	EBL	113/182	Existing	150'	145'	295'	320'	320'
	SBL	402/458	Existing	250'	145'	395'	230'	340'
Buckeye Loop Rd and Salisbury Dr	NBL	15/26	Existing	50'	145'	195'	230'	195'
Dundee Rd and Project Access A	EBL	40/48	Yes	50'	145'	195'	-	195'
	WBR	10/11	No	-	-	-	-	-
Dundee Rd and Project Access B	WBR	62/40	Yes	0'	145'	145'	-	145'
Buckeye Loop Rd and Project Access C	SBR	30/24	Yes	0	155'	155'	-	155'

(1) See Figures 7 and 8, Background plus Project Traffic, of this report.
(2) Based on Multi Modal Access Management Guidebook and Polk County LDC.
(3) Queue Length:
Dundee Rd and Buckeye Loop Rd
95th percentile per SIMTRAFFIC
Buckeye Loop Rd and Salisbury Dr
NBL: 26/30 x 25 = 22' Use 50'
Dundee Rd and Project Access A
95th percentile Queue
(4) Based on FDOT Exhibit 212-1 and the following design speeds:
- Dundee Rd - 35 MPH
- Buckeye Loop Rd - 40 MPH

on the Polk County LDC. The access recommendations are summarized in Table 8 and described in the following paragraphs:

Dundee Road and Buckeye Loop Road

This intersection is currently signalized. Based on the projected volumes, the existing 320 foot eastbound left turn lane should be sufficient to accommodate the background plus project traffic, as shown in Table 8. The existing 230 foot southbound left turn lane is recommended to be extended to 340 feet.

Buckeye Loop Road and Salisbury Drive

Salisbury Drive has full access to Buckeye Loop Road. There is an existing 230 foot northbound left turn lane. Based on the projected volumes, the existing northbound left turn lane is recommended to be reduced to 195 feet to accommodate the southbound left turn lane at Dundee Road.

Dundee Road and Project Access A

This driveway is proposed to have left-in/right-in/right-out access to Dundee Road. Based on the projected volumes, an eastbound left turn lane is warranted and a westbound right turn lane is not warranted, as shown in Table 8. It is recommended a 195 foot eastbound left turn lane be provided.

Dundee Road and Project Access B

This project driveway is proposed to have right-in/right-out access to Dundee Road. Based on the projected volumes, a westbound right turn lane is warranted, as shown in Table 8. Therefore, a 145 foot westbound right turn lane is recommended.

Buckeye Loop Road and Project Access C

This driveway is proposed to have right-in/right-out access to Buckeye Loop Road. Based on the projected volumes, a southbound right turn lane is warranted, as shown in Table 8. Therefore, a 155 foot southbound right turn is recommended.

PEDESTRIAN/BICYCLE/TRANSIT ANALYSIS

The purpose of this section is to provide an analysis of the pedestrian, bicycle, and transit for the proposed project.

The FDOT context classification for Dundee Road in the vicinity of the project C2. As indicated previously in the report, the project is proposed to include the following land uses:

- Circle K – 3,963 Square Feet with 12 Fueling Positions
- Medical Office – 15,000 Square Feet
- Mini-Warehouse – 150,000 Square Feet

Based on data contained in the ITE – Trip Generation Manual, 11th Edition, there is no data for the AM peak hour, it is estimated to be 4 pedestrian/bike/transit trips during the PM peak hour, as shown in Table 9. Therefore, based on Table 10 of the FDOT Multimodal Transportation Site Impact Handbook, the site would fall within a Level 1 analysis.

Based on the existing and proposed network, the following provides an assessment of the pedestrian, bike, and transit to serve the project:

TABLE 9

WALK + BIKE + TRANSIT
TRIP GENERATION (1)

Land Use	ITE LUC	Size	AM Peak Hour Trip Ends			PM Peak Hour Trip Ends		
			In	Out	Total	In	Out	Total
Circle K	945	12 FP	-	-	-	2	2	4
Medical Office	720	15,000 SF (2)	-	-	-	-	-	-
Mini-Warehouse	151	150,000 SF (2)	-	-	-	-	-	-
		Total	-	-	-	2	2	4

(1) Source: ITE Trip Generation Manual, 11th Edition, 2021.
(2) No data available for Medical Office or Mini-Warehouse.

There are existing sidewalks on both sides of Dundee Road. In addition, there is an existing sidewalk on the west side of Buckeye Loop Road that terminates approximately 180 feet north of Dundee Road. The sidewalk is proposed to be extended to Dundee Road in conjunction with the subject project.

1. There are bike lanes within Dundee Road.

2. The developer proposed to provide internal pedestrian circulation within parcels. These will also include connections to Dundee Road and Buckeye Loop Road.

At the present time there is no transit service in the vicinity of the project.

A copy of the latest Polk County Area Transit Map is included in the Appendix of the report.

SAFETY CONSIDERATIONS

As indicated previously in the report, the access to serve the project is proposed to be located on Dundee Road, Buckeye Loop Road and Salsbury Drive. Based on the existing and proposed geometry, there are no safety concerns with the proposed accesses.

Crash Data

The crash history from 2019 to 2023 at the intersection of Dundee Road and Buckeye Loop Road was evaluated. Based on a review of the data there were a total of 42 crashes with no fatality occurred from 2019 to 2023. Table 10 summarizes the crash data. The crash history is as follows:

TABLE 10
DUNDEE ROAD & BUCKEYE LOOP ROAD
CRASH HISTORY FROM 2019 TO 2023

	Total	2019	2020	2021	2022	2023
Fatal Crashes	0	0	0	0	0	0
Serious Injury Crashes	0	0	0	0	0	0
Injury Crashes	9	0	3	3	2	1
Property Damage Only Crashes	33	5	3	7	11	7
Crash Type						
Angle	7	1	2	3	1	0
Rear End	21	3	4	4	7	3
Head On	2	0	0	1	1	0
Sideswipe	8	1	0	1	2	4
Other	4	0	0	1	2	1
Total of Crash Type	42	5	6	10	13	8

- 2019 – 5 crashes
- 2020 - 6 crashes
- 2021 – 10 crashes
- 2022 – 13 crashes
- 2023 – 8 crashes

MITIGATION

The mitigation for the improvement of the project at the intersection of Dundee Road and Buckeye Road is to revised the southbound approach to an exclusive left turn lane, a shared left/through and an exclusive right lane.

The above improvements would improve the intersection overall delay and the V/C ratio for the southbound approach during the AM and PM peak hours. Table 11 summarizes the overall intersection delay and level of service during the AM and PM peak hours. Tables 12 and 13 summarize the mitigation alternatives for the southbound approach. As shown in Tables 12 and 13, the mitigation alternatives have reduced the V/C ratio to less than 1.0 for the southbound movements during the AM and PM peak hours.

Based on the projected volumes and the mitigation for the improvement, the existing 320 foot eastbound left turn lane should be sufficient to accommodate the background plus project traffic, as shown in Table 14. The existing 230 foot southbound left turn lane is recommended to be extended to 340 feet.

TABLE 11

ESTIMATED INTERSECTION ANALYSIS
MITIGATION ALTERNATIVES
(SIGNALIZED)

Intersection	Time Period	Peak Season Traffic Intersection Delay	Peak Season Traffic Intersection LOS	2026 Background Traffic Intersection Delay	2026 Background Traffic Intersection LOS	2026 Background Plus Project Traffic Intersection Delay	2026 Background Plus Project Traffic Intersection LOS	Mitigation 2026 Background Plus Project Traffic Intersection Delay	Mitigation 2026 Background Plus Project Traffic Intersection LOS
Dundee Rd and	AM	54.5	D	67.3	E	85.3	F	30.9	C
Buckeye Loop Rd	PM	40.6	D	56.0	E	83.6	F	26.2	C

TABLE 12

ESTIMATED INTERSECTION ANALYSIS
MITIGATION ALTERNATIVES
(SIGNALIZED)

		AM Peak Hour 2026 Background Traffic									AM Peak Hour 2026 Background Plus Project Traffic									AM Peak Hour 2026 Background Plus Project Traffic_With Mitigation								
		Left			Through			Right			Left			Through			Right			Left			Through			Right		
Intersection	Movement	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C
Dundee Rd and	EB	21.0	C	0.47	9.7	A	0.27	9.7	A	0.27	22.0	C	0.49	9.7	A	0.26	9.7	A	0.26	39.0	D	0.68	10.5	B	0.27	10.5	B	0.27
Buckeye Loop Rd	WB	6.8	A	0.04	44.0	D	0.95	6.9	A	0.48	6.9	A	0.04	54.5	D	1.00	7.3	A	0.47	6.9	A	0.04	41.2	D	0.95	5.8	A	0.45
	NB	48.0	D	0.01	48.0	D	0.01	48.0	D	0.01	48.0	D	0.01	48.0	D	0.01	48.0	D	0.01	48.0	D	0.01	48.0	D	0.01	48.0	D	0.01
	SB	333.7	F	1.63	333.7	F	1.63	11.2	B	0.56	399.6	F	1.79	399.6	F	1.79	14.0	B	0.57	72.1	E	0.85	72.1	E	0.85	10.2	B	0.52

TABLE 13

ESTIMATED INTERSECTION ANALYSIS
MITIGATION ALTERNATIVES
(SIGNALIZED)

		PM Peak Hour 2026 Background Traffic									PM Peak Hour 2026 Background Plus Project Traffic									PM Peak Hour 2026 Background Plus Project Traffic_With Mitigation								
		Left			Through			Right			Left			Through			Right			Left			Through			Right		
Intersection	Movement	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C
Dundee Rd and	EB	16.4	B	0.56	15.4	B	0.56	15.4	B	0.56	19.9	B	0.59	14.6	B	0.53	14.6	B	0.53	33.6	C	0.76	17.8	B	0.57	17.8	B	0.57
Buckeye Loop Rd	WB	8.1	A	0.15	34.4	C	0.85	4.3	A	0.47	7.8	A	0.14	35.3	D	0.87	4.7	A	0.45	9.2	A	0.15	34.2	C	0.85	4.6	A	0.45
	NB	46.4	D	0.07	46.4	D	0.07	46.4	D	0.07	47.7	D	0.08	47.7	D	0.08	47.7	D	0.08	47.9	D	0.08	47.9	D	0.08	47.9	D	0.08
	SB	275.8	F	1.51	275.8	F	1.51	5.7	A	0.33	408.2	F	1.82	408.2	F	1.82	5.2	A	0.32	53.7	D	0.77	52.7	D	0.75	4.3	A	0.28

Table 14

ACCESS RECOMMENDATIONS
MITIGATION ALTERNATIVES

Intersection	Movement	Volume (1)	Turn Lane Warranted? (2)	Queue Storage (3)	Deceleration Length (4)	Total Length	Existing Length	Recommended Length
Dundee Rd and	EBL	113/182	Existing	125'	145'	270'	320'	320'
Buckeye Loop Rd	SBL	402/458	Existing	250'	145'	395'	230'	340'

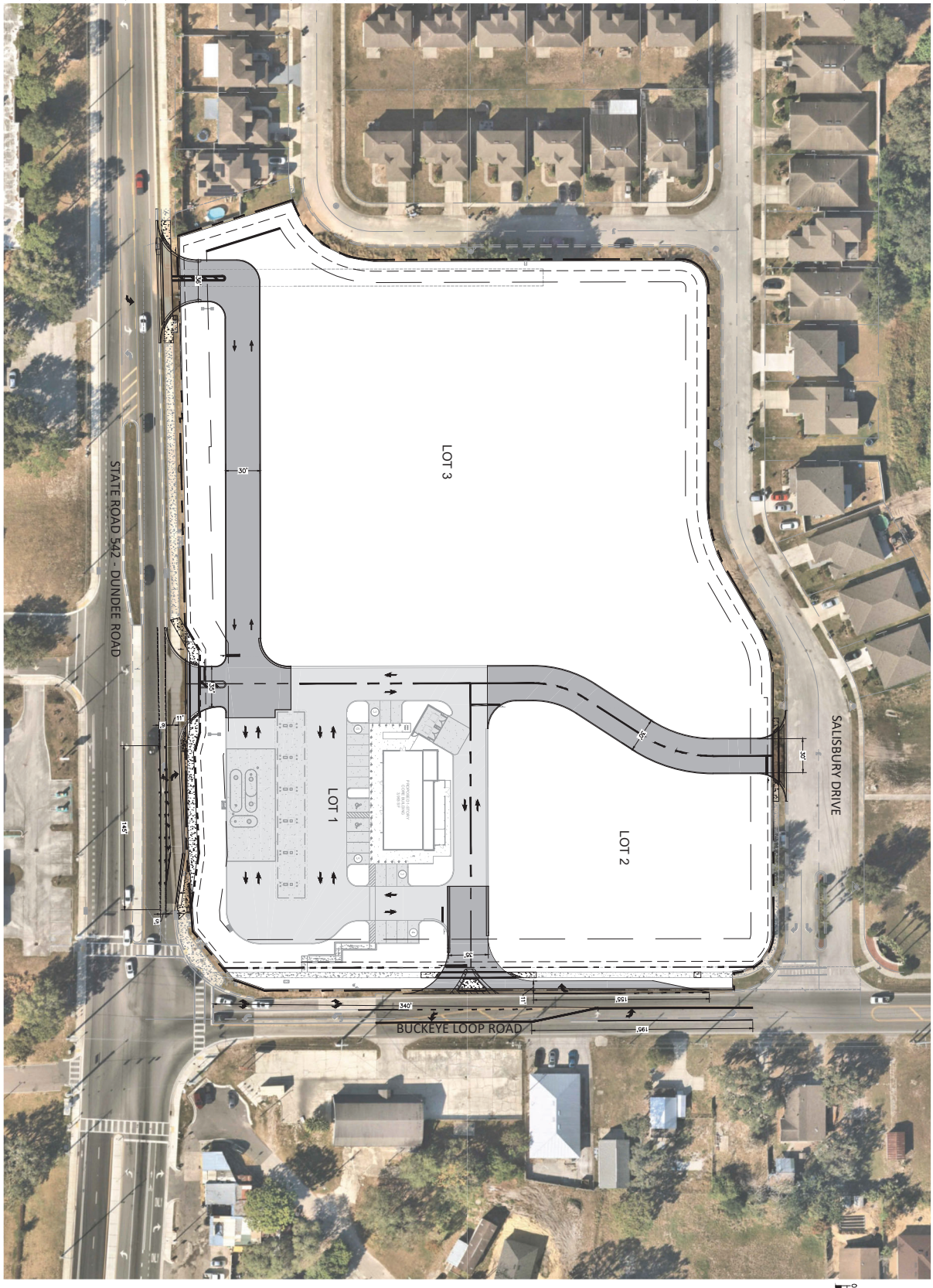
(1) See Figures 7 and 8, Background plus Project Traffic, of this report.
(2) Based on Multi Modal Access Management Guidebook and Polk County LDC.
(3) Queue Length:
Dundee Rd and Buckeye Loop Rd
95th percentile per SIMTRAFFIC
(4) Based on FDOT Exhibit 212-1 and the following design speeds:
- Dundee Rd - 35 MPH
- Buckeye Loop Rd - 40 MPH

CONCLUSION

The turn lanes required for the project accesses on Dundee Road and Buckeye Loop Road are to be provided by the developer in conjunction with the construction of each access. Based on a review of the historical crash data there were a total of 42 crashes with no fatality occurred from 2019 to 2023. In addition, based on the existing and proposed geometry, there are no safety concerns with the proposed accesses. A mitigation alternative at the intersection of Dundee Road and Buckeye Road includes revising the southbound approach to an exclusive left turn lane, a shared left/through and an exclusive right lane. It is anticipated the mitigation would reduce the V/C ratio to less than 1.0 for the southbound movements during the AM and PM peak hours.

APPENDIX

SITE PLAN



SHEET NUMBER C4.0	MASTER INFRASTRUCTURE - DUNDEE & BUCKEYE LOOP WINTER HAVEN FL	OVERALL SITE PLAN	KHA PROJECT 249343005 DATE 10/24/2024 SCALE AS SHOWN DESIGNED BY KEH DRAWN BY KEH CHECKED BY JCS	LICENSED PROFESSIONAL JAROD C STUBBS, PE FL LICENSE NUMBER 89387 DATE: 10/24/2024	Kimley»Horn © 2024 KIMLEY-HORN AND ASSOCIATES, INC. 1530 CORNERSTONE BLVD., SUITE 200, DAYTONA BEACH, FL 32117 PHONE: 386-271-0282 WWW.KIMLEY-HORN.COM REGISTRY No. 35106	No.	REVISIONS / DATE / BY

ITE TRIP GENERATION MANUAL, 11th EDITION

PERIOD SETTING

Analysis Name :	New Analysis		
Project Name :	Circle K - Dundee - Buckeye Loop	**No :**	
Date:	6/20/2024	**City:**	
State/Province:		**Zip/Postal Code:**	
Country:		**Client Name:**	
Analyst's Name:		**Edition:**	Trip Generation Manual, 11th Ed

Land Use	Independent Variable	Size	Time Period	Method	Entry	Exit	Total
945 - Convenience Store/Gas Station - GFA (2-4k) (General Urban/Suburban)	Vehicle Fueling Positions	12	Weekday	Best Fit (LIN) T = 158.28 (X)+850.23	1375 50%	1375 50%	2750
945 - Convenience Store/Gas Station - 1 - VFP (9-15) (General Urban/Suburban)	1000 Sq. Ft. GFA	3.96	Weekday	Average 700.43	1387 50%	1387 50%	2774
720 - Medical-Dental Office Building - Stand-Alone (General Urban/Suburban)	1000 Sq. Ft. GFA	15	Weekday	Average 36	270 50%	270 50%	540
151 - Mini-Warehouse (General Urban/Suburban)	1000 Sq. Ft. GFA	150(0)	Weekday	Average 1.45	109 50%	109 50%	218

(0) indicates size out of range.

TRAFFIC REDUCTIONS

Land Use	Entry Reduction	Adjusted Entry	Exit Reduction	Adjusted Exit
945 - Convenience Store/Gas Station	0 %	1375	0 %	1375
945 - Convenience Store/Gas Station - 1	0 %	1387	0 %	1387
720 - Medical-Dental Office Building	0 %	270	0 %	270
151 - Mini-Warehouse	0 %	109	0 %	109

INTERNAL TRIPS

945 - Convenience Store/Gas Station

Exit 1375 Demand Exit: 0 % (0)

Entry 1375 Demand Entry: 0 % (0)

Balanced: 0

Balanced: 0

945 - Convenience Store/Gas Station - 1

Demand Entry: 0 % (0) **Entry** 1387

Demand Exit: 0 % (0) **Exit** 1387

945 - Convenience Store/Gas Station — **720 - Medical-Dental Office Building**

Exit	1375	Demand Exit: 0 % (0)	Balanced: 0	Demand Entry: 0 % (0)	**Entry**	270
Entry	1375	Demand Entry: 0 % (0)	Balanced: 0	Demand Exit: 0 % (0)	**Exit**	270

945 - Convenience Store/Gas Station — **151 - Mini-Warehouse**

Exit	1375	Demand Exit: 0 % (0)	Balanced: 0	Demand Entry: 0 % (0)	**Entry**	109
Entry	1375	Demand Entry: 0 % (0)	Balanced: 0	Demand Exit: 0 % (0)	**Exit**	109

945 - Convenience Store/Gas Station - 1 — **720 - Medical-Dental Office Building**

Exit	1387	Demand Exit: 0 % (0)	Balanced: 0	Demand Entry: 0 % (0)	**Entry**	270
Entry	1387	Demand Entry: 0 % (0)	Balanced: 0	Demand Exit: 0 % (0)	**Exit**	270

945 - Convenience Store/Gas Station - 1 — **151 - Mini-Warehouse**

Exit	1387	Demand Exit: 0 % (0)	Balanced: 0	Demand Entry: 0 % (0)	**Entry**	109
Entry	1387	Demand Entry: 0 % (0)	Balanced: 0	Demand Exit: 0 % (0)	**Exit**	109

720 - Medical-Dental Office Building — **151 - Mini-Warehouse**

Exit	270	Demand Exit: 0 % (0)	Balanced: 0	Demand Entry: 0 % (0)	**Entry**	109
Entry	270	Demand Entry: 0 % (0)	Balanced: 0	Demand Exit: 0 % (0)	**Exit**	109

945 - Convenience Store/Gas Station

		Internal Trips				
	Total Trips	**945 - Convenience Store/Gas Station - 1**	**720 - Medical-Dental Office Building**	**151 - Mini-Warehouse**	**Total**	**External Trips**
Entry	1375 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1375 (100%)
Exit	1375 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1375 (100%)
Total	2750 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2750 (100%)

945 - Convenience Store/Gas Station - 1

		Internal Trips				
	Total Trips	**945 - Convenience Store/Gas Station**	**720 - Medical-Dental Office Building**	**151 - Mini-Warehouse**	**Total**	**External Trips**
Entry	1387 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1387 (100%)
Exit	1387 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1387 (100%)
Total	2774 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2774 (100%)

720 - Medical-Dental Office Building

		Internal Trips				
	Total Trips	**945 - Convenience Store/Gas Station**	**945 - Convenience Store/Gas Station - 1**	**151 - Mini-Warehouse**	**Total**	**External Trips**
Entry	270 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	270 (100%)

Exit	270 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	270 (100%)
Total	540 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	540 (100%)

151 - Mini-Warehouse

		Internal Trips				
	Total Trips	**945 - Convenience Store/Gas Station**	**945 - Convenience Store/Gas Station - 1**	**720 - Medical-Dental Office Building**	**Total**	**External Trips**
Entry	109 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	109 (100%)
Exit	109 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	109 (100%)
Total	218 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	218 (100%)

EXTERNAL TRIPS

Land Use	**External Trips**	**Pass-by%**	**Pass-by Trips**	**Non-pass-by Trips**
945 - Convenience Store/Gas Station	2750	0	0	2750
945 - Convenience Store/Gas Station - 1	2774	0	0	2774
720 - Medical-Dental Office Building	540	0	0	540
151 - Mini-Warehouse	218	0	0	218

ITE DEVIATION DETAILS

Weekday

Landuse — No deviations from ITE.

Methods — No deviations from ITE.

External Trips — 945 - Convenience Store/Gas Station - GFA (2-4k) (General Urban/Suburban)
ITE does not recommend a particular pass-by% for this case.

945 - Convenience Store/Gas Station - 1 - VFP (9-15) (General Urban/Suburban)
ITE does not recommend a particular pass-by% for this case.

720 - Medical-Dental Office Building - Stand-Alone (General Urban/Suburban)
ITE does not recommend a particular pass-by% for this case.

151 - Mini-Warehouse (General Urban/Suburban)
ITE does not recommend a particular pass-by% for this case.

SUMMARY

Total Entering	3141
Total Exiting	3141
Total Entering Reduction	0
Total Exiting Reduction	0
Total Entering Internal Capture Reduction	0
Total Exiting Internal Capture Reduction	0
Total Entering Pass-by Reduction	0
Total Exiting Pass-by Reduction	0
Total Entering Non-Pass-by Trips	3141
Total Exiting Non-Pass-by Trips	3141

PERIOD SETTING

Analysis Name :	New Analysis		
Project Name :	Circle K - Dundee - Buckeye Loop	**No :**	
Date:	6/20/2024	**City:**	
State/Province:		**Zip/Postal Code:**	
Country:		**Client Name:**	
Analyst's Name:		**Edition:**	Trip Generation Manual, 11th Ed

Land Use	Independent Variable	Size	Time Period	Method	Entry	Exit	Total
945 - Convenience Store/Gas Station - GFA (2-4k) (General Urban/Suburban)	Vehicle Fueling Positions	12	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.	Average 16.06	97 50%	96 50%	193
945 - Convenience Store/Gas Station - 1 - VFP (9-15) (General Urban/Suburban)	1000 Sq. Ft. GFA	3.96	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.	Average 56.52	112 50%	112 50%	224
720 - Medical-Dental Office Building - Stand-Alone (General Urban/Suburban)	1000 Sq. Ft. GFA	15	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.	Best Fit (LOG) Ln(T) = 0.9Ln(X) +1.34	35 80%	9 20%	44
151 - Mini-Warehouse (General Urban/Suburban)	1000 Sq. Ft. GFA	150(0)	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.	Average 0.09	8 57%	6 43%	14

(0) indicates size out of range.

TRAFFIC REDUCTIONS

Land Use	Entry Reduction	Adjusted Entry	Exit Reduction	Adjusted Exit
945 - Convenience Store/Gas Station	0 %	97	0 %	96
945 - Convenience Store/Gas Station - 1	0 %	112	0 %	112
720 - Medical-Dental Office Building	0 %	35	0 %	9
151 - Mini-Warehouse	0 %	8	0 %	6

INTERNAL TRIPS

945 - Convenience Store/Gas Station

Exit	96	Demand Exit:	0 %	(0)	Balanced: 0	**Entry**	112
Entry	97	Demand Entry:	0 %	(0)	Balanced: 0	**Exit**	112

945 - Convenience Store/Gas Station - 1

945 - Convenience Store/Gas Station

Exit	96	Demand Exit:	0 %	(0)	Balanced: 0	**Entry**	35
Entry	97	Demand Entry:	0 %	(0)	Balanced: 0	**Exit**	9

720 - Medical-Dental Office Building

945 - Convenience Store/Gas Station

Exit	96	Demand Exit:	0 %	(0)	Balanced: 0	**Entry**	8
Entry	97	Demand Entry:	0 %	(0)	Balanced: 0	**Exit**	6

151 - Mini-Warehouse

945 - Convenience Store/Gas Station - 1

Exit	112	Demand Exit:	0 %	(0)	Balanced: 0	**Entry**	35
Entry	112	Demand Entry:	0 %	(0)	Balanced: 0	**Exit**	9

720 - Medical-Dental Office Building

945 - Convenience Store/Gas Station - 1

Exit	112	Demand Exit:	0 %	(0)	Balanced: 0	**Entry**	8
Entry	112	Demand Entry:	0 %	(0)	Balanced: 0	**Exit**	6

151 - Mini-Warehouse

720 - Medical-Dental Office Building

Exit	9	Demand Exit:	0 %	(0)	Balanced: 0	**Entry**	8
Entry	35	Demand Entry:	0 %	(0)	Balanced: 0	**Exit**	6

151 - Mini-Warehouse

945 - Convenience Store/Gas Station

		Internal Trips				
	Total Trips	**945 - Convenience Store/Gas Station - 1**	**720 - Medical-Dental Office Building**	**151 - Mini-Warehouse**	**Total**	**External Trips**
Entry	97 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	97 (100%)
Exit	96 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	96 (100%)
Total	193 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	193 (100%)

945 - Convenience Store/Gas Station - 1

		Internal Trips				
	Total Trips	**945 - Convenience Store/Gas Station**	**720 - Medical-Dental Office Building**	**151 - Mini-Warehouse**	**Total**	**External Trips**
Entry	112 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	112 (100%)
Exit	112 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	112 (100%)
Total	224 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	224 (100%)

720 - Medical-Dental Office Building

		Internal Trips				
	Total Trips	945 - Convenience Store/Gas Station	945 - Convenience Store/Gas Station - 1	151 - Mini-Warehouse	Total	External Trips
Entry	35 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	35 (100%)
Exit	9 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	9 (100%)
Total	44 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	44 (100%)

151 - Mini-Warehouse

		Internal Trips				
	Total Trips	945 - Convenience Store/Gas Station	945 - Convenience Store/Gas Station - 1	720 - Medical-Dental Office Building	Total	External Trips
Entry	8 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	8 (100%)
Exit	6 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	6 (100%)
Total	14 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	14 (100%)

EXTERNAL TRIPS

Land Use	External Trips	Pass-by%	Pass-by Trips	Non-pass-by Trips
945 - Convenience Store/Gas Station	193	0	0	193
945 - Convenience Store/Gas Station - 1	224	0	0	224
720 - Medical-Dental Office Building	44	0	0	44
151 - Mini-Warehouse	14	0	0	14

ITE DEVIATION DETAILS

Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.

Landuse — No deviations from ITE.

Methods — No deviations from ITE.

External Trips — 945 - Convenience Store/Gas Station - GFA (2-4k) (General Urban/Suburban)
ITE does not recommend a particular pass-by% for this case.

945 - Convenience Store/Gas Station - 1 - VFP (9-15) (General Urban/Suburban)
ITE does not recommend a particular pass-by% for this case.

720 - Medical-Dental Office Building - Stand-Alone (General Urban/Suburban)
ITE does not recommend a particular pass-by% for this case.

151 - Mini-Warehouse (General Urban/Suburban)
ITE does not recommend a particular pass-by% for this case.

SUMMARY

Total Entering	252
Total Exiting	223
Total Entering Reduction	0
Total Exiting Reduction	0
Total Entering Internal Capture Reduction	0
Total Exiting Internal Capture Reduction	0
Total Entering Pass-by Reduction	0
Total Exiting Pass-by Reduction	0
Total Entering Non-Pass-by Trips	252
Total Exiting Non-Pass-by Trips	223

PERIOD SETTING

Analysis Name :	New Analysis		
Project Name :	Circle K - Dundee - Buckeye Loop	**No :**	
Date:	6/20/2024	**City:**	
State/Province:		**Zip/Postal Code:**	
Country:		**Client Name:**	
Analyst's Name:		**Edition:**	Trip Generation Manual, 11th Ed

Land Use	Independent Variable	Size	Time Period	Method	Entry	Exit	Total
945 - Convenience Store/Gas Station - GFA (2-4k) (General Urban/Suburban)	Vehicle Fueling Positions	12	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	Average 18.42	111 50%	110 50%	221
945 - Convenience Store/Gas Station - 1 - VFP (9-15) (General Urban/Suburban)	1000 Sq. Ft. GFA	3.96	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	Average 54.52	108 50%	108 50%	216
720 - Medical-Dental Office Building - Stand-Alone (General Urban/Suburban)	1000 Sq. Ft. GFA	15	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	Best Fit (LIN) T = 4.07 (X)+-3.17	17 29%	41 71%	58
151 - Mini-Warehouse (General Urban/Suburban)	1000 Sq. Ft. GFA	150(0)	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	Average 0.15	11 48%	12 52%	23

(0) indicates size out of range.

TRAFFIC REDUCTIONS

Land Use	Entry Reduction	Adjusted Entry	Exit Reduction	Adjusted Exit
945 - Convenience Store/Gas Station	0 %	111	0 %	110
945 - Convenience Store/Gas Station - 1	0 %	108	0 %	108
720 - Medical-Dental Office Building	0 %	17	0 %	41
151 - Mini-Warehouse	0 %	11	0 %	12

INTERNAL TRIPS

945 - Convenience Store/Gas Station

Exit	110	Demand Exit:	0 %	(0)	Balanced: 0	**945 - Convenience Store/Gas Station - 1** Demand Entry: 0 % (0)	**Entry** 108
Entry	111	Demand Entry:	0 %	(0)	Balanced: 0	Demand Exit: 0 % (0)	**Exit** 108

945 - Convenience Store/Gas Station

Exit	110	Demand Exit:	0 %	(0)	Balanced: 0	**720 - Medical-Dental Office Building** Demand Entry: 0 % (0)	**Entry** 17
Entry	111	Demand Entry:	0 %	(0)	Balanced: 0	Demand Exit: 0 % (0)	**Exit** 41

945 - Convenience Store/Gas Station

Exit	110	Demand Exit:	0 %	(0)	Balanced: 0	**151 - Mini-Warehouse** Demand Entry: 0 % (0)	**Entry** 11
Entry	111	Demand Entry:	0 %	(0)	Balanced: 0	Demand Exit: 0 % (0)	**Exit** 12

945 - Convenience Store/Gas Station - 1

Exit	108	Demand Exit:	0 %	(0)	Balanced: 0	**720 - Medical-Dental Office Building** Demand Entry: 0 % (0)	**Entry** 17
Entry	108	Demand Entry:	0 %	(0)	Balanced: 0	Demand Exit: 0 % (0)	**Exit** 41

945 - Convenience Store/Gas Station - 1

Exit	108	Demand Exit:	0 %	(0)	Balanced: 0	**151 - Mini-Warehouse** Demand Entry: 0 % (0)	**Entry** 11
Entry	108	Demand Entry:	0 %	(0)	Balanced: 0	Demand Exit: 0 % (0)	**Exit** 12

720 - Medical-Dental Office Building

Exit	41	Demand Exit:	0 %	(0)	Balanced: 0	**151 - Mini-Warehouse** Demand Entry: 0 % (0)	**Entry** 11
Entry	17	Demand Entry:	0 %	(0)	Balanced: 0	Demand Exit: 0 % (0)	**Exit** 12

945 - Convenience Store/Gas Station

		Internal Trips				
	Total Trips	**945 - Convenience Store/Gas Station - 1**	**720 - Medical-Dental Office Building**	**151 - Mini-Warehouse**	**Total**	**External Trips**
Entry	111 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	111 (100%)
Exit	110 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	110 (100%)
Total	221 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	221 (100%)

945 - Convenience Store/Gas Station - 1

		Internal Trips				
	Total Trips	**945 - Convenience Store/Gas Station**	**720 - Medical-Dental Office Building**	**151 - Mini-Warehouse**	**Total**	**External Trips**
Entry	108 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	108 (100%)
Exit	108 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	108 (100%)
Total	216 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	216 (100%)

720 - Medical-Dental Office Building

	Total Trips	Internal Trips				External Trips
		945 - Convenience Store/Gas Station	945 - Convenience Store/Gas Station - 1	151 - Mini-Warehouse	Total	
Entry	17 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	17 (100%)
Exit	41 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	41 (100%)
Total	58 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	58 (100%)

151 - Mini-Warehouse

	Total Trips	Internal Trips				External Trips
		945 - Convenience Store/Gas Station	945 - Convenience Store/Gas Station - 1	720 - Medical-Dental Office Building	Total	
Entry	11 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	11 (100%)
Exit	12 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	12 (100%)
Total	23 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	23 (100%)

EXTERNAL TRIPS

Land Use	External Trips	Pass-by%	Pass-by Trips	Non-pass-by Trips
945 - Convenience Store/Gas Station	221	0	0	221
945 - Convenience Store/Gas Station - 1	216	0	0	216
720 - Medical-Dental Office Building	58	0	0	58
151 - Mini-Warehouse	23	0	0	23

ITE DEVIATION DETAILS

Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.

Landuse — No deviations from ITE.

Methods — No deviations from ITE.

External Trips — 945 - Convenience Store/Gas Station - GFA (2-4k) (General Urban/Suburban)
ITE does not recommend a particular pass-by% for this case.

945 - Convenience Store/Gas Station - 1 - VFP (9-15) (General Urban/Suburban)
ITE does not recommend a particular pass-by% for this case.

720 - Medical-Dental Office Building - Stand-Alone (General Urban/Suburban)
ITE does not recommend a particular pass-by% for this case.

151 - Mini-Warehouse (General Urban/Suburban)
ITE does not recommend a particular pass-by% for this case.

SUMMARY

Total Entering	247
Total Exiting	271
Total Entering Reduction	0
Total Exiting Reduction	0
Total Entering Internal Capture Reduction	0
Total Exiting Internal Capture Reduction	0
Total Entering Pass-by Reduction	0
Total Exiting Pass-by Reduction	0
Total Entering Non-Pass-by Trips	247
Total Exiting Non-Pass-by Trips	271

PASSERBY CAPTURE

Vehicle Pass-By Rates by Land Use

Source: ITE *Trip Generation Manual* , 11th Edition

Land Use Code	945									
Land Use	Convenience Store/Gas Station									
Setting	General Urban/Suburban									
Time Period	Weekday AM Peak Period									
# Data Sites	16 Sites with between 2 and 8 VFP					28 Sites with between 9 and 20 VFP				
Average Pass-By Rate	60% for Sites with between 2 and 8 VFP					76% for Sites with between 9 and 20 VFP				
	Pass-By Characteristics for Individual Sites									
			Survey		Pass-By	Non-Pass-By Trips			Adj Street Peak	
GFA (000)	VFP	State or Province	Year	# Interviews	Trip (%)	Primary (%)	Diverted (%)	Total (%)	Hour Volume	Source
2	8	Maryland	1992	46	87	13	0	13	2235	25
2.1	6	Maryland	1992	26	58	23	19	42	2080	25
2.1	6	Maryland	1992	26	58	23	19	42	2080	25
2.2	8	Maryland	1992	31	47	34	19	53	1785	25
2.2	< 8	Indiana	1993	79	56	6	38	44	635	2
2.2	8	Maryland	1992	35	78	9	13	22	7080	25
2.3	6	Maryland	1992	37	32	41	27	68	2080	25
2.3	< 8	Kentucky	1993	58	64	5	31	36	1255	2
2.3	6	Maryland	1992	37	32	41	27	68	2080	25
2.4	< 8	Kentucky	1993	—	48	17	35	52	1210	2
2.6	< 8	Kentucky	1993	—	72	15	13	28	940	2
2.8	< 8	Kentucky	1993	—	54	11	35	46	1240	2
3	< 8	Indiana	1993	62	74	10	16	26	790	2
3.6	< 8	Kentucky	1993	49	67	4	29	33	1985	2
3.7	< 8	Kentucky	1993	49	66	16	18	34	990	2
4.694	12	Maryland	2000	—	72	—	—	28	2440	30
4.694	12	Maryland	2000	—	78	—	—	22	1561	30
4.694	12	Maryland	2000	—	79	—	—	21	2764	30
4.848	12	Virginia	2000	—	55	—	—	45	1398	30
5.06	12	Pennsylvania	2000	—	84	—	—	16	3219	30
5.242	12	Virginia	2000	—	74	—	—	26	1160	30
5.242	12	Virginia	2000	—	71	—	—	29	548	30
5.488	12	Delaware	2000	—	80	—	—	20	—	30
5.5	12	Pennsylvania	2000	—	85	—	—	15	2975	30
4.2	< 8	Kentucky	1993	47	62	19	19	38	1705	2
4.694	16	Maryland	2000	—	90	—	—	10	2278	30
4.694	16	Delaware	2000	—	74	—	—	26	2185	30
4.694	16	Delaware	2000	—	58	—	—	42	962	30
4.694	16	Delaware	2000	—	84	—	—	16	2956	30
4.694	16	New Jersey	2000	—	79	—	—	21	1859	30
4.694	20	Delaware	2000	—	84	—	—	16	3864	30
4.848	16	Virginia	2000	—	68	—	—	32	2106	30
4.848	16	Virginia	2000	—	85	—	—	15	2676	30
4.848	16	Virginia	2000	—	75	—	—	25	3244	30
4.848	16	Virginia	2000	—	71	—	—	29	1663	30
4.993	16	Pennsylvania	2000	—	75	—	—	25	1991	30
5.094	16	New Jersey	2000	—	86	—	—	14	1260	30
5.5	16	Pennsylvania	2000	—	82	—	—	18	1570	30
5.543	16	Pennsylvania	2000	—	84	—	—	16	1933	30
5.565	16	Pennsylvania	2000	—	77	—	—	23	2262	30
5.565	16	Pennsylvania	2000	—	68	—	—	32	2854	30
5.565	16	New Jersey	2000	—	58	—	—	42	1253	30
5.565	16	New Jersey	2000	—	79	—	—	21	1928	30
5.565	16	New Jersey	2000	---	84	---	---	16	1953	30

Vehicle Pass-By Rates by Land Use

Source: ITE *Trip Generation Manual* , 11th Edition

Land Use Code	945									
Land Use	Convenience Store/Gas Station									
Setting	General Urban/Suburban									
Time Period	Weekday PM Peak Period									
# Data Sites	12 Sites with between 2 and 8 VFP					28 Sites with between 9 and 20 VFP				
Average Pass-By Rate	56% for Sites with between 2 and 8 VFP					75% for Sites with between 9 and 20 VFP				
	Pass-By Characteristics for Individual Sites									
			Survey		Pass-By	Non-Pass-By Trips			Adj Street Peak	
GFA (000)	VFP	State or Province	Year	# Interviews	Trip (%)	Primary (%)	Diverted (%)	Total (%)	Hour Volume	Source
2.1	8	Maryland	1992	31	52	13	35	48	1785	25
2.1	6	Maryland	1992	30	53	20	27	47	1060	25
2.2	< 8	Indiana	1993	115	48	16	36	52	820	2
2.3	< 8	Kentucky	1993	67	57	16	27	43	1954	2
2.3	6	Maryland	1992	55	40	11	49	60	2760	25
2.4	< 8	Kentucky	1993	—	58	13	29	42	2655	2
2.6	< 8	Kentucky	1993	68	67	15	18	33	950	2
2.8	< 8	Kentucky	1993	—	62	11	27	38	2875	2
3	< 8	Indiana	1993	80	65	15	20	35	1165	2
3.6	< 8	Kentucky	1993	60	56	17	27	44	2505	2
3.7	< 8	Kentucky	1993	70	61	16	23	39	2175	2
4.2	< 8	Kentucky	1993	61	58	26	16	42	2300	2
4.694	12	Maryland	2000	—	78	—	—	22	3549	30
4.694	12	Maryland	2000	—	67	—	—	33	2272	30
4.694	12	Maryland	2000	—	66	—	—	34	3514	30
4.848	12	Virginia	2000	—	71	—	—	29	2350	30
5.06	12	Pennsylvania	2000	—	91	—	—	9	4181	30
5.242	12	Virginia	2000	—	70	—	—	30	2445	30
5.242	12	Virginia	2000	—	56	—	—	44	950	30
5.488	12	Delaware	2000	—	73	—	—	27	—	30
5.5	12	Pennsylvania	2000	—	84	—	—	16	4025	30
4.694	16	Maryland	2000	—	89	—	—	11	2755	30
4.694	16	Delaware	2000	—	73	—	—	27	1858	30
4.694	16	Delaware	2000	—	59	—	—	41	1344	30
4.694	16	Delaware	2000	—	72	—	—	28	3434	30
4.694	16	New Jersey	2000	—	81	—	—	19	1734	30
4.694	20	Delaware	2000	—	76	—	—	24	1616	30
4.848	16	Virginia	2000	—	67	—	—	33	2.954	30
4.848	16	Virginia	2000	—	78	—	—	22	3086	30
4.848	16	Virginia	2000	—	83	—	—	17	4143	30
4.848	16	Virginia	2000	—	73	—	—	27	2534	30
4.993	16	Pennsylvania	2000	—	72	—	—	28	2917	30
5.094	16	New Jersey	2000	—	86	—	—	14	1730	30
5.5	16	Pennsylvania	2000	—	90	—	—	10	2616	30
5.543	16	Pennsylvania	2000	—	87	—	—	13	2363	30
5.565	16	Pennsylvania	2000	—	81	—	—	19	2770	30
5.565	16	Pennsylvania	2000	—	76	—	—	24	3362	30
5.565	16	New Jersey	2000	—	61	—	—	39	1713	30
5.565	16	New Jersey	2000	—	86	—	—	14	1721	30
5.565	16	New Jersey	2000	---	81	---	---	19	2227	30

TURNING MOVEMENT COUNTS

National Data & Surveying Services

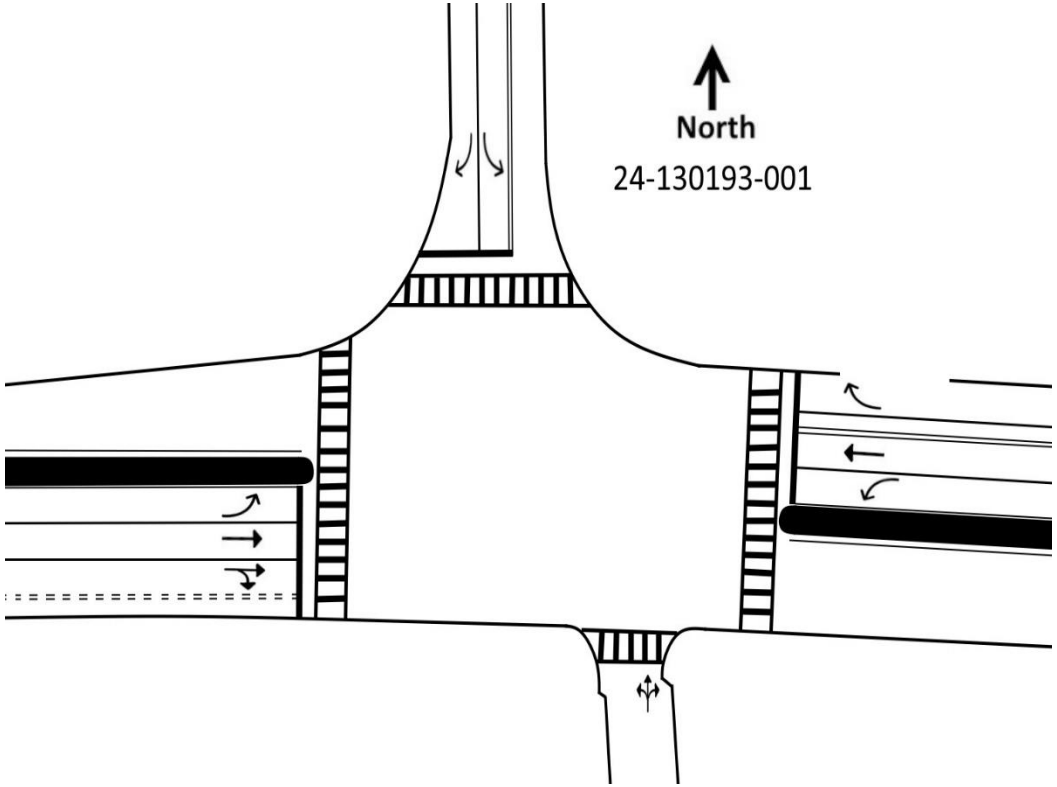
N

N/S Street: **Buckeye Loop Rd**

Speed: **35 MPH**

E/W Street: **SR 542/Dundee Rd**

Speed: **30/40 MPH**



Site Code: **24-130193-001**

Date: **05/29/2024**

Weather: **Sunny**

City: **Winter Haven**

County: **Polk**

Count Times: **07:00 - 09:00**

16:00 - 18:00

Control: **Signalized**

SIGNAL TIMING

PHASES	**1**	**2**	**3**
SL/ST	00:25	00:26	00:28
NL/NT	-	00:12	-
EL/WL	-	-	00:17
EL/ET	00:17	00:16	-
ET/WT	00:49	00:49	00:34

Prepared by National Data & Surveying Services

Buckeye Loop Rd & SR 542/Dundee Rd

Peak Hour Turning Movement Count

ID: 24-130193-001
City: Winter Haven

Day: Wednesday
Date: 5/29/2024

Period	PEAK HOURS	COUNT PERIODS
AM	07:15 AM - 08:15 AM	7:00 AM - 09:00 AM
NOON	NONE	NONE
PM	05:00 PM - 06:00 PM	4:00 PM - 06:00 PM

Buckeye Loop Rd — SOUTHBOUND

	Right	Thru	Left	U-Turn	Exit
AM	205	1	314	0	485
NOON	0	0	0	0	0
PM	107	6	341	0	459
	0	0	0	0	

SR 542/Dundee Rd — EASTBOUND

	AM	NOON	PM	
Exit	980	0	609	
U-Turn	1	0	2	0
Left	97	0	158	0
Thru	464	0	880	0
Right	1	0	8	0

SR 542/Dundee Rd — WESTBOUND

		PM	NOON	AM
Right	0	299	0	388
Thru	0	492	0	773
Left	0	14	0	2
U-Turn	0	20	0	16
Exit		1241	0	794

Buckeye Loop Rd — NORTHBOUND

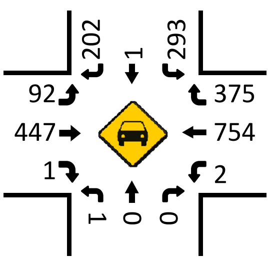
	Exit	U-Turn	Left	Thru	Right
		0	0	0	0
PM	28	0	8	2	0
NOON	0	0	0	0	0
AM	4	0	1	0	0

CONTROL

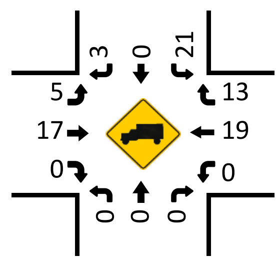
Signalized

	AM	NOON	PM
TEV	2263	0	2337
PHF	0.94		0.89

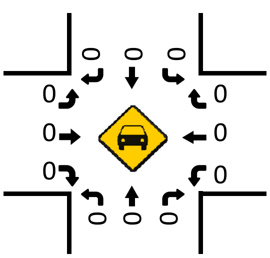
Cars (AM)



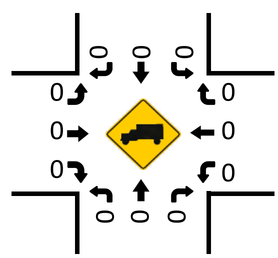
HT (AM)



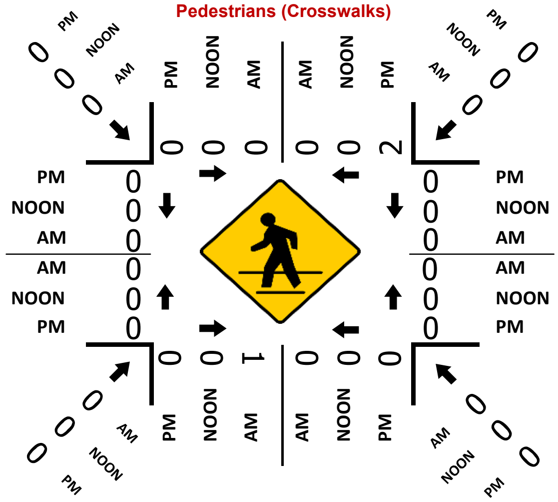
Cars (NOON)



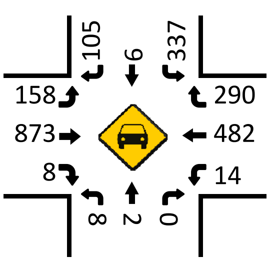
HT (NOON)



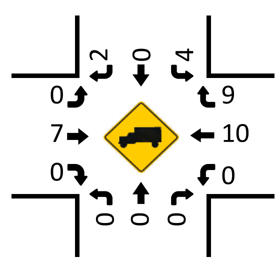
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Buckeye Loop Rd & SR 542/Dundee Rd
City: Winter Haven
Control: Signalized

Project ID: 24-130193-001
Date: 5/29/2024

Data - Total

NS/EW Streets:	Buckeye Loop Rd				Buckeye Loop Rd				SR 542/Dundee Rd				SR 542/Dundee Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	60	0	32	0	20	88	0	1	2	139	84	3	429
7:15 AM	0	0	0	0	69	0	45	0	33	105	0	1	0	181	118	2	554
7:30 AM	0	0	0	0	82	0	58	0	17	113	1	0	0	197	96	7	571
7:45 AM	0	0	0	0	80	1	50	0	21	141	0	0	0	200	110	2	605
8:00 AM	1	0	0	0	83	0	52	0	26	105	0	0	2	195	64	5	533
8:15 AM	0	0	0	0	73	0	54	0	19	106	0	0	0	195	80	3	530
8:30 AM	0	0	0	0	69	1	37	0	21	99	2	0	1	168	54	8	460
8:45 AM	0	0	0	0	55	0	28	0	18	90	0	1	5	142	48	6	393
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	0	0	0	571	2	356	0	175	847	3	3	10	1417	654	36	4075
APPROACH %'s :	100.00%	0.00%	0.00%	0.00%	61.46%	0.22%	38.32%	0.00%	17.02%	82.39%	0.29%	0.29%	0.47%	66.93%	30.89%	1.70%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	1	0	0	0	314	1	205	0	97	464	1	1	2	773	388	16	2263
PEAK HR FACTOR :	0.250	0.000	0.000	0.000	0.946	0.250	0.884	0.000	0.735	0.823	0.250	0.250	0.250	0.966	0.822	0.571	0.935
	0.250				0.929				0.869				0.945				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	2	1	1	0	62	0	20	0	25	181	2	1	1	118	82	6	502
4:15 PM	5	1	0	0	69	1	28	0	37	189	0	0	5	113	73	2	523
4:30 PM	0	0	0	0	72	0	28	0	26	184	0	1	6	128	64	5	514
4:45 PM	0	1	1	0	77	0	30	0	32	176	2	0	1	116	63	6	505
5:00 PM	3	0	0	0	67	2	19	0	36	233	0	0	0	128	80	7	575
5:15 PM	2	2	0	0	87	1	24	0	48	280	1	1	1	132	70	5	654
5:30 PM	2	0	0	0	97	1	26	0	36	190	3	0	4	110	80	5	554
5:45 PM	1	0	0	0	90	2	38	0	38	177	4	1	9	122	69	3	554
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	15	5	2	0	621	7	213	0	278	1610	12	4	27	967	581	39	4381
APPROACH %'s :	68.18%	22.73%	9.09%	0.00%	73.84%	0.83%	25.33%	0.00%	14.60%	84.56%	0.63%	0.21%	1.67%	59.91%	36.00%	2.42%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	8	2	0	0	341	6	107	0	158	880	8	2	14	492	299	20	2337
PEAK HR FACTOR :	0.667	0.250	0.000	0.000	0.879	0.750	0.704	0.000	0.823	0.786	0.500	0.500	0.389	0.932	0.934	0.714	0.893
	0.625				0.873				0.794				0.959				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Buckeye Loop Rd & SR 542/Dundee Rd
City: Winter Haven
Control: Signalized

Project ID: 24-130193-001
Date: 5/29/2024

Data - Cars

NS/EW Streets:	Buckeye Loop Rd				Buckeye Loop Rd				SR 542/Dundee Rd				SR 542/Dundee Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	57	0	31	0	19	83	0	1	2	138	82	3	416
7:15 AM	0	0	0	0	63	0	44	0	30	98	0	1	0	178	109	2	525
7:30 AM	0	0	0	0	75	0	58	0	17	111	1	0	0	193	93	7	555
7:45 AM	0	0	0	0	78	1	48	0	20	136	0	0	0	194	110	2	589
8:00 AM	1	0	0	0	77	0	52	0	25	102	0	0	2	189	63	3	514
8:15 AM	0	0	0	0	70	0	53	0	18	103	0	0	0	190	78	3	515
8:30 AM	0	0	0	0	68	1	36	0	21	95	2	0	1	165	50	8	447
8:45 AM	0	0	0	0	53	0	28	0	18	88	0	1	4	139	47	6	384
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	0	0	0	541	2	350	0	168	816	3	3	9	1386	632	34	3945
APPROACH %'s :	100.00%	0.00%	0.00%	0.00%	60.58%	0.22%	39.19%	0.00%	16.97%	82.42%	0.30%	0.30%	0.44%	67.25%	30.66%	1.65%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	1	0	0	0	293	1	202	0	92	447	1	1	2	754	375	14	2183
PEAK HR FACTOR :	0.250	0.000	0.000	0.000	0.939	0.250	0.871	0.000	0.767	0.822	0.250	0.250	0.250	0.972	0.852	0.500	0.927
	0.250				0.932				0.867				0.935				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	2	1	1	0	60	0	18	0	24	179	2	0	1	113	77	6	484
4:15 PM	5	1	0	0	66	1	25	0	37	184	0	0	4	110	70	2	505
4:30 PM	0	0	0	0	69	0	27	0	26	184	0	1	5	125	62	5	504
4:45 PM	0	1	1	0	76	0	30	0	31	173	1	0	1	110	59	6	489
5:00 PM	3	0	0	0	66	2	19	0	36	231	0	0	0	125	76	7	565
5:15 PM	2	2	0	0	85	1	24	0	48	279	1	1	1	130	68	5	647
5:30 PM	2	0	0	0	97	1	24	0	36	188	3	0	4	106	77	5	543
5:45 PM	1	0	0	0	89	2	38	0	38	175	4	1	9	121	69	3	550
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	15	5	2	0	608	7	205	0	276	1593	11	3	25	940	558	39	4287
APPROACH %'s :	68.18%	22.73%	9.09%	0.00%	74.15%	0.85%	25.00%	0.00%	14.66%	84.60%	0.58%	0.16%	1.60%	60.18%	35.72%	2.50%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	8	2	0	0	337	6	105	0	158	873	8	2	14	482	290	20	2305
PEAK HR FACTOR :	0.667	0.250	0.000	0.000	0.869	0.750	0.691	0.000	0.823	0.782	0.500	0.500	0.389	0.927	0.942	0.714	0.891
	0.625				0.868				0.791				0.969				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Buckeye Loop Rd & SR 542/Dundee Rd
City: Winter Haven
Control: Signalized

Project ID: 24-130193-001
Date: 5/29/2024

Data - HT

NS/EW Streets:	Buckeye Loop Rd				Buckeye Loop Rd				SR 542/Dundee Rd				SR 542/Dundee Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	3	0	1	0	1	5	0	0	0	1	2	0	13
7:15 AM	0	0	0	0	6	0	1	0	3	7	0	0	0	3	9	0	29
7:30 AM	0	0	0	0	7	0	0	0	0	2	0	0	0	4	3	0	16
7:45 AM	0	0	0	0	2	0	2	0	1	5	0	0	0	6	0	0	16
8:00 AM	0	0	0	0	6	0	0	0	1	3	0	0	0	6	1	2	19
8:15 AM	0	0	0	0	3	0	1	0	1	3	0	0	0	5	2	0	15
8:30 AM	0	0	0	0	1	0	1	0	0	4	0	0	0	3	4	0	13
8:45 AM	0	0	0	0	2	0	0	0	0	2	0	0	1	3	1	0	9
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	30	0	6	0	7	31	0	0	1	31	22	2	130
APPROACH %'s :					83.33%	0.00%	16.67%	0.00%	18.42%	81.58%	0.00%	0.00%	1.79%	55.36%	39.29%	3.57%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	0	0	21	0	3	0	5	17	0	0	0	19	13	2	80
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.750	0.000	0.375	0.000	0.417	0.607	0.000	0.000	0.000	0.792	0.361	0.250	0.690
					0.857				0.550				0.708				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	2	0	2	0	1	2	0	1	0	5	5	0	18
4:15 PM	0	0	0	0	3	0	3	0	0	5	0	0	1	3	3	0	18
4:30 PM	0	0	0	0	3	0	1	0	0	0	0	0	1	3	2	0	10
4:45 PM	0	0	0	0	1	0	0	0	1	3	1	0	0	6	4	0	16
5:00 PM	0	0	0	0	1	0	0	0	0	2	0	0	0	3	4	0	10
5:15 PM	0	0	0	0	2	0	0	0	0	1	0	0	0	2	2	0	7
5:30 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	4	3	0	11
5:45 PM	0	0	0	0	1	0	0	0	0	2	0	0	0	1	0	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	13	0	8	0	2	17	1	1	2	27	23	0	94
APPROACH %'s :					61.90%	0.00%	38.10%	0.00%	9.52%	80.95%	4.76%	4.76%	3.85%	51.92%	44.23%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	4	0	2	0	0	7	0	0	0	10	9	0	32
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.500	0.000	0.250	0.000	0.000	0.875	0.000	0.000	0.000	0.625	0.563	0.000	0.727
					0.750				0.875				0.679				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Buckeye Loop Rd & SR 542/Dundee Rd
City: Winter Haven
Control: Signalized

Project ID: 24-130193-001
Date: 5/29/2024

Data - Bikes

NS/EW Streets:	Buckeye Loop Rd				Buckeye Loop Rd				SR 542/Dundee Rd				SR 542/Dundee Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	5	0	0	0	4	0	0	9
APPROACH %'s :									0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	5	0	0	0	1	0	0	6
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.625	0.000	0.000	0.000	0.250	0.000	0.000	0.750
									0.625				0.250				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	3
5:15 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	1	0	1	0	1	3	0	0	0	2	1	0	9
APPROACH %'s :					50.00%	0.00%	50.00%	0.00%	25.00%	75.00%	0.00%	0.00%	0.00%	66.67%	33.33%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	1	0	0	0	0	2	0	0	0	1	1	0	5
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.250	0.000	0.417
					0.250				0.250				0.250				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Buckeye Loop Rd & SR 542/Dundee Rd
City: Winter Haven

Project ID: 24-130193-001
Date: 5/29/2024

Data - Pedestrians (Crosswalks)

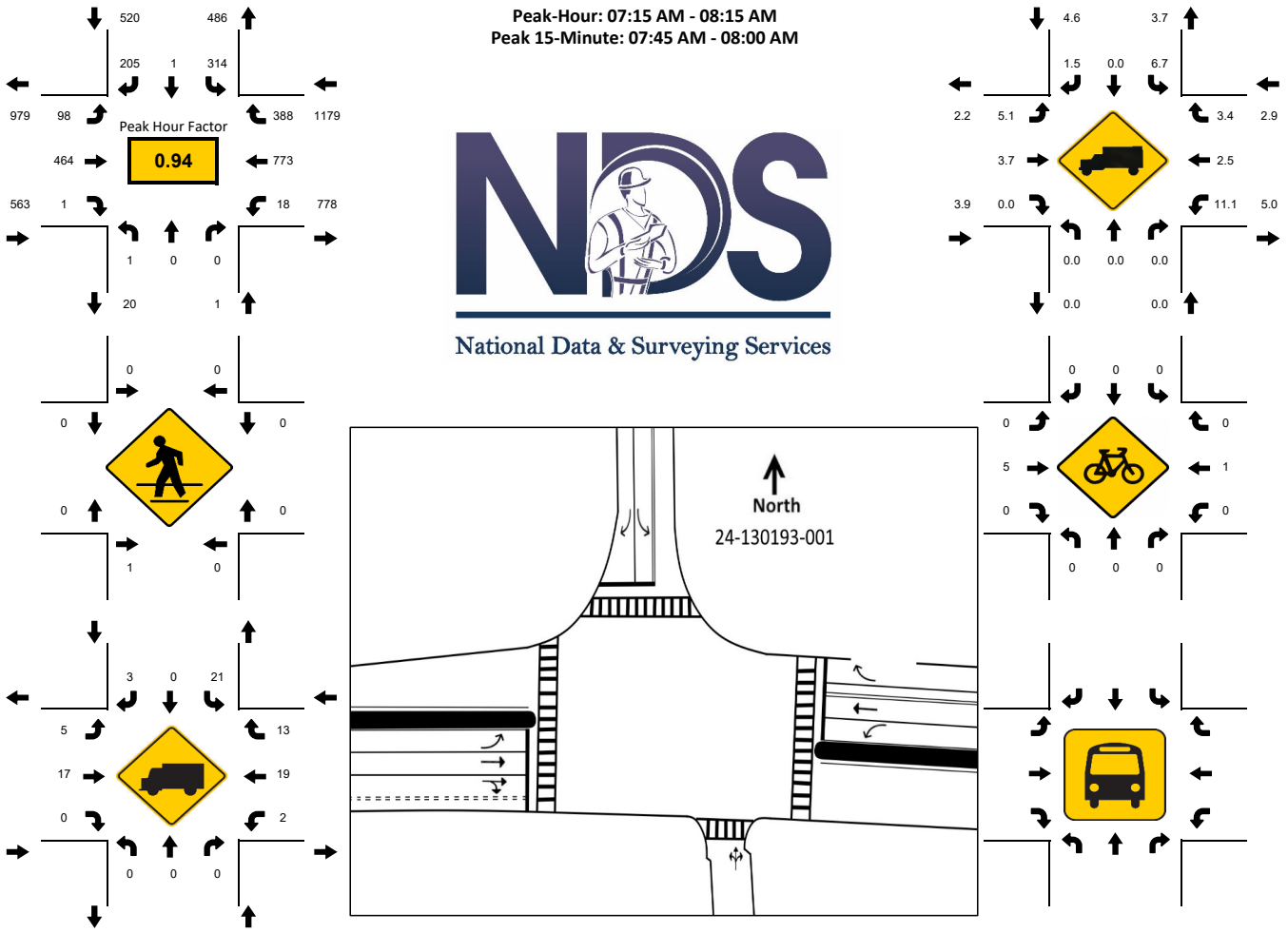
NS/EW Streets:	Buckeye Loop Rd		Buckeye Loop Rd		SR 542/Dundee Rd		SR 542/Dundee Rd		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	1	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	1	0	0	0	0	0	1
APPROACH %'s :			100.00%	0.00%					
PEAK HR :	**07:15 AM - 08:15 AM**								TOTAL
PEAK HR VOL :	0	0	1	0	0	0	0	0	1
PEAK HR FACTOR :			0.250						0.250
			0.250						

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	1	0	1	1	0	0	3
4:30 PM	1	0	0	0	0	0	0	0	1
4:45 PM	0	2	0	0	0	0	0	0	2
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	2	0	0	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	1	4	1	0	1	1	0	0	8
APPROACH %'s :	20.00%	80.00%	100.00%	0.00%	50.00%	50.00%			
PEAK HR :	**05:00 PM - 06:00 PM**								TOTAL
PEAK HR VOL :	0	2	0	0	0	0	0	0	2
PEAK HR FACTOR :		0.250							0.250
	0.250								

LOCATION: Buckeye Loop Rd & SR 542/Dundee Rd
CITY/STATE: Winter Haven, FL

PROJECT ID: 24-130193-001
DATE: Wed, May 29, 2024

Peak-Hour: 07:15 AM - 08:15 AM
Peak 15-Minute: 07:45 AM - 08:00 AM

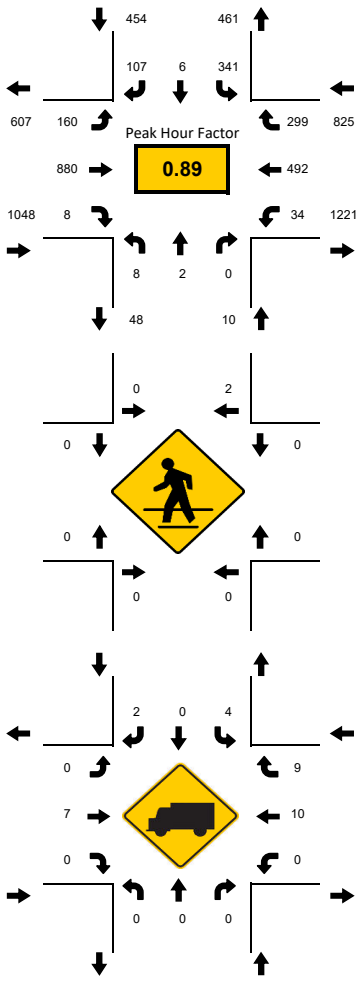


15-Min Count Period Beginning At	Buckeye Loop Rd Northbound					Buckeye Loop Rd Southbound					SR 542/Dundee Rd Eastbound					SR 542/Dundee Rd Westbound					Total	Hourly Total
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
7:00 AM	0	0	0	0		60	0	32	0		20	88	0	1		2	139	84	3		429	2159
7:15 AM	0	0	0	0		69	0	45	0		33	105	0	1		0	181	118	2		554	2263
7:30 AM	0	0	0	0		82	0	58	0		17	113	1	0		0	197	96	7		571	2239
7:45 AM	0	0	0	0		80	1	50	0		21	141	0	0		0	200	110	2		605	2128
8:00 AM	1	0	0	0		83	0	52	0		26	105	0	0		2	195	64	5		533	1916
8:15 AM	0	0	0	0		73	0	54	0		19	106	0	0		0	195	80	3		530	1383
8:30 AM	0	0	0	0		69	1	37	0		21	99	2	0		1	168	54	8		460	853
8:45 AM	0	0	0	0		55	0	28	0		18	90	0	1		5	142	48	6		393	393
Peak 15-Min Flowrates	**Northbound**					**Southbound**					**Eastbound**					**Westbound**						
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Total	
All Vehicles	4	0	0	0		332	4	232	0		132	564	4	4		8	800	472	28		**2584**	
Heavy Trucks	0	0	0	0		28	0	8	0		12	28	0	0		0	24	36	8		**136**	
Pedestrians		4					0					0					0				**4**	
Bicycles	0	0	0	0		0	0	0	0		0	8	0	0		0	4	0	0		**12**	
Buses																						
Stopped Buses																						

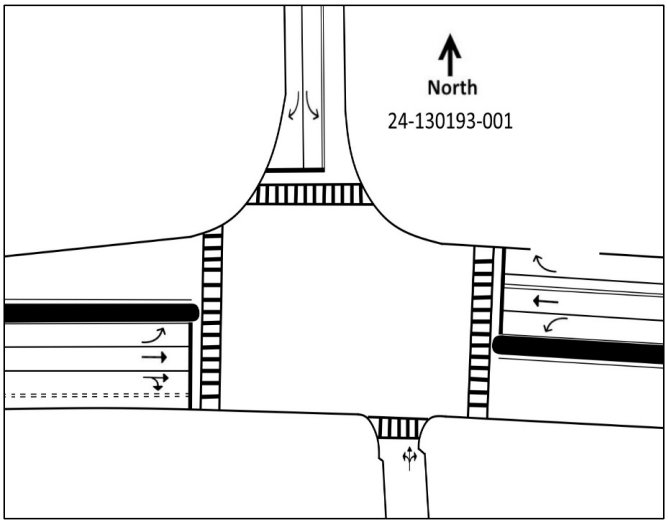
LOCATION: Buckeye Loop Rd & SR 542/Dundee Rd
CITY/STATE: Winter Haven, FL

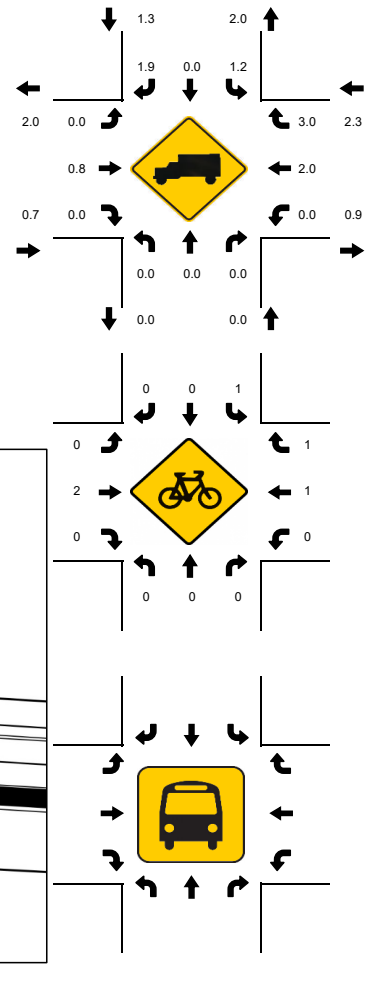
PROJECT ID: 24-130193-001
DATE: Wed, May 29, 2024

Peak-Hour: 05:00 PM - 06:00 PM
Peak 15-Minute: 05:15 PM - 05:30 PM



National Data & Surveying Services





15-Min Count Period Beginning At	Buckeye Loop Rd Northbound					Buckeye Loop Rd Southbound					SR 542/Dundee Rd Eastbound					SR 542/Dundee Rd Westbound					Total	Hourly Total
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
4:00 PM	2	1	1	0		62	0	20	0		25	181	2	1		1	118	82	6		502	2044
4:15 PM	5	1	0	0		69	1	28	0		37	189	0	0		5	113	73	2		523	2117
4:30 PM	0	0	0	0		72	0	28	0		26	184	0	1		6	128	64	5		514	2248
4:45 PM	0	1	1	0		77	0	30	0		32	176	2	0		1	116	63	6		505	2288
5:00 PM	3	0	0	0		67	2	19	0		36	233	0	0		0	128	80	7		575	2337
5:15 PM	2	2	0	0		87	1	24	0		48	280	1	1		1	132	70	5		654	1762
5:30 PM	2	0	0	0		97	1	26	0		36	190	3	0		4	110	80	5		554	1108
5:45 PM	1	0	0	0		90	2	38	0		38	177	4	1		9	122	69	3		554	554
Peak 15-Min Flowrates	**Northbound**					**Southbound**					**Eastbound**					**Westbound**						
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	**Total**	
All Vehicles	12	8	0	0		388	8	152	0		192	1120	16	4		36	528	320	28		**2812**	
Heavy Trucks	0	0	0	0		8	0	8	0		0	8	0	0		0	16	16	0		**56**	
Pedestrians		0					8					0					0				**8**	
Bicycles	0	0	0	0		4	0	0	0		0	8	0	0		0	4	4	0		**20**	
Buses																						
Stopped Buses																						

National Data & Surveying Services

N

N/S Street: **18th St SE**

Speed: **15 MPH**

E/W Street: **SR 542/Dundee Rd**

Speed: **30 MPH**

Site Code: **24-130193-003**

Date: **05/29/2024**

Weather: **Sunny**

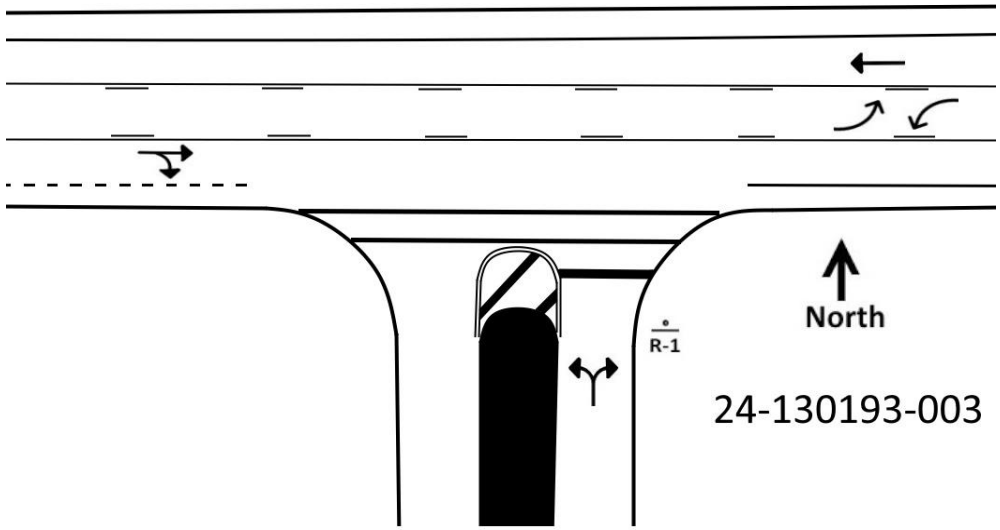
City: **Winter Haven**

County: **Polk**

Count Times: **07:00 - 09:00**

16:00 - 18:00

Control: **1-Way Stop(NB)**



Prepared by National Data & Surveying Services

18th St SE & SR 542/Dundee Rd

Peak Hour Turning Movement Count

ID: 24-130193-003
City: Winter Haven

Day: Wednesday
Date: 5/29/2024

PEAK HOURS

AM: 07:30 AM - 08:30 AM
NOON: NONE
PM: 05:00 PM - 06:00 PM

COUNT PERIODS

AM: 7:00 AM - 09:00 AM
NOON: NONE
PM: 4:00 PM - 06:00 PM

SOUTHBOUND (18th St SE)

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

EASTBOUND (SR 542/Dundee Rd)

AM	NOON	PM	
987	0	620	⇦
0	0	0	↶ 0
0	0	0	↱ 0
536	0	1010	→ 0
16	0	38	↴ 0
AM	NOON	PM	

WESTBOUND (SR 542/Dundee Rd)

PM	NOON	AM	
0	0	0	0 ↰
598	0	975	0 ←
22	0	37	0 ↙
0	0	1	0 ↲
1037	0	555	⇨
PM	NOON	AM	

CONTROL

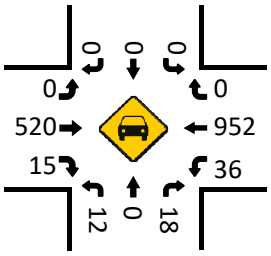
1-Way Stop(NB)

TEV	1595 AM	0 NOON	1717 PM
PHF	0.94		0.91

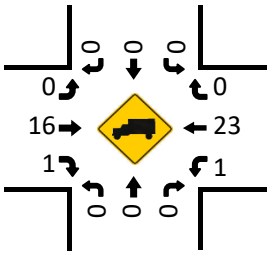
NORTHBOUND (18th St SE)

PM	60	0	22	0	27	PM
NOON	0	0	0	0	0	NOON
AM	53	0	12	0	18	AM

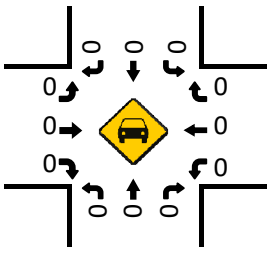
Cars (AM)



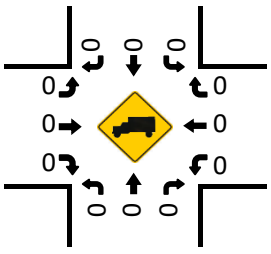
HT (AM)



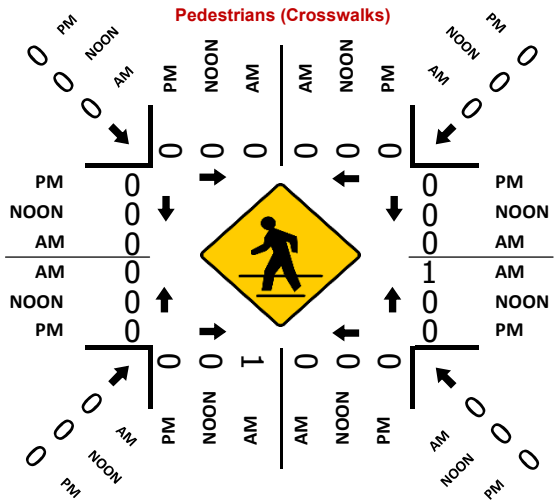
Cars (NOON)



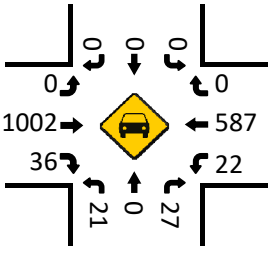
HT (NOON)



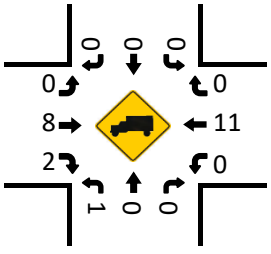
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: 18th St SE & SR 542/Dundee Rd
City: Winter Haven
Control: 1-Way Stop(NB)

Project ID: 24-130193-003
Date: 5/29/2024

Data - Total

NS/EW Streets:	18th St SE				18th St SE				SR 542/Dundee Rd				SR 542/Dundee Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	3	0	1	0	0	0	0	0	0	112	4	0	6	164	0	0	290
7:15 AM	5	0	1	0	0	0	0	0	0	124	1	0	5	214	0	1	351
7:30 AM	6	0	1	0	0	0	0	0	0	133	2	0	8	247	0	0	397
7:45 AM	3	0	5	0	0	0	0	0	0	153	5	0	6	250	0	1	423
8:00 AM	2	0	6	0	0	0	0	0	0	130	3	0	9	237	0	0	387
8:15 AM	1	0	6	0	0	0	0	0	0	120	6	0	14	241	0	0	388
8:30 AM	7	0	8	0	0	0	0	0	0	116	5	0	6	190	0	0	332
8:45 AM	2	0	1	0	0	0	0	0	0	114	2	0	5	175	0	0	299
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	29	0	29	0	0	0	0	0	0	1002	28	0	59	1718	0	2	2867
APPROACH %'s :	50.00%	0.00%	50.00%	0.00%					0.00%	97.28%	2.72%	0.00%	3.32%	96.57%	0.00%	0.11%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	12	0	18	0	0	0	0	0	0	536	16	0	37	975	0	1	1595
PEAK HR FACTOR :	0.500	0.000	0.750	0.000	0.000	0.000	0.000	0.000	0.000	0.876	0.667	0.000	0.661	0.975	0.000	0.250	0.943
	0.938								0.873				0.985				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	5	0	4	0	0	0	0	0	0	211	12	0	9	139	0	0	380
4:15 PM	10	0	5	0	0	0	0	0	0	222	4	0	5	143	0	0	389
4:30 PM	2	0	4	0	0	0	0	0	0	202	4	0	7	148	0	0	367
4:45 PM	8	0	5	0	0	0	0	0	0	202	4	0	5	136	0	0	360
5:00 PM	4	0	9	0	0	0	0	0	0	279	18	0	2	158	0	0	470
5:15 PM	5	0	1	0	0	0	0	0	0	304	7	0	6	150	0	0	473
5:30 PM	7	0	10	0	0	0	0	0	0	239	9	0	6	142	0	0	413
5:45 PM	6	0	7	0	0	0	0	0	0	188	4	0	8	148	0	0	361
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	47	0	45	0	0	0	0	0	0	1847	62	0	48	1164	0	0	3213
APPROACH %'s :	51.09%	0.00%	48.91%	0.00%					0.00%	96.75%	3.25%	0.00%	3.96%	96.04%	0.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	22	0	27	0	0	0	0	0	0	1010	38	0	22	598	0	0	1717
PEAK HR FACTOR :	0.786	0.000	0.675	0.000	0.000	0.000	0.000	0.000	0.000	0.831	0.528	0.000	0.688	0.946	0.000	0.000	0.908
	0.721								0.842				0.969				

National Data & Surveying Services

Intersection Turning Movement Count

Location: 18th St SE & SR 542/Dundee Rd
City: Winter Haven
Control: 1-Way Stop(NB)

Project ID: 24-130193-003
Date: 5/29/2024

Data - Cars

NS/EW Streets:	18th St SE				18th St SE				SR 542/Dundee Rd				SR 542/Dundee Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	3	0	1	0	0	0	0	0	0	107	4	0	6	162	0	0	283
7:15 AM	4	0	1	0	0	0	0	0	0	114	0	0	5	210	0	1	335
7:30 AM	6	0	1	0	0	0	0	0	0	130	2	0	8	243	0	0	390
7:45 AM	3	0	5	0	0	0	0	0	0	148	4	0	5	244	0	1	410
8:00 AM	2	0	6	0	0	0	0	0	0	126	3	0	9	230	0	0	376
8:15 AM	1	0	6	0	0	0	0	0	0	116	6	0	14	235	0	0	378
8:30 AM	7	0	8	0	0	0	0	0	0	112	5	0	6	186	0	0	324
8:45 AM	2	0	1	0	0	0	0	0	0	111	2	0	5	173	0	0	294
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	28	0	29	0	0	0	0	0	0	964	26	0	58	1683	0	2	2790
APPROACH %'s :	49.12%	0.00%	50.88%	0.00%					0.00%	97.37%	2.63%	0.00%	3.33%	96.56%	0.00%	0.11%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	12	0	18	0	0	0	0	0	0	520	15	0	36	952	0	1	1554
PEAK HR FACTOR :	0.500	0.000	0.750	0.000	0.000	0.000	0.000	0.000	0.000	0.878	0.625	0.000	0.643	0.975	0.000	0.250	0.948
	0.938								0.880				0.985				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	5	0	4	0	0	0	0	0	0	206	11	0	9	132	0	0	367
4:15 PM	9	0	5	0	0	0	0	0	0	218	4	0	5	136	0	0	377
4:30 PM	2	0	4	0	0	0	0	0	0	202	3	0	6	145	0	0	362
4:45 PM	6	0	5	0	0	0	0	0	0	197	3	0	5	130	0	0	346
5:00 PM	4	0	9	0	0	0	0	0	0	277	18	0	2	156	0	0	466
5:15 PM	5	0	1	0	0	0	0	0	0	302	5	0	6	147	0	0	466
5:30 PM	6	0	10	0	0	0	0	0	0	238	9	0	6	136	0	0	405
5:45 PM	6	0	7	0	0	0	0	0	0	185	4	0	8	148	0	0	358
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	43	0	45	0	0	0	0	0	0	1825	57	0	47	1130	0	0	3147
APPROACH %'s :	48.86%	0.00%	51.14%	0.00%					0.00%	96.97%	3.03%	0.00%	3.99%	96.01%	0.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	21	0	27	0	0	0	0	0	0	1002	36	0	22	587	0	0	1695
PEAK HR FACTOR :	0.875	0.000	0.675	0.000	0.000	0.000	0.000	0.000	0.000	0.829	0.500	0.000	0.688	0.941	0.000	0.000	0.909
	0.750								0.845				0.964				

National Data & Surveying Services

Intersection Turning Movement Count

Location: 18th St SE & SR 542/Dundee Rd
City: Winter Haven
Control: 1-Way Stop(NB)

Project ID: 24-130193-003
Date: 5/29/2024

Data - HT

NS/EW Streets:	18th St SE				18th St SE				SR 542/Dundee Rd				SR 542/Dundee Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	5	0	0	0	2	0	0	7
7:15 AM	1	0	0	0	0	0	0	0	0	10	1	0	0	4	0	0	16
7:30 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	4	0	0	7
7:45 AM	0	0	0	0	0	0	0	0	0	5	1	0	1	6	0	0	13
8:00 AM	0	0	0	0	0	0	0	0	0	4	0	0	0	7	0	0	11
8:15 AM	0	0	0	0	0	0	0	0	0	4	0	0	0	6	0	0	10
8:30 AM	0	0	0	0	0	0	0	0	0	4	0	0	0	4	0	0	8
8:45 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	2	0	0	5
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	0	0	0	0	0	0	0	0	38	2	0	1	35	0	0	77
APPROACH %'s :	100.00%	0.00%	0.00%	0.00%					0.00%	95.00%	5.00%	0.00%	2.78%	97.22%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	16	1	0	1	23	0	0	41
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.800	0.250	0.000	0.250	0.821	0.000	0.000	0.788
										0.708				0.857			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	5	1	0	0	7	0	0	13
4:15 PM	1	0	0	0	0	0	0	0	0	4	0	0	0	7	0	0	12
4:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	3	0	0	5
4:45 PM	2	0	0	0	0	0	0	0	0	5	1	0	0	6	0	0	14
5:00 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	4
5:15 PM	0	0	0	0	0	0	0	0	0	2	2	0	0	3	0	0	7
5:30 PM	1	0	0	0	0	0	0	0	0	1	0	0	0	6	0	0	8
5:45 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	4	0	0	0	0	0	0	0	0	22	5	0	1	34	0	0	66
APPROACH %'s :	100.00%	0.00%	0.00%	0.00%					0.00%	81.48%	18.52%	0.00%	2.86%	97.14%	0.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	1	0	0	0	0	0	0	0	0	8	2	0	0	11	0	0	22
PEAK HR FACTOR :	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.667	0.250	0.000	0.000	0.458	0.000	0.000	0.688
		0.250								0.625				0.458			

National Data & Surveying Services

Intersection Turning Movement Count

Location: 18th St SE & SR 542/Dundee Rd
City: Winter Haven
Control: 1-Way Stop(NB)

Project ID: 24-130193-003
Date: 5/29/2024

Data - Bikes

NS/EW Streets:	18th St SE				18th St SE				SR 542/Dundee Rd				SR 542/Dundee Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
7:30 AM	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	2
7:45 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2
8:00 AM	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	3
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	0	2	0	0	0	0	0	0	3	1	0	0	4	0	0	11
APPROACH %'s :	33.33%	0.00%	66.67%	0.00%					0.00%	75.00%	25.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	1	0	2	0	0	0	0	0	0	2	1	0	0	3	0	0	9
PEAK HR FACTOR :	0.250	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.250	0.000	0.000	0.375	0.000	0.000	0.750
	0.750								0.375				0.375				

NS/EW Streets:	18th St SE				18th St SE				SR 542/Dundee Rd				SR 542/Dundee Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	2
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	4	0	0	1	2	0	0	7
APPROACH %'s :									0.00%	100.00%	0.00%	0.00%	33.33%	66.67%	0.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	3
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.375
									0.250				0.250				

National Data & Surveying Services

Intersection Turning Movement Count

Location: 18th St SE & SR 542/Dundee Rd
City: Winter Haven

Project ID: 24-130193-003
Date: 5/29/2024

Data - Pedestrians (Crosswalks)

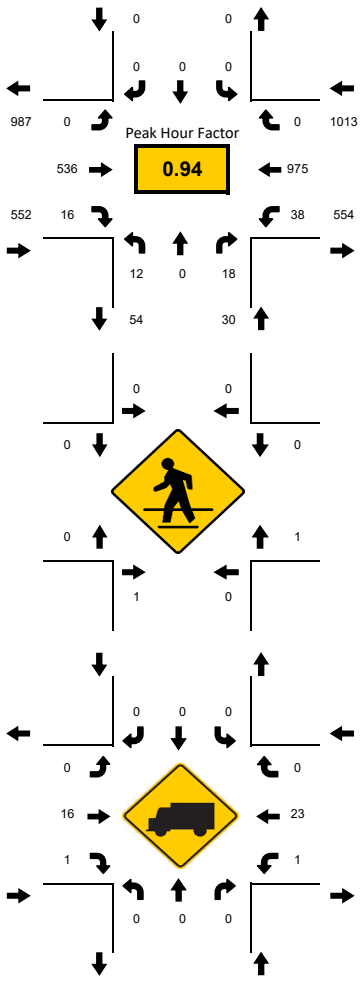
NS/EW Streets:	18th St SE		18th St SE		SR 542/Dundee Rd		SR 542/Dundee Rd		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	1	0	0	0	0	0	1
7:45 AM	0	0	0	0	1	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	1	0	1	0	0	0	2
APPROACH %'s :			100.00%	0.00%	100.00%	0.00%			
PEAK HR :	07:30 AM - 08:30 AM								TOTAL
PEAK HR VOL :	0	0	1	0	1	0	0	0	2
PEAK HR FACTOR :			0.250		0.250				0.500
			0.250		0.250				

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	1	0	1	0	0	2
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	1	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	1	1	0	1	0	0	3
APPROACH %'s :			50.00%	50.00%	0.00%	100.00%			
PEAK HR :	05:00 PM - 06:00 PM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

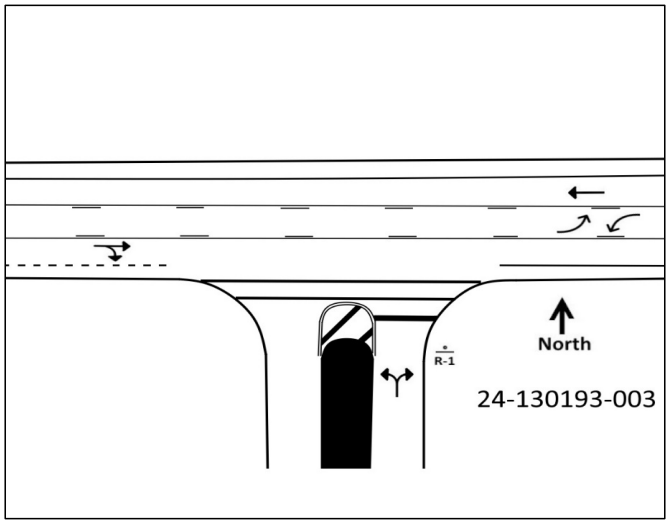
LOCATION: 18th St SE & SR 542/Dundee Rd
CITY/STATE: Winter Haven, FL

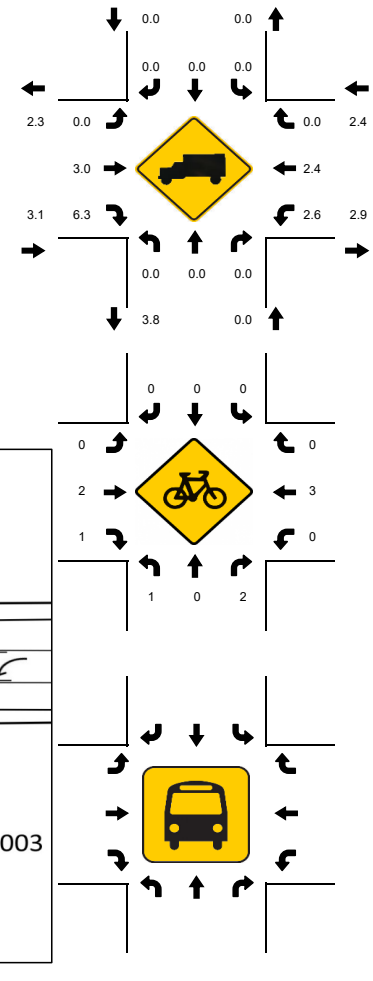
PROJECT ID: 24-130193-003
DATE: Wed, May 29, 2024

Peak-Hour: 07:30 AM - 08:30 AM
Peak 15-Minute: 07:45 AM - 08:00 AM



National Data & Surveying Services



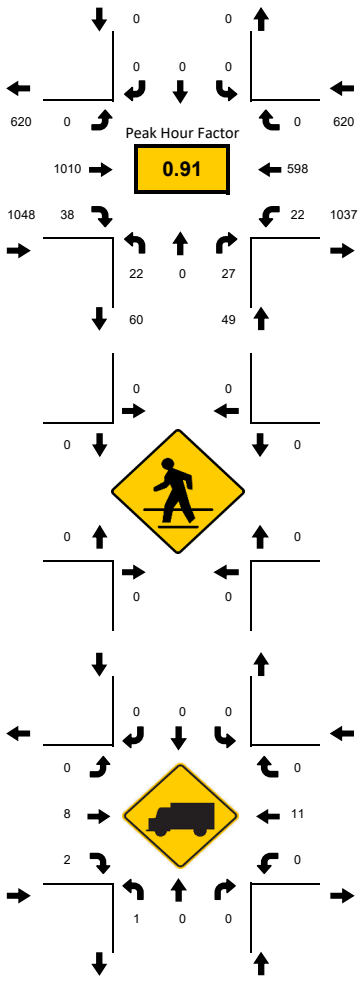


15-Min Count Period Beginning At	18th St SE Northbound					18th St SE Southbound					SR 542/Dundee Rd Eastbound					SR 542/Dundee Rd Westbound					Total	Hourly Total
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
7:00 AM	3	0	1	0		0	0	0	0		0	112	4	0		6	164	0	0		290	1461
7:15 AM	5	0	1	0		0	0	0	0		0	124	1	0		5	214	0	1		351	1558
7:30 AM	6	0	1	0		0	0	0	0		0	133	2	0		8	247	0	0		397	1595
7:45 AM	3	0	5	0		0	0	0	0		0	153	5	0		6	250	0	1		423	1530
8:00 AM	2	0	6	0		0	0	0	0		0	130	3	0		9	237	0	0		387	1406
8:15 AM	1	0	6	0		0	0	0	0		0	120	6	0		14	241	0	0		388	1019
8:30 AM	7	0	8	0		0	0	0	0		0	116	5	0		6	190	0	0		332	631
8:45 AM	2	0	1	0		0	0	0	0		0	114	2	0		5	175	0	0		299	299
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	24	0	24	0		0	0	0	0		0	612	24	0		56	1000	0	4		**1744**	
Heavy Trucks	0	0	0	0		0	0	0	0		0	20	4	0		4	28	0	0		**56**	
Pedestrians		4					0					0					4				**8**	
Bicycles	4	0	4	0		0	0	0	0		0	4	4	0		0	8	0	0		**24**	
Buses																						
Stopped Buses																						

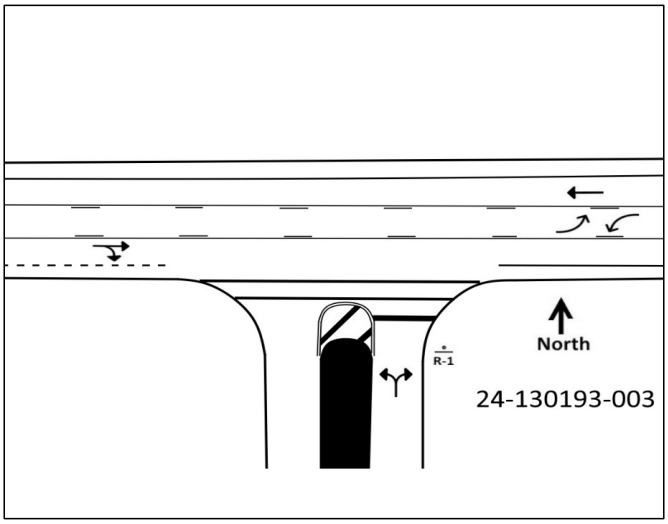
LOCATION: 18th St SE & SR 542/Dundee Rd
CITY/STATE: Winter Haven, FL

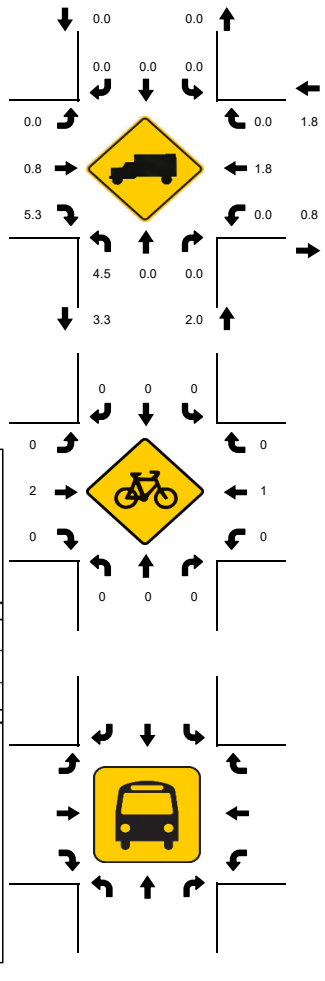
PROJECT ID: 24-130193-003
DATE: Wed, May 29, 2024

Peak-Hour: 05:00 PM - 06:00 PM
Peak 15-Minute: 05:15 PM - 05:30 PM



National Data & Surveying Services



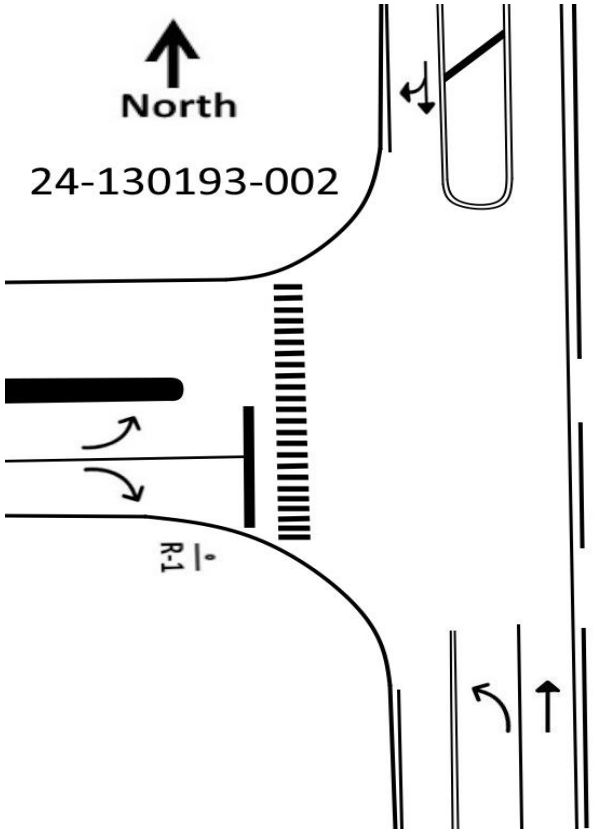


15-Min Count Period Beginning At	18th St SE Northbound					18th St SE Southbound					SR 542/Dundee Rd Eastbound					SR 542/Dundee Rd Westbound					Total	Hourly Total
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
4:00 PM	5	0	4	0		0	0	0	0		0	211	12	0		9	139	0	0		380	1496
4:15 PM	10	0	5	0		0	0	0	0		0	222	4	0		5	143	0	0		389	1586
4:30 PM	2	0	4	0		0	0	0	0		0	202	4	0		7	148	0	0		367	1670
4:45 PM	8	0	5	0		0	0	0	0		0	202	4	0		5	136	0	0		360	1716
5:00 PM	4	0	9	0		0	0	0	0		0	279	18	0		2	158	0	0		470	1717
5:15 PM	5	0	1	0		0	0	0	0		0	304	7	0		6	150	0	0		473	1247
5:30 PM	7	0	10	0		0	0	0	0		0	239	9	0		6	142	0	0		413	774
5:45 PM	6	0	7	0		0	0	0	0		0	188	4	0		8	148	0	0		361	361
Peak 15-Min Flowrates	**Northbound**					**Southbound**					**Eastbound**					**Westbound**						
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Total	
All Vehicles	28	0	40	0		0	0	0	0		0	1216	72	0		32	632	0	0		2020	
Heavy Trucks	4	0	0	0		0	0	0	0		0	12	8	0		0	24	0	0		48	
Pedestrians		0					0					0					0				0	
Bicycles	0	0	0	0		0	0	0	0		0	8	0	0		0	4	0	0		12	
Buses																						
Stopped Buses																						

National Data & Surveying Services

N/S Street: **Buckeye Loop Rd**	Speed: **35 MPH**

Site Code:	**24-130193-002**
Date:	**05/29/2024**
Weather:	**Sunny**
City:	**Winter Haven**
County:	**Polk**
Count Times:	**07:00 - 09:00**
	16:00 - 18:00
Control:	**1-Way Stop(EB)**



E/W Street: **Salisbury Dr**

Speed: **25 MPH**

Prepared by National Data & Surveying Services

Buckeye Loop Rd & Salisbury Dr

Peak Hour Turning Movement Count

ID: 24-130193-002
City: Winter Haven

Day: Wednesday
Date: 5/29/2024

PEAK HOURS

AM	07:15 AM - 08:15 AM
NOON	NONE
PM	05:00 PM - 06:00 PM

COUNT PERIODS

AM	7:00 AM - 09:00 AM
NOON	NONE
PM	4:00 PM - 06:00 PM

Buckeye Loop Rd

SOUTHBOUND

AM	5	514	1	0	485	AM
NOON	0	0	0	0	0	NOON
PM	2	444	0	0	452	PM

EASTBOUND (Salisbury Dr)

AM	NOON	PM	
9	0	14	
1	0	0	0
4	0	3	0
0	0	0	0
7	0	10	0

WESTBOUND (Salisbury Dr)

PM	NOON	AM	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	1	

CONTROL

1-Way Stop(EB)

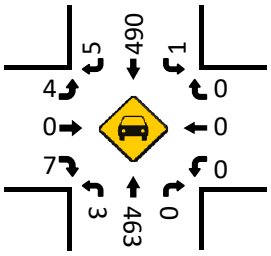
TEV	1019 AM	0 NOON	920 PM
PHF	0.92		0.96

NORTHBOUND

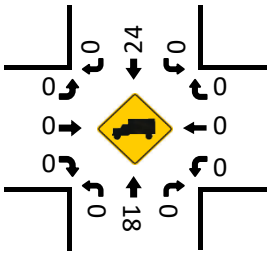
PM	454	0	12	449	0	PM
NOON	0	0	0	0	0	NOON
AM	524	3	3	481	0	AM

Buckeye Loop Rd

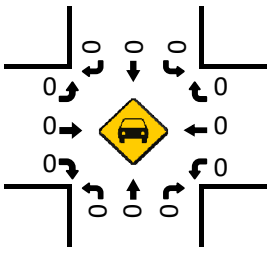
Cars (AM)



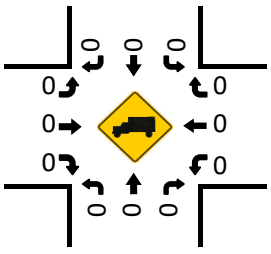
HT (AM)



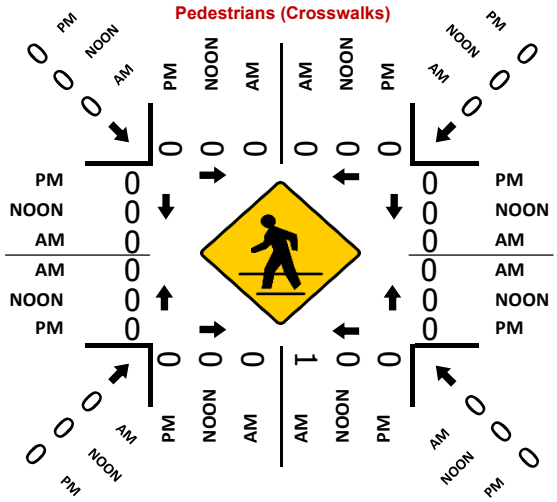
Cars (NOON)



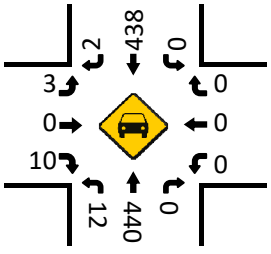
HT (NOON)



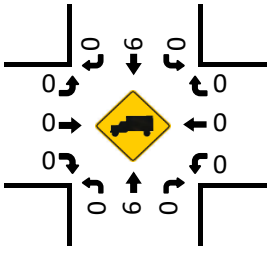
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Buckeye Loop Rd & Salisbury Dr
City: Winter Haven
Control: 1-Way Stop(EB)

Project ID: 24-130193-002
Date: 5/29/2024

Data - Total

NS/EW Streets:	Buckeye Loop Rd				Buckeye Loop Rd				Salisbury Dr				Salisbury Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	103	0	0	0	90	0	0	1	0	3	0	0	0	0	0	197
7:15 AM	1	152	0	0	1	120	0	0	2	0	1	0	0	0	0	0	277
7:30 AM	0	111	0	1	0	134	0	0	0	0	4	1	0	0	0	0	251
7:45 AM	0	129	0	2	0	122	1	0	1	0	2	0	0	0	0	0	257
8:00 AM	2	89	0	0	0	138	4	0	1	0	0	0	0	0	0	0	234
8:15 AM	1	93	0	1	0	125	2	0	1	0	4	0	0	0	0	0	227
8:30 AM	1	77	0	0	0	97	1	0	0	0	2	0	0	0	0	0	178
8:45 AM	0	63	0	0	0	87	0	0	1	0	2	0	0	0	0	0	153
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	5	817	0	4	1	913	8	0	7	0	18	1	0	0	0	0	1774
APPROACH %'s :	0.61%	98.91%	0.00%	0.48%	0.11%	99.02%	0.87%	0.00%	26.92%	0.00%	69.23%	3.85%					
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	3	481	0	3	1	514	5	0	4	0	7	1	0	0	0	0	1019
PEAK HR FACTOR :	0.375	0.791	0.000	0.375	0.250	0.931	0.313	0.000	0.500	0.000	0.438	0.250	0.000	0.000	0.000	0.000	0.920
		0.796				0.915				0.600							

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	4	107	0	0	0	74	0	0	0	0	2	0	0	0	0	0	187
4:15 PM	2	106	0	1	0	96	1	0	1	0	1	0	0	0	0	0	208
4:30 PM	1	92	0	0	0	102	1	0	0	0	1	0	0	0	0	0	197
4:45 PM	0	93	0	0	0	104	1	0	0	0	0	0	0	0	0	0	198
5:00 PM	1	116	0	0	0	86	1	0	1	0	4	0	0	0	0	0	209
5:15 PM	2	119	0	0	0	115	1	0	0	0	3	0	0	0	0	0	240
5:30 PM	2	113	0	0	0	117	0	0	1	0	2	0	0	0	0	0	235
5:45 PM	7	101	0	0	0	126	0	0	1	0	1	0	0	0	0	0	236
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	19	847	0	1	0	820	5	0	4	0	14	0	0	0	0	0	1710
APPROACH %'s :	2.19%	97.69%	0.00%	0.12%	0.00%	99.39%	0.61%	0.00%	22.22%	0.00%	77.78%	0.00%					
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	12	449	0	0	0	444	2	0	3	0	10	0	0	0	0	0	920
PEAK HR FACTOR :	0.429	0.943	0.000	0.000	0.000	0.881	0.500	0.000	0.750	0.000	0.625	0.000	0.000	0.000	0.000	0.000	0.958
		0.952				0.885				0.650							

National Data & Surveying Services

Intersection Turning Movement Count

Location: Buckeye Loop Rd & Salisbury Dr
City: Winter Haven
Control: 1-Way Stop(EB)

Project ID: 24-130193-002
Date: 5/29/2024

Data - Cars

NS/EW Streets:	Buckeye Loop Rd				Buckeye Loop Rd				Salisbury Dr				Salisbury Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	99	0	0	0	86	0	0	1	0	3	0	0	0	0	0	189
7:15 AM	1	140	0	0	1	112	0	0	2	0	1	0	0	0	0	0	257
7:30 AM	0	108	0	1	0	127	0	0	0	0	4	1	0	0	0	0	241
7:45 AM	0	129	0	2	0	119	1	0	1	0	2	0	0	0	0	0	254
8:00 AM	2	86	0	0	0	132	4	0	1	0	0	0	0	0	0	0	225
8:15 AM	1	90	0	1	0	121	2	0	1	0	4	0	0	0	0	0	220
8:30 AM	1	74	0	0	0	95	1	0	0	0	2	0	0	0	0	0	173
8:45 AM	0	61	0	0	0	85	0	0	1	0	2	0	0	0	0	0	149
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	5	787	0	4	1	877	8	0	7	0	18	1	0	0	0	0	1708
APPROACH %'s :	0.63%	98.87%	0.00%	0.50%	0.11%	98.98%	0.90%	0.00%	26.92%	0.00%	69.23%	3.85%					
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	3	463	0	3	1	490	5	0	4	0	7	1	0	0	0	0	977
PEAK HR FACTOR :	0.375	0.827	0.000	0.375	0.250	0.928	0.313	0.000	0.500	0.000	0.438	0.250	0.000	0.000	0.000	0.000	0.950
		0.832				0.912				0.600							

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	4	101	0	0	0	70	0	0	0	0	2	0	0	0	0	0	177
4:15 PM	2	103	0	1	0	90	1	0	1	0	1	0	0	0	0	0	199
4:30 PM	1	90	0	0	0	98	1	0	0	0	1	0	0	0	0	0	191
4:45 PM	0	88	0	0	0	103	1	0	0	0	0	0	0	0	0	0	192
5:00 PM	1	113	0	0	0	85	1	0	1	0	4	0	0	0	0	0	205
5:15 PM	2	116	0	0	0	113	1	0	0	0	3	0	0	0	0	0	235
5:30 PM	2	110	0	0	0	115	0	0	1	0	2	0	0	0	0	0	230
5:45 PM	7	101	0	0	0	125	0	0	1	0	1	0	0	0	0	0	235
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	19	822	0	1	0	799	5	0	4	0	14	0	0	0	0	0	1664
APPROACH %'s :	2.26%	97.62%	0.00%	0.12%	0.00%	99.38%	0.62%	0.00%	22.22%	0.00%	77.78%	0.00%					
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	12	440	0	0	0	438	2	0	3	0	10	0	0	0	0	0	905
PEAK HR FACTOR :	0.429	0.948	0.000	0.000	0.000	0.876	0.500	0.000	0.750	0.000	0.625	0.000	0.000	0.000	0.000	0.000	0.963
		0.958				0.880				0.650							

National Data & Surveying Services

Intersection Turning Movement Count

Location: Buckeye Loop Rd & Salisbury Dr
City: Winter Haven
Control: 1-Way Stop(EB)

Project ID: 24-130193-002
Date: 5/29/2024

Data - HT

NS/EW Streets:	Buckeye Loop Rd				Buckeye Loop Rd				Salisbury Dr				Salisbury Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	8
7:15 AM	0	12	0	0	0	8	0	0	0	0	0	0	0	0	0	0	20
7:30 AM	0	3	0	0	0	7	0	0	0	0	0	0	0	0	0	0	10
7:45 AM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3
8:00 AM	0	3	0	0	0	6	0	0	0	0	0	0	0	0	0	0	9
8:15 AM	0	3	0	0	0	4	0	0	0	0	0	0	0	0	0	0	7
8:30 AM	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	0	5
8:45 AM	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	30	0	0	0	36	0	0	0	0	0	0	0	0	0	0	66
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%									
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	18	0	0	0	24	0	0	0	0	0	0	0	0	0	0	42
PEAK HR FACTOR :	0.000	0.375	0.000	0.000	0.000	0.750	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.525
		0.375				0.750											

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	6	0	0	0	4	0	0	0	0	0	0	0	0	0	0	10
4:15 PM	0	3	0	0	0	6	0	0	0	0	0	0	0	0	0	0	9
4:30 PM	0	2	0	0	0	4	0	0	0	0	0	0	0	0	0	0	6
4:45 PM	0	5	0	0	0	1	0	0	0	0	0	0	0	0	0	0	6
5:00 PM	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	4
5:15 PM	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	0	5
5:30 PM	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	0	5
5:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	25	0	0	0	21	0	0	0	0	0	0	0	0	0	0	46
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%									
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	9	0	0	0	6	0	0	0	0	0	0	0	0	0	0	15
PEAK HR FACTOR :	0.000	0.750	0.000	0.000	0.000	0.750	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.750
		0.750				0.750											

National Data & Surveying Services

Intersection Turning Movement Count

Location: Buckeye Loop Rd & Salisbury Dr
City: Winter Haven
Control: 1-Way Stop(EB)

Project ID: 24-130193-002
Date: 5/29/2024

Data - Bikes

NS/EW Streets:	Buckeye Loop Rd				Buckeye Loop Rd				Salisbury Dr				Salisbury Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %'s :																	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %'s :																	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

National Data & Surveying Services

Intersection Turning Movement Count

Location: Buckeye Loop Rd & Salisbury Dr
City: Winter Haven

Project ID: 24-130193-002
Date: 5/29/2024

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Buckeye Loop Rd		Buckeye Loop Rd		Salisbury Dr		Salisbury Dr		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	1	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	1	0	0	0	0	1
APPROACH %'s :			0.00%	100.00%					
PEAK HR :	07:15 AM - 08:15 AM								TOTAL
PEAK HR VOL :	0	0	0	1	0	0	0	0	1
PEAK HR FACTOR :				0.250					0.250
			0.250						

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0
APPROACH %'s :									
PEAK HR :	05:00 PM - 06:00 PM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

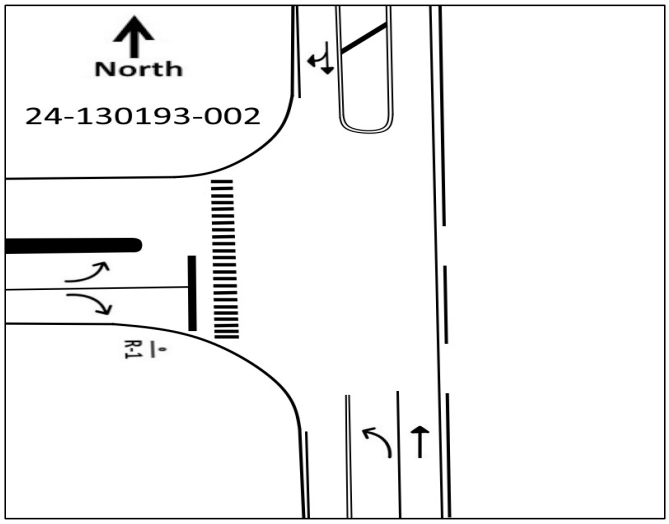
LOCATION: Buckeye Loop Rd & Salisbury Dr
CITY/STATE: Winter Haven, FL

PROJECT ID: 24-130193-002
DATE: Wed, May 29, 2024

Peak-Hour: 07:15 AM - 08:15 AM
Peak 15-Minute: 07:15 AM - 07:30 AM

Peak Hour Factor: **0.92**

National Data & Surveying Services



15-Min Count Period Beginning At	Buckeye Loop Rd Northbound					Buckeye Loop Rd Southbound					Salisbury Dr Eastbound					Salisbury Dr 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	103	0	0		0	90	0	0		1	0	3	0		0	0	0	0		197	982
7:15 AM	1	152	0	0		1	120	0	0		2	0	1	0		0	0	0	0		277	1019
7:30 AM	0	111	0	1		0	134	0	0		0	0	4	1		0	0	0	0		251	969
7:45 AM	0	129	0	2		0	122	1	0		1	0	2	0		0	0	0	0		257	896
8:00 AM	2	89	0	0		0	138	4	0		1	0	0	0		0	0	0	0		234	792
8:15 AM	1	93	0	1		0	125	2	0		1	0	4	0		0	0	0	0		227	558
8:30 AM	1	77	0	0		0	97	1	0		0	0	2	0		0	0	0	0		178	331
8:45 AM	0	63	0	0		0	87	0	0		1	0	2	0		0	0	0	0		153	153
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	8	608	0	8		4	552	16	0		8	0	16	4		0	0	0	0		**1224**	
Heavy Trucks	0	48	0	0		0	32	0	0		0	0	0	0		0	0	0	0		**80**	
Pedestrians		4					0					0					0				**4**	
Bicycles	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		**0**	
Buses																						
Stopped Buses																						

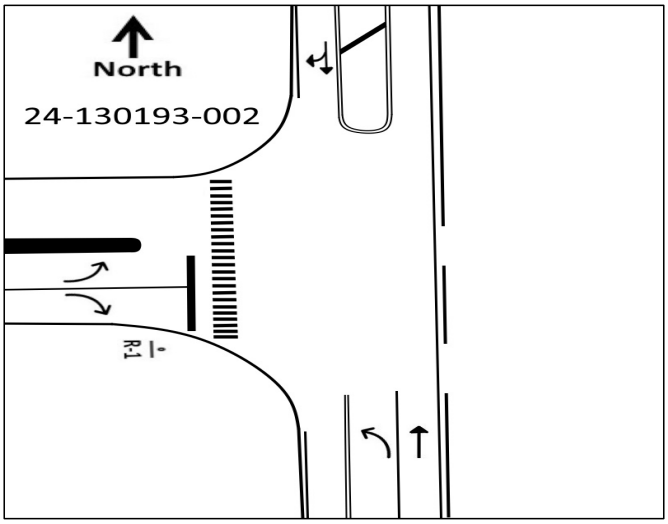
LOCATION: Buckeye Loop Rd & Salisbury Dr
CITY/STATE: Winter Haven, FL

PROJECT ID: 24-130193-002
DATE: Wed, May 29, 2024

Peak-Hour: 05:00 PM - 06:00 PM
Peak 15-Minute: 05:15 PM - 05:30 PM

Peak Hour Factor: **0.96**

National Data & Surveying Services



15-Min Count Period Beginning At	Buckeye Loop Rd Northbound					Buckeye Loop Rd Southbound					Salisbury Dr Eastbound					Salisbury Dr Westbound					Total	Hourly Total
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
4:00 PM	4	107	0	0		0	74	0	0		0	0	2	0		0	0	0	0		187	790
4:15 PM	2	106	0	1		0	96	1	0		1	0	1	0		0	0	0	0		208	812
4:30 PM	1	92	0	0		0	102	1	0		0	0	1	0		0	0	0	0		197	844
4:45 PM	0	93	0	0		0	104	1	0		0	0	0	0		0	0	0	0		198	882
5:00 PM	1	116	0	0		0	86	1	0		1	0	4	0		0	0	0	0		209	920
5:15 PM	2	119	0	0		0	115	1	0		0	0	3	0		0	0	0	0		240	711
5:30 PM	2	113	0	0		0	117	0	0		1	0	2	0		0	0	0	0		235	471
5:45 PM	7	101	0	0		0	126	0	0		1	0	1	0		0	0	0	0		236	236
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	28	476	0	0		0	504	4	0		4	0	16	0		0	0	0	0		**1032**	
Heavy Trucks	0	12	0	0		0	8	0	0		0	0	0	0		0	0	0	0		**20**	
Pedestrians		0					0					0					0				**0**	
Bicycles	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		**0**	
Buses																						
Stopped Buses																						

FDOT PEAK SEASON ADJUSTMENT FACTORS

2023 PEAK SEASON FACTOR CATEGORY REPORT - REPORT TYPE: ALL
CATEGORY: 1600 POLK COUNTYWIDE

MOCF: 0.96

WEEK	DATES	SF	PSCF
1	01/01/2023 - 01/07/2023	1.02	1.06
2	01/08/2023 - 01/14/2023	1.01	1.05
3	01/15/2023 - 01/21/2023	1.01	1.05
4	01/22/2023 - 01/28/2023	0.99	1.03
* 5	01/29/2023 - 02/04/2023	0.98	1.02
* 6	02/05/2023 - 02/11/2023	0.96	1.00
* 7	02/12/2023 - 02/18/2023	0.94	0.98
* 8	02/19/2023 - 02/25/2023	0.94	0.98
* 9	02/26/2023 - 03/04/2023	0.94	0.98
*10	03/05/2023 - 03/11/2023	0.94	0.98
*11	03/12/2023 - 03/18/2023	0.94	0.98
*12	03/19/2023 - 03/25/2023	0.95	0.99
*13	03/26/2023 - 04/01/2023	0.96	1.00
*14	04/02/2023 - 04/08/2023	0.96	1.00
*15	04/09/2023 - 04/15/2023	0.97	1.01
*16	04/16/2023 - 04/22/2023	0.98	1.02
*17	04/23/2023 - 04/29/2023	0.99	1.03
18	04/30/2023 - 05/06/2023	0.99	1.03
19	05/07/2023 - 05/13/2023	1.00	1.04
20	05/14/2023 - 05/20/2023	1.01	1.05
21	05/21/2023 - 05/27/2023	1.02	1.06
22	05/28/2023 - 06/03/2023	1.02	1.06
23	06/04/2023 - 06/10/2023	1.03	1.07
24	06/11/2023 - 06/17/2023	1.04	1.08
25	06/18/2023 - 06/24/2023	1.05	1.09
26	06/25/2023 - 07/01/2023	1.05	1.09
27	07/02/2023 - 07/08/2023	1.06	1.10
28	07/09/2023 - 07/15/2023	1.06	1.10
29	07/16/2023 - 07/22/2023	1.06	1.10
30	07/23/2023 - 07/29/2023	1.06	1.10
31	07/30/2023 - 08/05/2023	1.06	1.10
32	08/06/2023 - 08/12/2023	1.06	1.10
33	08/13/2023 - 08/19/2023	1.06	1.10
34	08/20/2023 - 08/26/2023	1.05	1.09
35	08/27/2023 - 09/02/2023	1.04	1.08
36	09/03/2023 - 09/09/2023	1.03	1.07
37	09/10/2023 - 09/16/2023	1.03	1.07
38	09/17/2023 - 09/23/2023	1.02	1.06
39	09/24/2023 - 09/30/2023	1.01	1.05
40	10/01/2023 - 10/07/2023	1.00	1.04
41	10/08/2023 - 10/14/2023	0.99	1.03
42	10/15/2023 - 10/21/2023	0.98	1.02
43	10/22/2023 - 10/28/2023	0.99	1.03
44	10/29/2023 - 11/04/2023	0.99	1.03
45	11/05/2023 - 11/11/2023	0.99	1.03
46	11/12/2023 - 11/18/2023	0.99	1.03
47	11/19/2023 - 11/25/2023	1.00	1.04
48	11/26/2023 - 12/02/2023	1.01	1.05
49	12/03/2023 - 12/09/2023	1.01	1.05
50	12/10/2023 - 12/16/2023	1.02	1.06
51	12/17/2023 - 12/23/2023	1.02	1.06
52	12/24/2023 - 12/30/2023	1.01	1.05
53	12/31/2023 - 12/31/2023	1.01	1.05

* PEAK SEASON

GROWTH RATE

LINCKS & ASSOCIATES, LLC

TABLE A-1

GROWTH RATE DETERMINATION

Road	Location	2023 Volume	2019 Volume	Growth Rate
Dundee Rd	E of 17th St NE	18,200	16,900	-
Dundee Rd	E of 6th Street SE	13,900	12,200	-
	Average	16,050	14,550	2.58% / Year

FLORIDA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION STATISTICS OFFICE
2023 HISTORICAL AADT REPORT

COUNTY: 16 - POLK

SITE: 0034 - SR 542/DUNDEE RD, E OF 17TH ST NE WH

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2023	18200 C	E 9100	W 9100	9.00	55.00	3.90
2022	15200 C	E 7500	W 7700	9.00	55.20	5.60
2021	13800 C	E 6700	W 7100	9.00	55.30	4.40
2020	14100 C	E 6800	W 7300	9.00	53.40	6.30
2019	16900 F	E 8400	W 8500	9.00	56.00	3.70
2018	16300 C	E 8100	W 8200	9.00	54.50	3.70
2017	15600 C	E 7800	W 7800	9.00	54.50	3.50
2016	16000 C	E 7900	W 8100	9.00	53.30	3.20
2015	15300 C	E 7600	W 7700	9.00	55.70	3.30
2014	13600 S	E 6800	W 6800	9.00	55.60	3.40
2013	13400 F	E 6700	W 6700	9.00	55.90	3.40
2012	13400 C	E 6700	W 6700	9.00	55.80	3.40
2011	13500 S	E 6600	W 6900	9.00	55.70	3.50
2010	13500 F	E 6600	W 6900	9.55	56.07	3.50
2009	13700 C	E 6700	W 7000	9.36	56.35	3.50
2008	13700 C	E 6800	W 6900	9.78	55.29	3.40

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

FLORIDA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION STATISTICS OFFICE
2023 HISTORICAL AADT REPORT

COUNTY: 16 - POLK

SITE: 5157 - SR542/CENTRAL AV, E OF 6TH STREET SE, WINTER HAVEN

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2023	13900 F	E 6600	W 7300	9.00	55.00	4.60
2022	13100 C	E 6200	W 6900	9.00	55.20	4.60
2021	10900 C	E 5000	W 5900	9.00	55.30	4.40
2020	12200 S	E 5800	W 6400	9.00	53.40	3.90
2019	12200 F	E 5800	W 6400	9.00	56.00	3.90
2018	11800 C	E 5600	W 6200	9.00	54.50	3.90
2017	11500 C	E 5600	W 5900	9.00	54.50	3.50
2016	11600 C	E 5500	W 6100	9.00	53.30	2.90
2015	10900 C	E 5200	W 5700	9.00	55.70	3.00
2014	10400 S	E 4900	W 5500	9.00	55.60	3.90
2013	10200 F	E 4800	W 5400	9.00	55.90	3.90
2012	10200 C	E 4800	W 5400	9.00	55.80	3.90
2011	9600 S	E 4600	W 5000	9.00	55.70	2.80
2010	9600 F	E 4600	W 5000	9.55	56.07	2.80
2009	9700 C	E 4600	W 5100	9.36	56.35	2.80
2008	10400 C	E 4900	W 5500	9.78	55.29	3.10

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

TIS DUNDEE ROAD MEDICAL OFFICES

TR TRANSPORTATION CONSULTANTS, INC

2726 OAK RIDGE COURT, SUITE 503
FORT MYERS, FL 33901-9356
OFFICE 239.278.3090
FAX 239.278.1906

TRAFFIC ENGINEERING
TRANSPORTATION PLANNING
SIGNAL SYSTEMS/DESIGN

TRAFFIC IMPACT STATEMENT

FOR

DUNDEE ROAD MEDICAL OFFICES
CITY OF WINTER HAVEN, FLORIDA

(PROJECT NO. F2308.37)

PREPARED BY:
TR Transportation Consultants, Inc.
Certificate of Authorization Number: 27003
2726 Oak Ridge Court, Suite 503
Fort Myers, Florida 33901-9356
(239) 278-3090

October 30, 2023

Yury Bykau

Digitally signed by Yury Bykau
Date: 2023.10.30 10:30:51 -04'00'

TRANSPORTATION CONSULTANTS, INC

CONTENTS

TRANSPORTATION CONSULTANTS, INC

LIST OF FIGURES

LIST OF TABLES

TR TRANSPORTATION CONSULTANTS, INC

I. INTRODUCTION

TR Transportation Consultants, Inc. has conducted a traffic impact statement to fulfill requirements set forth by the City of Winter Haven and Florida Department of Transportation (FDOT) for projects seeking site development plan and access approvals. The subject site is located on the south side of Dundee Road (SR 542) just east of Buckeye Loop Road (Parcels #262826-592003-000060, #262826-592003-000050, and #262826-592003-000040) in the City of Winter Haven, Florida. **Figure 1** illustrates the approximate location of the subject site.

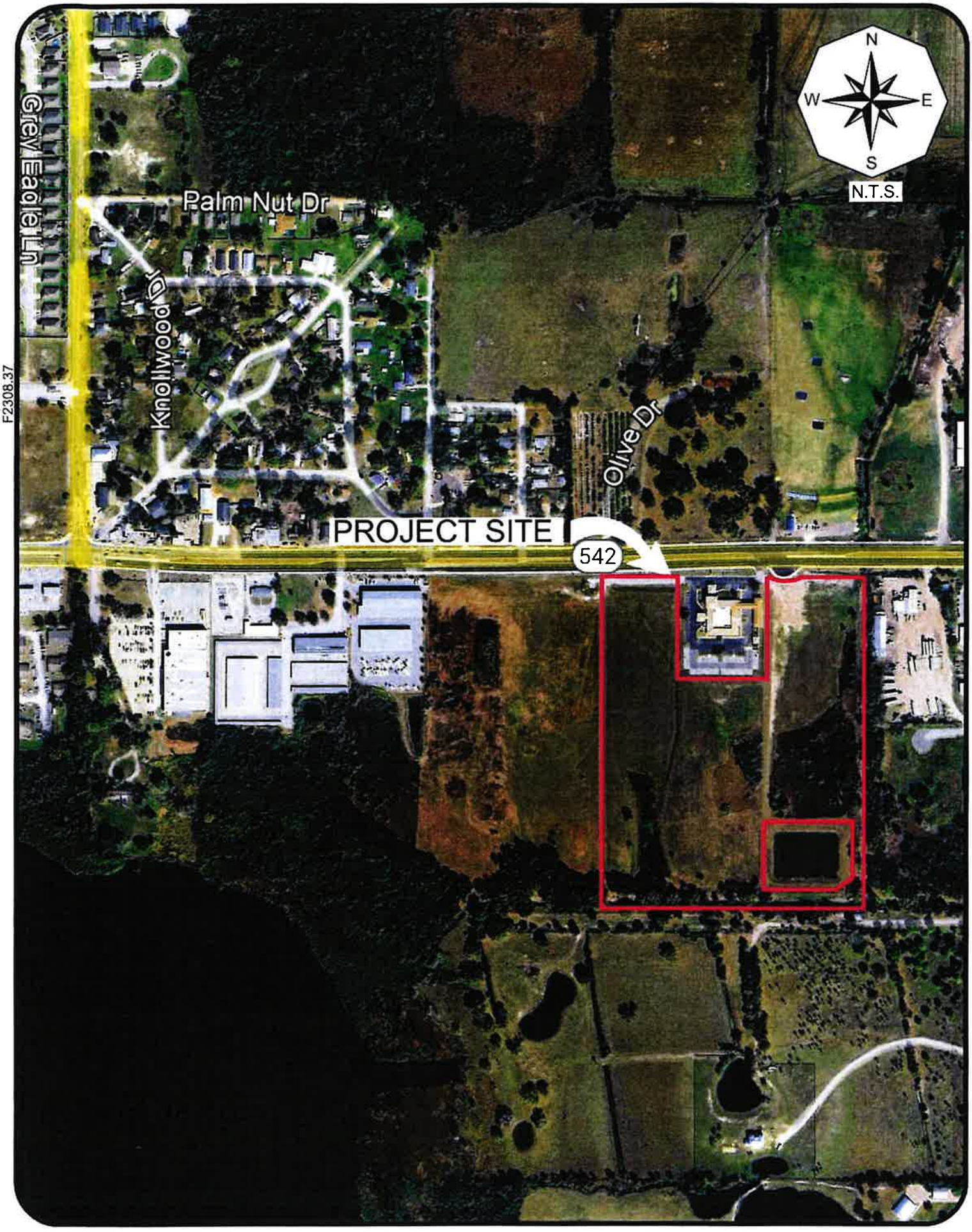
Based on the site plan, the subject site is proposed to be developed with up to 66,000 square feet of medical office uses. Access to the subject site will be provided to Dundee Road (SR 542) via one existing right-in/right-out only access connection and one existing full access connection.

This report examines the impact of the development on the surrounding roadways. Trip generation and assignment to the site access drives will be completed and analysis conducted to determine the impacts of the development on the surrounding streets and intersections.

II. EXISTING CONDITIONS

The subject site is currently vacant. The site is generally bordered by Dundee Road (SR 542) and existing medical facility to the north, a truck repair shop and vacant land to the east, and by vacant land to the south and west.

Dundee Road (SR 542) is an east/west four-lane divided arterial that borders the subject site to the north. SR 542 has a posted speed limit of 50 mph and is under the jurisdiction of Florida Department of Transportation (FDOT).



F2308.37

TR TRANSPORTATION CONSULTANTS, INC

PROJECT LOCATION MAP
DUNDEE ROAD MEDICAL OFFICES

Figure 1

TR TRANSPORTATION CONSULTANTS, INC

III. PROPOSED DEVELOPMENT

Based on the site plan, the subject site is proposed to be developed with up to 66,000 square feet of medical office uses. **Table 1** summarizes the land use utilized for trip generation purposes of the proposed development.

Table 1
Land Use
Dundee Road Medical Offices

Land Use	Size
Medical Office	66,000 Sq. Ft.

Access to the subject site will be provided to Dundee Road (SR 542) via one existing right-in/right-out only access connection and one existing full access connection.

IV. TRIP GENERATION & DISTRIBUTION

The trip generation for the proposed development was determined by referencing the Institute of Transportation Engineer's (ITE) report, titled ***Trip Generation Manual***, 11th Edition. Land Use Code 720 (Medical-Dental Office Building) was utilized for the trip generation purposes of the proposed medical office uses. **Table 2** outlines the anticipated weekday A.M. and P.M. peak hour and daily trip generation of the project as currently proposed.

Table 2
Trip Generation
Dundee Road Medical Offices

Land Use	Weekday A.M. Peak Hour			Weekday P.M. Peak Hour			Daily
	In	Out	Total	In	Out	Total	(2-way)
Medical Office (66,000 Sq. Ft.)	131	35	166	80	185	265	2,728

The trips the proposed development is anticipated to generate as shown in Table 2 were assigned to the site access drive and the surrounding roadway network. Based on current and projected population in the area and other existing or planned competing/complementary uses in the area, a distribution of the site traffic was formulated. The anticipated trip distribution of the development traffic on Dundee Road (SR 542) is shown on **Figure 2**. Also shown on Figure 2 is the site traffic assignment to the existing site access drives.

V. LEVEL OF SERVICE ANALYSIS

In order to determine which roadway segments surrounding the site may be significantly impacted as outlined in the Polk County guidelines, **Table 1A**, in the Appendix, was created. This table indicates which roadway links will accommodate an amount of project traffic greater than the 5% of the generalized planning capacity for the minimum acceptable level of service standard. The adopted Level of Service Directional Capacity for Dundee Road (SR 542) was obtained from the ***2022 District One Level of Service Report***. It is important to note that to be consistent with the historical traffic studies completed for the City of Winter Haven, the Level of Service Threshold volumes were adjusted to 110%. Based on the results obtained from Table 1A, it was concluded that the proposed development will not significantly impact any of the roadways in the study area. Therefore, only Dundee Road (SR 542) adjacent to the site was included in the capacity analysis conducted as part of this report.

A Level of Service analysis was conducted on the surrounding roadway network to determine if there will be sufficient capacity to accommodate the trips from the proposed medical office development. The existing traffic data was obtained from the Polk County's ***2023 Roadway Network Database***. For the purposes of this analysis, it was assumed that the development would be completed by 2025. In order to estimate the 2025 peak hour traffic volumes, the existing peak hour volumes were adjusted by the appropriate growth rate, which was obtained from Polk County's ***2023 Roadway Network Database***. From this database, it was determined that all of the roadways being analyzed will require a minimum annual growth rate of two percent (2%) per year, compounded annually.

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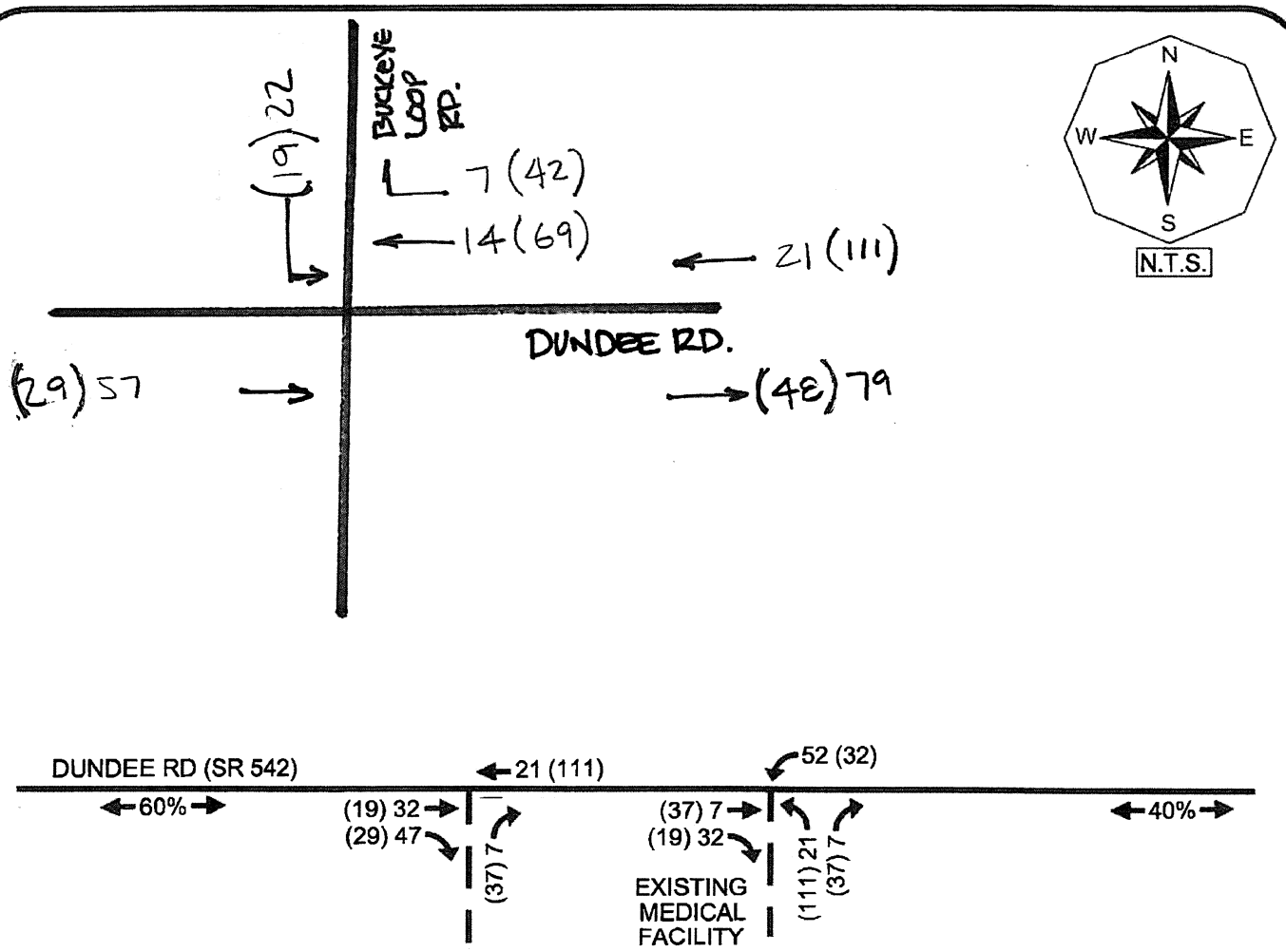


SITE

LEGEND

← 000 WEEKDAY AM PEAK HOUR SITE TRAFFIC
←(000) WEEKDAY PM PEAK HOUR SITE TRAFFIC
←20%→ PERCENT TRIP DISTRIBUTION

TR TRANSPORTATION CONSULTANTS, INC

TRIP DISTRIBUTION & SITE TRAFFIC ASSIGNMENT DUNDEE ROAD MEDICAL OFFICES

Figure 2

SIGNAL TIMINGS

This document has been digitally signed and sealed by

FDOT - DISTRICT 1
801 N Broadway Ave, Bartow, FL 33830

Signal Timing Report

(For isolated traffic signal)

Drawn By:	NAT
Date:	Dec-20
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	
12/2020: Updated Clearance Intervals **per FPID #410666-2-52-01**	Section: ***16280-000***	Mile Post: ***2.476***
	Major Street: ***SR 542***	Orientation: ***E/W***
	Minor Street: ***Buckeye Loop***	Orientation: ***N/S***
	Sig ID: ***811***	

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	***WBL***	***EB***			***EBL***	***WB***	**SB**	***NB***	
Turn Type	***Prot/Perm***				***Prot/Perm***				
Min Green	***5***	***17***			***5***	***17***	7	***7***	
Ext	***3.0***	***5.0***			***3.0***	***5.0***	3.0	***3.0***	
Yellow	***4.3***	***4.3***			***4.3***	***4.3***	4.1	***3.7***	
All Red	***3.0***	***3.0***			***3.0***	***3.0***	2.5	***2.4***	
Max I	***20***	***60***			***20***	***60***	25.0	***10***	
Max II									
Max Limit							45		
Adjust By							10		
Walk		***7***				***7***	7	***7***	
Flashing Don't Walk		***9***				***21***	26	***24***	
Detector Memory									
Det. Cross Switch.	***YES***				***YES***				
Dual Entry		***ON***				***ON***			
Recall		***MIN***				***MIN***			

SOP 9

Ring - 1	1	2		**7**	8
Ring - 2	5	6			

Notes:

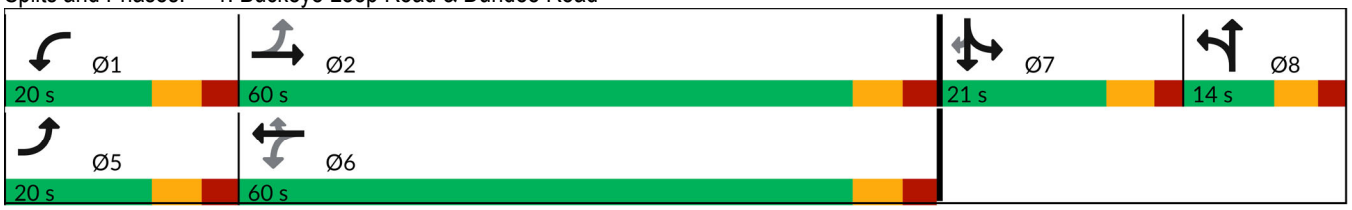
1) Program phase restrictions to omit phase 1 when phase 2 is green, and omit phase 5 when phase 6 is green, in addition to detector cross switching
2) Program 8 Seconds detection delay for minor street right turn movements.
3) Program 3 seconds detection delay for SBL turn movement.

INTERSECTION ANALYSIS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	492	1	19	819	411	1	0	0	333	1	217
Future Volume (vph)	104	492	1	19	819	411	1	0	0	333	1	217
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	5%	4%	0%	11%	2%	3%	0%	0%	0%	7%	0%	2%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases	2			6		6						7
Detector Phase	5	2		1	6	6	8	8		7	7	7
Switch Phase												
Minimum Initial (s)	5.0	17.0		5.0	17.0	17.0	7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	12.3	25.3		12.3	25.3	25.3	13.1	13.1		13.6	13.6	13.6
Total Split (s)	20.0	60.0		20.0	60.0	60.0	14.0	14.0		21.0	21.0	21.0
Total Split (%)	17.4%	52.2%		17.4%	52.2%	52.2%	12.2%	12.2%		18.3%	18.3%	18.3%
Yellow Time (s)	4.3	4.3		4.3	4.3	4.3	3.7	3.7		4.1	4.1	4.1
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	2.4	2.4		2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	7.3	7.3		7.3	7.3	7.3		6.1			6.6	6.6
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	Min		None	Min	Min	None	None		None	None	None
Act Effct Green (s)	70.2	65.5		58.9	52.9	52.9		7.0			14.5	14.5
Actuated g/C Ratio	0.69	0.65		0.58	0.52	0.52		0.07			0.14	0.14
v/c Ratio	0.43	0.23		0.04	0.90	0.45		0.01			1.47	0.55
Control Delay (s/veh)	15.4	9.5		6.8	36.4	6.2		48.0			267.7	11.1
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Total Delay (s/veh)	15.4	9.5		6.8	36.4	6.2		48.0			267.7	11.1
LOS	B	A		A	D	A		D			F	B
Approach Delay (s/veh)		10.5			26.0			48.0			166.6	
Approach LOS		B			C			D			F	

Intersection Summary	
Cycle Length: 115	
Actuated Cycle Length: 101.4	
Natural Cycle: 120	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.47	
Intersection Signal Delay (s/veh): 54.5	Intersection LOS: D
Intersection Capacity Utilization 83.9%	ICU Level of Service E
Analysis Period (min) 15	

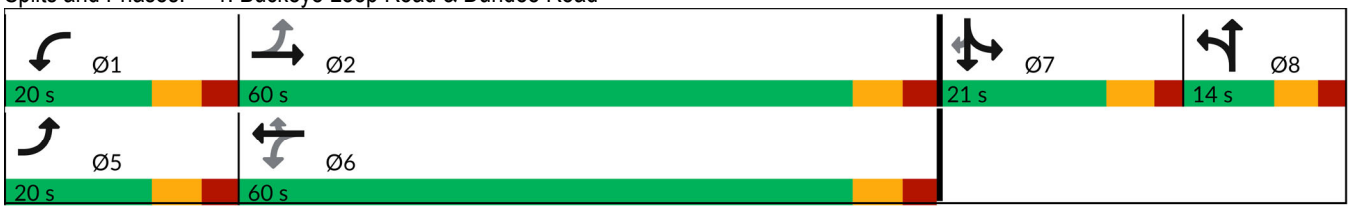
Splits and Phases: 1: Buckeye Loop Road & Dundee Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	169	933	8	36	522	317	8	2	0	362	6	113
Future Volume (vph)	169	933	8	36	522	317	8	2	0	362	6	113
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	1%	0%	0%	2%	3%	0%	0%	0%	1%	0%	2%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases	2			6		6						7
Detector Phase	5	2		1	6	6	8	8		7	7	7
Switch Phase												
Minimum Initial (s)	5.0	17.0		5.0	17.0	17.0	7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	12.3	25.3		12.3	25.3	25.3	13.1	13.1		13.6	13.6	13.6
Total Split (s)	20.0	60.0		20.0	60.0	60.0	14.0	14.0		21.0	21.0	21.0
Total Split (%)	17.4%	52.2%		17.4%	52.2%	52.2%	12.2%	12.2%		18.3%	18.3%	18.3%
Yellow Time (s)	4.3	4.3		4.3	4.3	4.3	3.7	3.7		4.1	4.1	4.1
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	2.4	2.4		2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	7.3	7.3		7.3	7.3	7.3		6.1			6.6	6.6
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	Min		None	Min	Min	None	None		None	None	None
Act Effct Green (s)	49.6	43.1		38.6	32.2	32.2		7.4			15.0	15.0
Actuated g/C Ratio	0.60	0.52		0.47	0.39	0.39		0.09			0.18	0.18
v/c Ratio	0.48	0.56		0.13	0.81	0.43		0.07			1.27	0.30
Control Delay (s/veh)	11.1	15.9		8.3	31.6	3.6		43.8			175.3	4.8
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Total Delay (s/veh)	11.1	15.9		8.3	31.6	3.6		43.8			175.3	4.8
LOS	B	B		A	C	A		D			F	A
Approach Delay (s/veh)		15.2			20.6			43.8			135.3	
Approach LOS		B			C			D			F	

Intersection Summary	
Cycle Length: 115	
Actuated Cycle Length: 82.2	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.27	
Intersection Signal Delay (s/veh): 40.6	Intersection LOS: D
Intersection Capacity Utilization 77.9%	ICU Level of Service D
Analysis Period (min) 15	

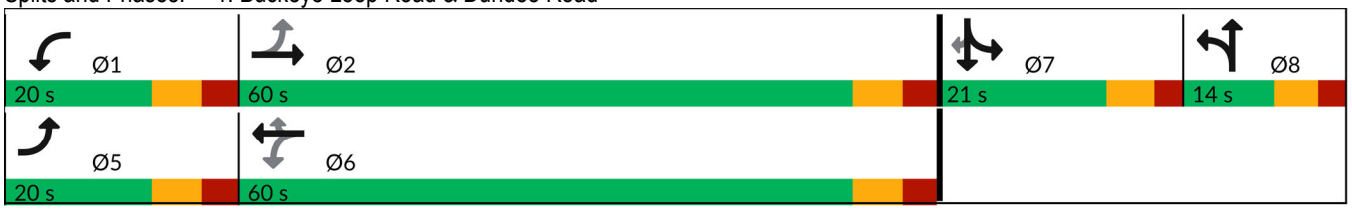
Splits and Phases: 1: Buckeye Loop Road & Dundee Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	108	569	1	20	866	434	1	0	0	368	1	226
Future Volume (vph)	108	569	1	20	866	434	1	0	0	368	1	226
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	5%	4%	0%	11%	2%	3%	0%	0%	0%	7%	0%	2%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases	2			6		6						7
Detector Phase	5	2		1	6	6	8	8		7	7	7
Switch Phase												
Minimum Initial (s)	5.0	17.0		5.0	17.0	17.0	7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	12.3	25.3		12.3	25.3	25.3	13.1	13.1		13.6	13.6	13.6
Total Split (s)	20.0	60.0		20.0	60.0	60.0	14.0	14.0		21.0	21.0	21.0
Total Split (%)	17.4%	52.2%		17.4%	52.2%	52.2%	12.2%	12.2%		18.3%	18.3%	18.3%
Yellow Time (s)	4.3	4.3		4.3	4.3	4.3	3.7	3.7		4.1	4.1	4.1
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	2.4	2.4		2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	7.3	7.3		7.3	7.3	7.3		6.1			6.6	6.6
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	Min		None	Min	Min	None	None		None	None	None
Act Effct Green (s)	70.3	65.5		58.9	52.9	52.9		7.0			14.5	14.5
Actuated g/C Ratio	0.69	0.65		0.58	0.52	0.52		0.07			0.14	0.14
v/c Ratio	0.47	0.27		0.04	0.95	0.48		0.01			1.63	0.56
Control Delay (s/veh)	21.0	9.7		6.8	44.0	6.9		48.0			333.7	11.2
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Total Delay (s/veh)	21.0	9.7		6.8	44.0	6.9		48.0			333.7	11.2
LOS	C	A		A	D	A		D			F	B
Approach Delay (s/veh)		11.5			31.2			48.0			211.2	
Approach LOS		B			C			D			F	

Intersection Summary		
Cycle Length: 115		
Actuated Cycle Length: 101.5		
Natural Cycle: 150		
Control Type: Actuated-Uncoordinated		
Maximum v/c Ratio: 1.63		
Intersection Signal Delay (s/veh): 67.3	Intersection LOS: E	
Intersection Capacity Utilization 88.4%	ICU Level of Service E	
Analysis Period (min) 15		

Splits and Phases: 1: Buckeye Loop Road & Dundee Road



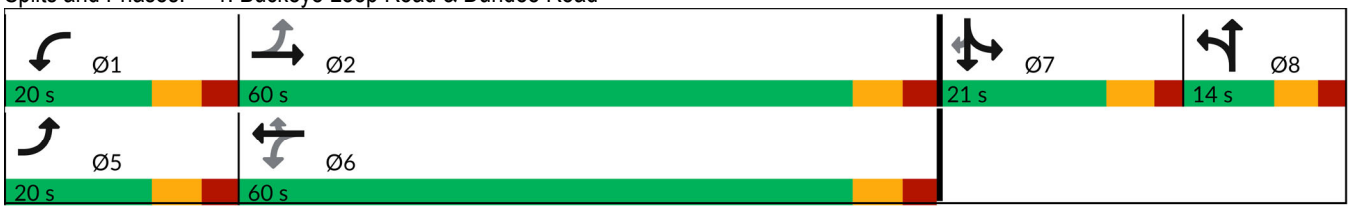
Timings
1: Buckeye Loop Road & Dundee Road

12/18/2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	176	999	8	38	612	372	8	2	0	395	6	118
Future Volume (vph)	176	999	8	38	612	372	8	2	0	395	6	118
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	1%	0%	0%	2%	3%	0%	0%	0%	1%	0%	2%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases	2			6		6						7
Detector Phase	5	2		1	6	6	8	8		7	7	7
Switch Phase												
Minimum Initial (s)	5.0	17.0		5.0	17.0	17.0	7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	12.3	25.3		12.3	25.3	25.3	13.1	13.1		13.6	13.6	13.6
Total Split (s)	20.0	60.0		20.0	60.0	60.0	14.0	14.0		21.0	21.0	21.0
Total Split (%)	17.4%	52.2%		17.4%	52.2%	52.2%	12.2%	12.2%		18.3%	18.3%	18.3%
Yellow Time (s)	4.3	4.3		4.3	4.3	4.3	3.7	3.7		4.1	4.1	4.1
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	2.4	2.4		2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	7.3	7.3		7.3	7.3	7.3		6.1			6.6	6.6
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	Min		None	Min	Min	None	None		None	None	None
Act Effct Green (s)	56.6	49.9		44.9	38.5	38.5		7.3			14.8	14.8
Actuated g/C Ratio	0.64	0.56		0.51	0.43	0.43		0.08			0.17	0.17
v/c Ratio	0.56	0.56		0.15	0.85	0.47		0.07			1.51	0.33
Control Delay (s/veh)	16.4	15.4		8.1	34.4	4.3		46.4			275.8	5.7
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Total Delay (s/veh)	16.4	15.4		8.1	34.4	4.3		46.4			275.8	5.7
LOS	B	B		A	C	A		D			F	A
Approach Delay (s/veh)		15.5			22.5			46.4			214.3	
Approach LOS		B			C			D			F	

Intersection Summary			
Cycle Length: 115			
Actuated Cycle Length: 88.8			
Natural Cycle: 120			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.51			
Intersection Signal Delay (s/veh): 56.0		Intersection LOS: E	
Intersection Capacity Utilization 85.1%		ICU Level of Service E	
Analysis Period (min) 15			

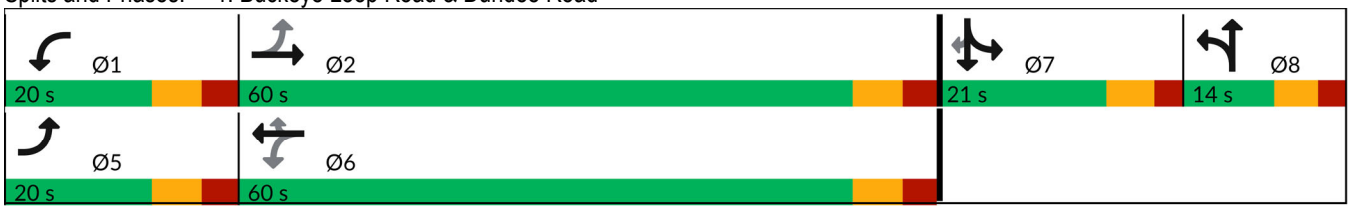
Splits and Phases: 1: Buckeye Loop Road & Dundee Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	113	552	1	20	908	420	1	0	0	402	1	218
Future Volume (vph)	113	552	1	20	908	420	1	0	0	402	1	218
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	5%	4%	0%	11%	2%	3%	0%	0%	0%	7%	0%	2%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases	2			6		6						7
Detector Phase	5	2		1	6	6	8	8		7	7	7
Switch Phase												
Minimum Initial (s)	5.0	17.0		5.0	17.0	17.0	7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	12.3	25.3		12.3	25.3	25.3	13.1	13.1		13.6	13.6	13.6
Total Split (s)	20.0	60.0		20.0	60.0	60.0	14.0	14.0		21.0	21.0	21.0
Total Split (%)	17.4%	52.2%		17.4%	52.2%	52.2%	12.2%	12.2%		18.3%	18.3%	18.3%
Yellow Time (s)	4.3	4.3		4.3	4.3	4.3	3.7	3.7		4.1	4.1	4.1
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	2.4	2.4		2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	7.3	7.3		7.3	7.3	7.3		6.1			6.6	6.6
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	Min		None	Min	Min	None	None		None	None	None
Act Effct Green (s)	70.6	65.7		58.9	52.9	52.9		7.0			14.5	14.5
Actuated g/C Ratio	0.69	0.65		0.58	0.52	0.52		0.07			0.14	0.14
v/c Ratio	0.49	0.26		0.04	1.00	0.47		0.01			1.79	0.57
Control Delay (s/veh)	22.0	9.7		6.9	54.5	7.3		48.0			399.6	14.0
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Total Delay (s/veh)	22.0	9.7		6.9	54.5	7.3		48.0			399.6	14.0
LOS	C	A		A	D	A		D			F	B
Approach Delay (s/veh)		11.8			39.1			48.0			264.3	
Approach LOS		B			D			D			F	

Intersection Summary	
Cycle Length: 115	
Actuated Cycle Length: 101.7	
Natural Cycle: 150	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.79	
Intersection Signal Delay (s/veh): 85.3	Intersection LOS: F
Intersection Capacity Utilization 92.6%	ICU Level of Service F
Analysis Period (min) 15	

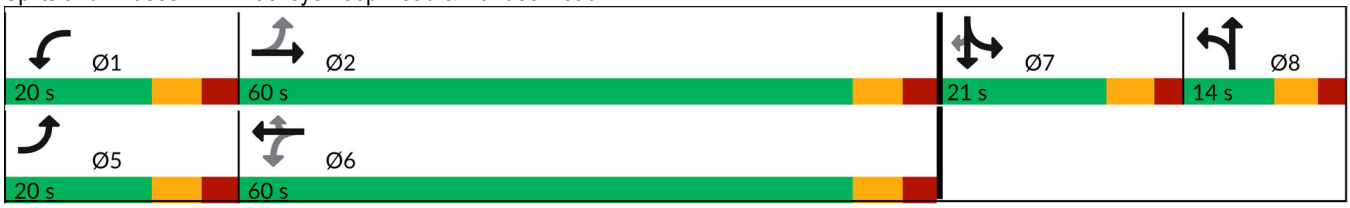
Splits and Phases: 1: Buckeye Loop Road & Dundee Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	182	967	8	38	645	361	8	2	0	458	6	114
Future Volume (vph)	182	967	8	38	645	361	8	2	0	458	6	114
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	1%	0%	0%	2%	3%	0%	0%	0%	1%	0%	2%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases	2			6		6						7
Detector Phase	5	2		1	6	6	8	8		7	7	7
Switch Phase												
Minimum Initial (s)	5.0	17.0		5.0	17.0	17.0	7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	12.3	25.3		12.3	25.3	25.3	13.1	13.1		13.6	13.6	13.6
Total Split (s)	20.0	60.0		20.0	60.0	60.0	14.0	14.0		21.0	21.0	21.0
Total Split (%)	17.4%	52.2%		17.4%	52.2%	52.2%	12.2%	12.2%		18.3%	18.3%	18.3%
Yellow Time (s)	4.3	4.3		4.3	4.3	4.3	3.7	3.7		4.1	4.1	4.1
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	2.4	2.4		2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	7.3	7.3		7.3	7.3	7.3		6.1			6.6	6.6
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	Min		None	Min	Min	None	None		None	None	None
Act Effct Green (s)	60.1	53.2		47.8	41.4	41.4		7.3			14.8	14.8
Actuated g/C Ratio	0.65	0.58		0.52	0.45	0.45		0.08			0.16	0.16
v/c Ratio	0.59	0.53		0.14	0.87	0.45		0.08			1.82	0.32
Control Delay (s/veh)	19.9	14.6		7.8	35.3	4.7		47.7			408.2	5.2
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Total Delay (s/veh)	19.9	14.6		7.8	35.3	4.7		47.7			408.2	5.2
LOS	B	B		A	D	A		D			F	A
Approach Delay (s/veh)		15.4			23.7			47.7			328.9	
Approach LOS		B			C			D			F	

Intersection Summary	
Cycle Length: 115	
Actuated Cycle Length: 92.1	
Natural Cycle: 150	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.82	
Intersection Signal Delay (s/veh): 83.6	Intersection LOS: F
Intersection Capacity Utilization 91.2%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 1: Buckeye Loop Road & Dundee Road



Intersection: 1: Buckeye Loop Road & Dundee Road

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	L	T	R	LTR	LT	R
Maximum Queue (ft)	67	144	102	196	493	237	10	230	1311
Average Queue (ft)	42	79	23	54	344	96	2	229	809
95th Queue (ft)	79	140	66	209	595	245	14	230	1338
Link Distance (ft)		1439			1302	1302	184		1303
Upstream Blk Time (%)									7
Queuing Penalty (veh)									0
Storage Bay Dist (ft)	270		270	230				180	
Storage Blk Time (%)					20			80	2
Queuing Penalty (veh)					4			174	9

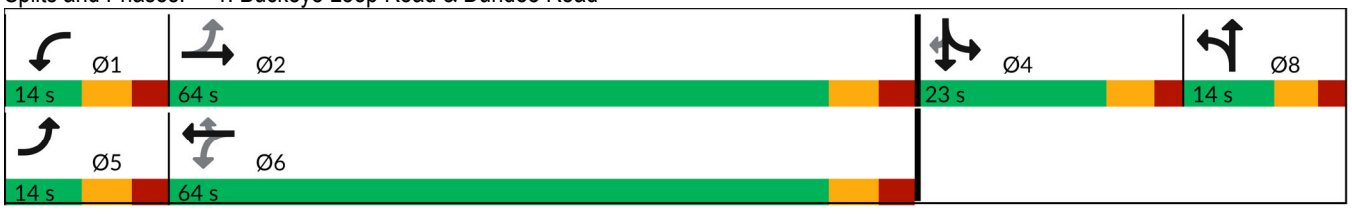
Intersection: 1: Buckeye Loop Road & Dundee Road

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	L	T	R	LTR	LT	R
Maximum Queue (ft)	132	213	178	45	365	109	38	230	1321
Average Queue (ft)	79	131	94	26	209	71	10	229	939
95th Queue (ft)	144	203	185	53	309	111	37	229	1537
Link Distance (ft)		1439			1302	1302	184		1303
Upstream Blk Time (%)									20
Queuing Penalty (veh)									0
Storage Bay Dist (ft)	270		270	230				180	
Storage Blk Time (%)					6			83	
Queuing Penalty (veh)					2			94	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	113	552	1	20	908	420	1	0	0	402	1	218
Future Volume (vph)	113	552	1	20	908	420	1	0	0	402	1	218
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	5%	4%	0%	11%	2%	3%	0%	0%	0%	7%	0%	2%
Shared Lane Traffic (%)										50%		
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2			6		6						4
Detector Phase	5	2		1	6	6	8	8		4	4	4
Switch Phase												
Minimum Initial (s)	5.0	17.0		5.0	17.0	17.0	7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	12.3	25.3		12.3	25.3	25.3	13.1	13.1		13.6	13.6	13.6
Total Split (s)	14.0	64.0		14.0	64.0	64.0	14.0	14.0		23.0	23.0	23.0
Total Split (%)	12.2%	55.7%		12.2%	55.7%	55.7%	12.2%	12.2%		20.0%	20.0%	20.0%
Yellow Time (s)	4.3	4.3		4.3	4.3	4.3	3.7	3.7		4.1	4.1	4.1
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	2.4	2.4		2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)	7.3	7.3		7.3	7.3	7.3		6.1		6.6	6.6	6.6
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Recall Mode	None	Min		None	Min	Min	None	None		None	None	None
Act Effct Green (s)	68.2	65.6		62.8	56.8	56.8		7.0		16.3	16.3	16.3
Actuated g/C Ratio	0.66	0.63		0.61	0.55	0.55		0.07		0.16	0.16	0.16
v/c Ratio	0.68	0.27		0.04	0.95	0.45		0.01		0.85	0.85	0.52
Control Delay (s/veh)	39.0	10.5		6.9	41.2	5.8		48.0		72.1	72.1	10.2
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Delay (s/veh)	39.0	10.5		6.9	41.2	5.8		48.0		72.1	72.1	10.2
LOS	D	B		A	D	A		D		E	E	B
Approach Delay (s/veh)		15.3			29.7			48.0			50.4	
Approach LOS		B			C			D			D	

Intersection Summary	
Cycle Length: 115	
Actuated Cycle Length: 103.5	
Natural Cycle: 110	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.95	
Intersection Signal Delay (s/veh): 30.9	Intersection LOS: C
Intersection Capacity Utilization 83.8%	ICU Level of Service E
Analysis Period (min) 15	

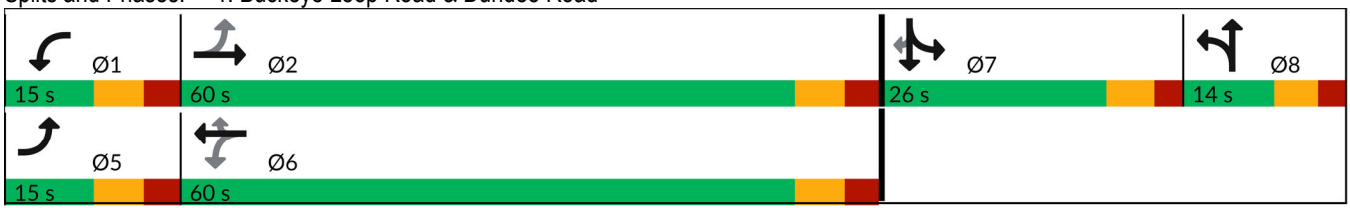
Splits and Phases: 1: Buckeye Loop Road & Dundee Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	182	967	8	38	645	361	8	2	0	458	6	114
Future Volume (vph)	182	967	8	38	645	361	8	2	0	458	6	114
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	1%	0%	0%	2%	3%	0%	0%	0%	1%	0%	2%
Shared Lane Traffic (%)										49%		
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases	2			6		6						7
Detector Phase	5	2		1	6	6	8	8		7	7	7
Switch Phase												
Minimum Initial (s)	5.0	17.0		5.0	17.0	17.0	7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	12.3	25.3		12.3	25.3	25.3	13.1	13.1		13.6	13.6	13.6
Total Split (s)	15.0	60.0		15.0	60.0	60.0	14.0	14.0		26.0	26.0	26.0
Total Split (%)	13.0%	52.2%		13.0%	52.2%	52.2%	12.2%	12.2%		22.6%	22.6%	22.6%
Yellow Time (s)	4.3	4.3		4.3	4.3	4.3	3.7	3.7		4.1	4.1	4.1
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	2.4	2.4		2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)	7.3	7.3		7.3	7.3	7.3		6.1		6.6	6.6	6.6
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	Min		None	Min	Min	None	None		None	None	None
Act Effct Green (s)	54.2	49.9		48.8	42.3	42.3		7.3		18.8	18.8	18.8
Actuated g/C Ratio	0.58	0.54		0.53	0.46	0.46		0.08		0.20	0.20	0.20
v/c Ratio	0.76	0.57		0.15	0.85	0.45		0.08		0.77	0.75	0.28
Control Delay (s/veh)	33.6	17.8		9.2	34.2	4.6		47.9		53.7	52.7	4.3
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Delay (s/veh)	33.6	17.8		9.2	34.2	4.6		47.9		53.7	52.7	4.3
LOS	C	B		A	C	A		D		D	D	A
Approach Delay (s/veh)		20.2			23.0			47.9			43.6	
Approach LOS		C			C			D			D	

Intersection Summary	
Cycle Length: 115	
Actuated Cycle Length: 92.9	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay (s/veh): 26.2	Intersection LOS: C
Intersection Capacity Utilization 76.5%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: Buckeye Loop Road & Dundee Road



Intersection: 1: Buckeye Loop Road & Dundee Road

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	R	LTR	L	LT	R
Maximum Queue (ft)	88	122	67	126	418	319	10	173	191	143
Average Queue (ft)	48	86	26	37	271	118	2	125	158	89
95th Queue (ft)	79	132	68	133	452	349	14	201	202	147
Link Distance (ft)		1433			1296	1296	184			1304
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	270		270	230				180	180	
Storage Blk Time (%)					13			0	3	0
Queuing Penalty (veh)					3			1	6	0

Intersection: 1: Buckeye Loop Road & Dundee Road

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	R	LTR	L	LT	R
Maximum Queue (ft)	105	210	200	66	314	107	37	194	222	143
Average Queue (ft)	78	155	122	31	209	69	18	142	178	54
95th Queue (ft)	120	223	220	65	331	112	43	220	236	148
Link Distance (ft)		1433			1296	1296	184			1304
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	270		270	230				180	180	
Storage Blk Time (%)					7			0	7	
Queuing Penalty (veh)					3			1	8	

HCS Two-Way Stop-Control Report

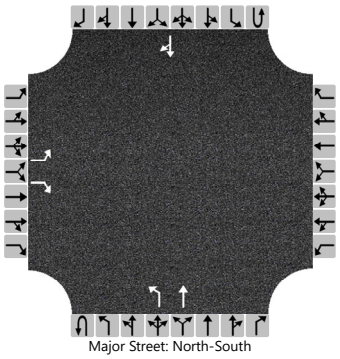
General Information

Analyst	NA
Agency/Co.	Lincks & Associates, LLC
Date Performed	12/18/2024
Analysis Year	2026
Time Analyzed	AM Peak Hour
Intersection Orientation	North-South
Project Description	Background Plus Project Traffic

Site Information

Intersection	Buckeye Loop Rd & Salisbury Dr
Jurisdiction	
East/West Street	Salisbury Dr
North/South Street	Buckeye Loop Rd
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	1	1	0	0	0	1	0
Configuration		L		R						L	T					TR
Volume (veh/h)		31		7						15	519				601	9
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No														
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		34		8						16						
Capacity, c (veh/h)		186		464						926						
v/c Ratio		0.18		0.02						0.02						
95% Queue Length, Q_{95} (veh)		0.6		0.0						0.1						
Control Delay (s/veh)		28.6		12.9						9.0						
Level of Service (LOS)		D		B						A						
Approach Delay (s/veh)		25.7								0.3						
Approach LOS		D								A						

HCS Two-Way Stop-Control Report

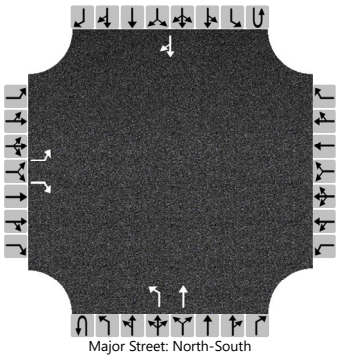
General Information

Analyst	NA
Agency/Co.	Lincks & Associates, LLC
Date Performed	12/18/2024
Analysis Year	2026
Time Analyzed	PM Peak Hour
Intersection Orientation	North-South
Project Description	Background Plus Project Traffic

Site Information

Intersection	Buckeye Loop Rd & Salisbury Dr
Jurisdiction	
East/West Street	Salisbury Dr
North/South Street	Buckeye Loop Rd
Peak Hour Factor	0.96
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	1	1	0	0	0	1	0
Configuration		L		R						L	T					TR
Volume (veh/h)		37		11						26	520				519	6
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No														
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		39		11						27						
Capacity, c (veh/h)		216		539						1022						
v/c Ratio		0.18		0.02						0.03						
95% Queue Length, Q_{95} (veh)		0.6		0.1						0.1						
Control Delay (s/veh)		25.2		11.8						8.6						
Level of Service (LOS)		D		B						A						
Approach Delay (s/veh)		22.1								0.4						
Approach LOS		C								A						

HCS Two-Way Stop-Control Report

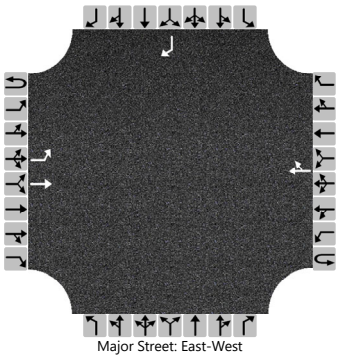
General Information

Analyst	NA
Agency/Co.	Lincks & Associates, LLC
Date Performed	12/18/2024
Analysis Year	2026
Time Analyzed	AM Peak Hour
Intersection Orientation	East-West
Project Description	Background Plus Project Traffic

Site Information

Intersection	Dundee Rd & Project Access A
Jurisdiction	
East/West Street	Dundee Rd
North/South Street	Project Access A
Peak Hour Factor	0.94
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	0	0		0	0	1
Configuration		L	T					TR								R
Volume (veh/h)		40	666				1105	10								6
Percent Heavy Vehicles (%)		2														2
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized														No		
Median Type | Storage			Left + Thru								1					

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1														6.2
Critical Headway (sec)		4.12														6.22
Base Follow-Up Headway (sec)		2.2														3.3
Follow-Up Headway (sec)		2.22														3.32

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		43														6
Capacity, c (veh/h)		589														231
v/c Ratio		0.07														0.03
95% Queue Length, Q_{95} (veh)		0.2														0.1
Control Delay (s/veh)		11.6														21.0
Level of Service (LOS)		B														C
Approach Delay (s/veh)		0.7												21.0		
Approach LOS		A												C		

HCS Two-Way Stop-Control Report

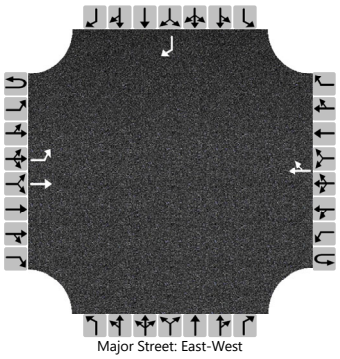
General Information

Analyst	NA
Agency/Co.	Lincks & Associates, LLC
Date Performed	12/18/2024
Analysis Year	2026
Time Analyzed	PM Peak Hour
Intersection Orientation	East-West
Project Description	Background Plus Project Traffic

Site Information

Intersection	Dundee Rd & Project Access A
Jurisdiction	
East/West Street	Dundee Rd
North/South Street	Project Access A
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	0	0		0	0	1
Configuration		L	T					TR								R
Volume (veh/h)		48	1157				752	11								20
Percent Heavy Vehicles (%)		2														2
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized														No		
Median Type | Storage			Left + Thru								1					

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1														6.2
Critical Headway (sec)		4.12														6.22
Base Follow-Up Headway (sec)		2.2														3.3
Follow-Up Headway (sec)		2.22														3.32

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		52														22
Capacity, c (veh/h)		802														373
v/c Ratio		0.07														0.06
95% Queue Length, Q_{95} (veh)		0.2														0.2
Control Delay (s/veh)		9.8														15.2
Level of Service (LOS)		A														C
Approach Delay (s/veh)		0.4												15.2		
Approach LOS		A												C		

HCS Two-Way Stop-Control Report

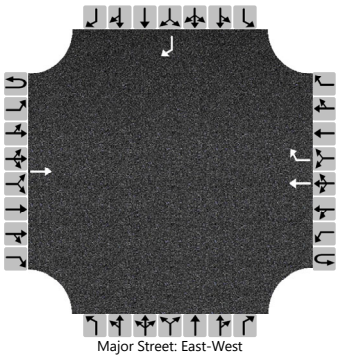
General Information

Analyst	NA
Agency/Co.	Lincks & Associates, LLC
Date Performed	12/18/2024
Analysis Year	2026
Time Analyzed	AM Peak Hour
Intersection Orientation	East-West
Project Description	Background Plus Project Traffic

Site Information

Intersection	Dundee Rd & Project Access B
Jurisdiction	
East/West Street	Dundee Rd
North/South Street	Project Access B
Peak Hour Factor	0.94
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	1		0	0	0		0	0	1
Configuration			T				T	R								R
Volume (veh/h)			666				1066	62								49
Percent Heavy Vehicles (%)																2
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized					No								No			
Median Type | Storage	Left + Thru								1							

Critical and Follow-up Headways

Base Critical Headway (sec)																6.2
Critical Headway (sec)																6.22
Base Follow-Up Headway (sec)																3.3
Follow-Up Headway (sec)																3.32

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)																52
Capacity, c (veh/h)																247
v/c Ratio																0.21
95% Queue Length, Q_{95} (veh)																0.8
Control Delay (s/veh)																23.5
Level of Service (LOS)																C
Approach Delay (s/veh)													23.5			
Approach LOS													C			

HCS Two-Way Stop-Control Report

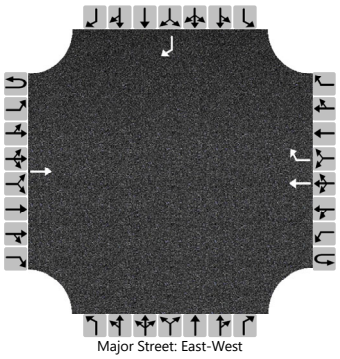
General Information

Analyst	NA
Agency/Co.	Lincks & Associates, LLC
Date Performed	12/18/2024
Analysis Year	2026
Time Analyzed	PM Peak Hour
Intersection Orientation	East-West
Project Description	Background Plus Project Traffic

Site Information

Intersection	Dundee Rd & Project Access B
Jurisdiction	
East/West Street	Dundee Rd
North/South Street	Project Access B
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	1		0	0	0		0	0	1
Configuration			T				T	R								R
Volume (veh/h)			1157				729	40								34
Percent Heavy Vehicles (%)																2
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized							No						No			
Median Type | Storage			Left + Thru								1					

Critical and Follow-up Headways

Base Critical Headway (sec)																6.2
Critical Headway (sec)																6.22
Base Follow-Up Headway (sec)																3.3
Follow-Up Headway (sec)																3.32

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)																37
Capacity, c (veh/h)																389
v/c Ratio																0.10
95% Queue Length, Q_{95} (veh)																0.3
Control Delay (s/veh)																15.2
Level of Service (LOS)																C
Approach Delay (s/veh)													15.2			
Approach LOS													C			

HCS Two-Way Stop-Control Report

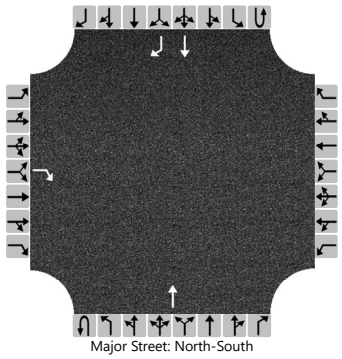
General Information

Analyst	NA
Agency/Co.	Lincks & Associates, LLC
Date Performed	12/18/2024
Analysis Year	2026
Time Analyzed	AM Peak Hour
Intersection Orientation	North-South
Project Description	Background Plus Project Traffic

Site Information

Intersection	Buckeye Loop Rd & Project Access C
Jurisdiction	
East/West Street	Project Access C
North/South Street	Buckeye Loop Rd
Peak Hour Factor	0.94
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	0	0	0	1	0	0	0	1	1
Configuration				R							T				T	R
Volume (veh/h)				46							532				575	30
Percent Heavy Vehicles (%)				2												
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No												No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)				6.2												
Critical Headway (sec)				6.22												
Base Follow-Up Headway (sec)				3.3												
Follow-Up Headway (sec)				3.32												

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				49												
Capacity, c (veh/h)				493												
v/c Ratio				0.10												
95% Queue Length, Q_{95} (veh)				0.3												
Control Delay (s/veh)				13.1												
Level of Service (LOS)				B												
Approach Delay (s/veh)		13.1														
Approach LOS		B														

HCS Two-Way Stop-Control Report

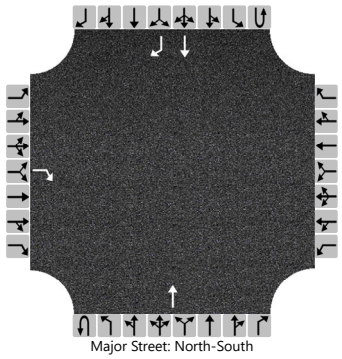
General Information

Analyst	NA
Agency/Co.	Lincks & Associates, LLC
Date Performed	12/18/2024
Analysis Year	2026
Time Analyzed	PM Peak Hour
Intersection Orientation	North-South
Project Description	Background Plus Project Traffic

Site Information

Intersection	Buckeye Loop Rd & Project Access C
Jurisdiction	
East/West Street	Project Access C
North/South Street	Buckeye Loop Rd
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	0	0	0	1	0	0	0	1	1
Configuration				R							T				T	R
Volume (veh/h)				75							543				503	24
Percent Heavy Vehicles (%)				2												
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No												No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)				6.2												
Critical Headway (sec)				6.22												
Base Follow-Up Headway (sec)				3.3												
Follow-Up Headway (sec)				3.32												

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				82												
Capacity, c (veh/h)				537												
v/c Ratio				0.15												
95% Queue Length, Q_{95} (veh)				0.5												
Control Delay (s/veh)				12.9												
Level of Service (LOS)				B												
Approach Delay (s/veh)		12.9														
Approach LOS		B														

POLK COUNTY LDC

Section 705 - Access to County Transportation System (Rev. 7/10/18 - Ord. 18-047; 7/25/01 - Ord. 01- 57; Rev. 12-08-03 Ord. 03-69

This Section establishes standards for the vehicular ingress and egress from public and private roads in order to promote pedestrian and vehicular safety, minimize congestion, promote roadway aesthetics, provide for safe ingress and egress for emergency vehicles and maintain the functional capacity of roads in Polk County.

A. **Minimum Access and Frontage (Rev. 7/10/18 - Ord. 18-047; 03/190/08 - Ord. 08-004; 2/11/02 - Ord. 02-07)**

A tract of land to be used for residential or non-residential purposes shall have:

1. Legal access to a paved County road; and
2. Except as otherwise provided herein, direct frontage on a paved road accepted by the County for maintenance which includes:
   a. NON-RESIDENTIAL DEVELOPMENT - A non-residential development may meet minimum access and frontage requirements through the provision of a County approved, paved private internal service road that gives access to a paved County road and is maintained through a maintenance agreement, easement agreement or other similar agreement;
   b. RESIDENTIAL DEVELOPMENT - A residential development may meet minimum access and frontage requirements as follows:
      i. Through platted private roads, constructed to county standards, which provide access to a paved county road, and whose maintenance and upkeep are provided for by a homeowners association, property - owners association, or other similar organization;
      ii. Through platted public roads constructed to County standards and accepted by Polk County for maintenance and upkeep; or
      iii. Through a legally established easement consistent with the requirements outlined in Section 705 B.
   c. For multi-family developments, a County approved, paved private internal service road can provide access between common areas and a paved county road. The maintenance of said service road must be covered under a maintenance agreement, easement agreement, or other similar agreement.

B. **Residential Access Through Easement (Added 07/10/18 - Ord. 18-047)**

1. An easement providing access to a residential lot from a paved road meeting County standards shall meet the following requirements; the easement shall:
   a.

Provide access for no more than four lots subject to other density, minimum lot size requirements and any other applicable requirements of this Code;

b. Have a minimum width of 20 feet;

c. Not exceed 0.25 miles (1,320 feet) in length;

d. Provide for sufficient ingress and egress for fire trucks, ambulances, police cars and emergency vehicles; and

e. Be supported by the joinder and consent of all fee owners under easements to the use of the easement by the subject parcel(s). If joinders are provided for the easement, it shall be accompanied by an ownership and encumbrance report based on the legal description of the easement. In lieu of joinders, an applicant may provide a legal opinion from a licensed Florida attorney stating a lot has legal access, along with supporting documentation.

2. When creating a parcel that will be accessed solely via an easement as provided for herein, the parent tract (prior to subdividing) shall directly front on a public or private paved road meeting County standards. If the parent parcel fronts an unpaved road that is maintained by the County and the road is less than 0.25 miles (1,320 feet) in length, this shall also suffice as direct frontage.

3. The provisions as outlined in subsection B.1 above shall not be eligible for lots created as part of large unrecorded subdivisions where infrastructure was not constructed, as documented herein this Code.

4. Access provided solely via an easement shall not be permitted in undeveloped recorded subdivisions where infrastructure does not exist, commonly referred to as "paper plats."

5. Access provided solely via easement shall not be permitted in the Green Swamp Area of Critical State Concern.

6. Lot(s) gaining access solely via an easement pursuant to this Section shall be subject to a Level 1 Review and be provided written approval of same prior to obtaining a building permit.

7. Waivers to Section 705 B. (subsections 1.a. [number of lots] and 1.c. and 2. only) may be granted by the Board of County Commissioners pursuant to a Level 4 Review and subject to the waiver provisions in Section 932 of this Code.

C. **Types of Ingress and Egress (Rev. 2/11/02 - Ord. 02-07)**

Intersection [1] design standards vary based on the estimated amount of traffic entering and exiting through a development site entrance according to the most recent ITE [2] manual. The following standards apply to all roads within unincorporated Polk County and all County maintained roads within municipal boundaries where the cumulative traffic generation at a driveway or roadway

intersection exceeds 90 AADT or 20 parking spaces. These standards are graphically depicted in Appendix A of this Code. The applicable intersection types are as follows:

1. A Type I intersection is required for new or reconstructed roads and non-residential driveways serving less than 500 AADT and less than 100 parking spaces. (see figure A.10) However, a 12' lane on the opposite side of the centerline is not required for developments of less the 250 AADT and less than 50 parking spaces.
2. A Type II intersection is required for new or reconstructed roads and non-residential driveways serving more than 499 AADT or 99 parking spaces, but less than 1,000 AADT and 200 parking spaces. Type II design varies depending on posted speed. (see figure A.11)
3. A Type III intersection is required for new or reconstructed roads and non-residential driveways serving more than 999 AADT or 199 parking spaces, but less than 1,500 AADT and 300 parking spaces. Type III design varies depending on posted speed. (see figure A.12)
4. A Type IV intersection is required for new or reconstructed roads and non-residential driveways serving more than 1,499 AADT or 299 parking spaces. Type IV design varies depending on posted speed. (see figure A.13)
5. A Type V intersection is required for new or reconstructed roads and non-residential driveways accessing a divided highway where the development is serving more than 500 AADT or 100 parking spaces, but less than 1,000 AADT and 200 parking spaces. Type V design varies depending on posted speed. (see figure A.14)
6. A Type VI intersection is required for new or reconstructed roads and non-residential driveways accessing a divided highway where the development is serving more than 1,000 AADT or 200 parking spaces. Type VI design varies depending on posted speed. (see figure A.15)
7. All lanes of collector and arterial roadways shall be a minimum of 12 feet in width for the length of intersection construction.
8. Where an intersection occurs on a roadway that is identified to be below its designated level of service standard, intersection standards shall be increased as required by the County Engineer.
9. Intersection standards are based upon the cumulative amount of AADT passing through an individual ingress and egress point. Additional phases within a residential development, increases in parking spaces, or increases in AADT on an existing intersection may require that intersection to be redeveloped to greater standards.
10.

The requirements of this section are minimum standards. The results of traffic studies may indicate the need for a higher standard of intersection construction, but shall not enable lower standards than the minimum requirements.

11. Where a development's sole access is a local residential road, and the roadway is part of a longer route that is interconnected with other collector or arterial roads and it serves multiple properties, the County Engineer may require intersection improvements to meet collector road standards based on future volumes, function, and or safety.
12. Due to roadway conditions including, but not limited to, site distance, pavement width, clear recovery, and terrain, higher intersection standards may be required by the County Engineer.

D. **Access to Substandard Roads (Rev. 2/11/02 - Ord. 02-07)**

Development sites accessing a collector or arterial roadway that is substandard due to pavement width shall increase the pavement width to 24 feet in both directions and equally on both sides of the road along the existing roadway right-of-way for a distance as specified in Table 7.4b from the end of intersection construction.

E. **Substandard Right-of-Way Width (Rev. 01/07/14 - Ord 14-004; Rev. 9/13/06 - Ord. 06-047; Rev. 2/11/02 - Ord. 02-07)**

Land, to be developed for residential purposes or non residential developments generating 27 or more new vehicle trips per day adjacent to an existing County road where right-of-way is deficient shall dedicate or deed additional right-of way from the centerline of the existing County road along the entire frontage of the development site at a width to meet the following requirements:

1. 40 feet from the centerline of two (2) lane collector roads constructed with a Rural Section (no curb); and
2. 30 feet from the centerline of two (2) lane collector roads constructed with a Village Section (depressed curb) and an Urban Section (curb and gutter).

Table 7.4b (Rev. 2/11/02 - Ord. 02-07)

Length of Pavement Width Improvement (Both Directions From the End of Intersection Construction, Both Sides of Roadway)

	Posted Speed				
	35 mph or less	**40 mph**	**45 mph**	**50 mph**	**55 mph and greater**
Distance widened to 24' beyond Intersection Improvements if pavement is currently 20' wide or better	70'	80'	90'	100'	110'
Distance widened to 24' beyond Intersection Improvements if pavement is currently less than 20' wide [3]	105'	120'	135'	150'	165'
[3] Use 35' per 1' to determine specific lengths for roads that are greater than 18' in current width.					

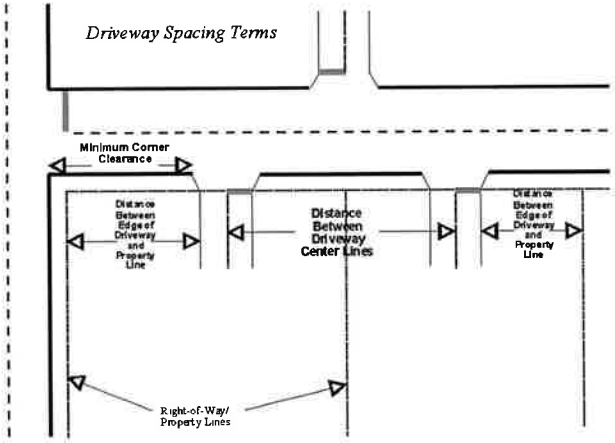
F. **Driveway Permits (Revised 5/20/09 - Ord. 09-023)**

1. A driveway permit shall be obtained from the County prior to the installation of any access to a County maintained road, in the following situations:
   a. The alteration of an existing driveway, the issuance of a construction permit or mobile home set-up permit, or a new driveway on a County maintained road is proposed;
   b. Where the use of any building, structure, or premises is increased through addition of dwelling units, gross floor area, seating capacity, or other units related to trip generation;
   c. Prior to final development approval of any other development requesting direct access to a County maintained road, even when Polk County has no jurisdiction over the development;
   d. A temporary driveway permit must be obtained for construction access to a County maintained road.

e. Bona fide agricultural uses which receive an agricultural exemption shall comply with all requirements except paving.

2. A driveway permit is not required for:
   a. Driveways designed and approved on subdivision plans, when constructed or bonded as part of the subdivision construction, prior to plat approval. Such subdivision plans must show a typical detail of the access required to serve each lot.
   b. Building permit applications for accessory structures to an existing residence where no additional driveway is needed.
   c. If approved on construction plans per Section 704.
   d. Paved residential driveway surfaces on local roads with curb and gutter, Miami curb or asphalt wings, constructed after the effective date of this Code.
   e. On existing driveways without culverts where no change to driveways are made.
3. Driveway permit applications and the applicable fee shall be submitted as follows:
   a. All driveway permit applications for single-family, duplex, triplexes, quadruplexes, and all agricultural uses, including temporary driveway permit applications, shall be submitted to the Building Division.
   b. All driveway permit applications for uses not included in Section 705 A.3.a, including temporary driveway permit applications, shall be submitted to the Land Development Division.
   c. Any permits required by FDOT may serve in lieu of a Polk County driveway permit. A letter from FDOT will satisfy this requirement for existing driveways.
   d. Driveways to roads under FDOT jurisdiction and driveways to be located on a County road within 0.25 mile of a limited access right-of-way fence shall comply with FDOT Administrative Rule 14-96 and 14-97.

Figure 7.1 Residential and Non-Residential Driveway and intersection spacing measurements[(1)](Rev. 8/28/02 - Ord. 0256)



(1) See Table 7.5 and 7.6

4. Driveway permits shall be issued along with Final Development Plan approval. Building permits for buildings on any Final Development Plan shall not be issued until necessary driveway permits have been issued. No Certificate of Occupancy shall be issued until the required driveway has been constructed in accordance with these regulations.

G. **Residential Driveway Location- Single-Family, Duplex, Triplex, and Quadruplex**

1. The number and placement of driveways allowed for each parcel shall be determined using the following criteria:
   a. All parcels shall be allowed one, two-way driveway or a pair of one-way driveways, except for those properties further restricted by a subdivision plat or a Final Development Plan;
   b. A third access point may be allowed for properties with at least two times the frontage as provided for in Section 822. Right-in only and right-out only driveways shall be used for this additional access;
   c. The minimum distance between two-way driveway center lines shall be in accordance with Table 7.5;

Table 7.5 Residential Driveway Standards*(3)

Roadway Classification	Forty or less AADT
Minimum Distance Between Driveway Center lines	

Arterial, Principal	[1]
Arterial, Minor	100'
Collector, Urban	100'
Collector, Rural Major	100'
Collector, Rural Minor	100'
Local, Commercial	100'
Minimum Distance Between Edge of Driveway and Property Line[2]	
Arterial, Principal	n/a
Arterial, Minor	n/a
Collector, Urban	n/a
Collector, Rural Major	n/a
Collector, Rural Minor	n/a
Local, Commercial	n/a
Minimum Corner Clearance	

Arterial, Principal	[1]
Arterial, Minor	[1]
Collector, Urban	60'
Collector, Rural Major	60'
Collector, Rural Minor	60'
Local, Commercial	60'
Local, Residential	6'

[1] Undesirable uses on roads of this classification, generally not permitted.

[2] This distance is measured from the right-of-way line.

[3] See Figure 7.1 Residential and Non-Residential Driveway and Intersection Spacing Measurements.

* General Notes: Does not apply to FDOT accessed roads and Lots-of-Record. The minimum distance from the intersecting edge of pavement to nearest edge of driveway (corner clearance). Corner clearance shall be measured from the edge of road to the edge of driveway along the right-of-way line. Local residential roads within platted subdivisions are exempt from Table 7.5.

d. The minimum distance between a two-way driveway centerline and a one-way driveway centerline on one parcel shall be in accordance with Table 7.5;
e. No driveways are to be constructed within intersections;
f. No driveways are to be constructed within turn lanes, or tapers unless no other access is available;
g.

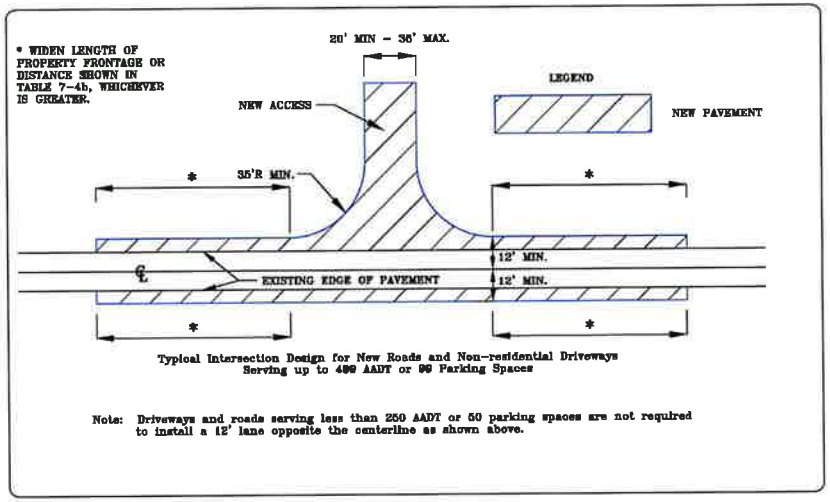
The minimum distance between the driveway and any adjacent property line without a cross-access easement shall be in accordance with Table 7.5.

2. Driveways near intersections shall be located to provide for stacking and protection of left turn movements. The minimum distance from the intersecting edge of pavement to nearest edge of driveway (corner clearance) shall be in accordance with Table 7.5. Return radii of driveway or intersecting roads are not included in this measurement.
3. Acceleration, deceleration, and turning lanes shall conform to the construction standards contained in Appendix A Technical Standards Manual.
4. All driveways shall be constructed within the limits of the frontage boundary of the property or development they serve.
5. Mitered end sections added to existing residential driveway culverts may encroach the frontage boundary of an adjacent property.

H. **Non-Residential Driveway Location, including Multi-Family Structures of 5 Dwelling Units or More (Rev. 3/25/03 - Ord. 03-26; 7/25/01 - Ord. 01-57)**

1. Non-residential driveways shall not be permitted on a local road when it results in traffic from a collector or arterial road to pass residentially used or designated property.
2. Out-parcels for shopping, office, or industrial centers shall be limited to internal access to the center unless otherwise approved as part of a master development plan.
3. The number and placement of driveways allowed for each parcel shall be determined using the following criteria:
    a. All parcels shall be allowed one two-way driveway or may be allowed a pair of one-way driveways, except for those properties restricted by subdivision plat or a Final Development Plan.
    b. The minimum distance between two-way driveway center lines shall be in accordance with Table 7.6.
    c. The minimum distance between a two-way driveway centerline and a one-way driveway centerline on one parcel shall be in accordance with Table 7.6.
    d. No driveways are to be constructed within intersections.
    e. No driveways are to be constructed within turn lanes, or tapers unless no other access is available.
    f. The minimum distance between the driveway and any adjacent property line without a cross-access easement shall be in accordance with Table 7.6.

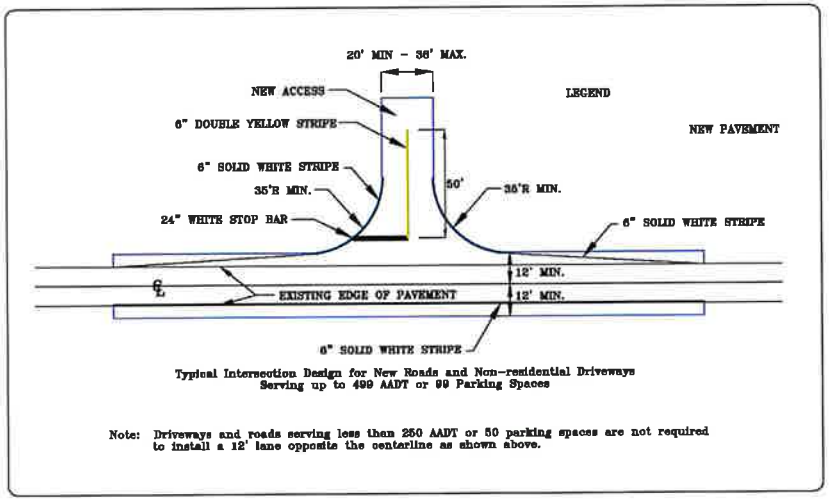
Figure A9
Type I Intersection Geometric Plan



Typical Intersection Design for New Roads and Non-residential Driveways
Serving up to 499 AADT or 99 Parking Spaces

Note: Driveways and roads serving less than 250 AADT or 50 parking spaces are not required to install a 12' lane opposite the centerline as shown above.

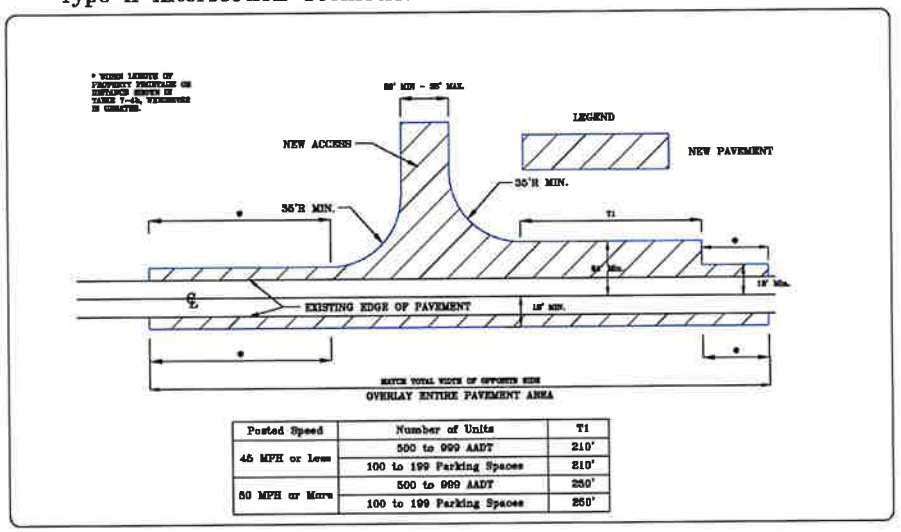
Type I Intersection Striping Plan



Typical Intersection Design for New Roads and Non-residential Driveways
Serving up to 499 AADT or 99 Parking Spaces

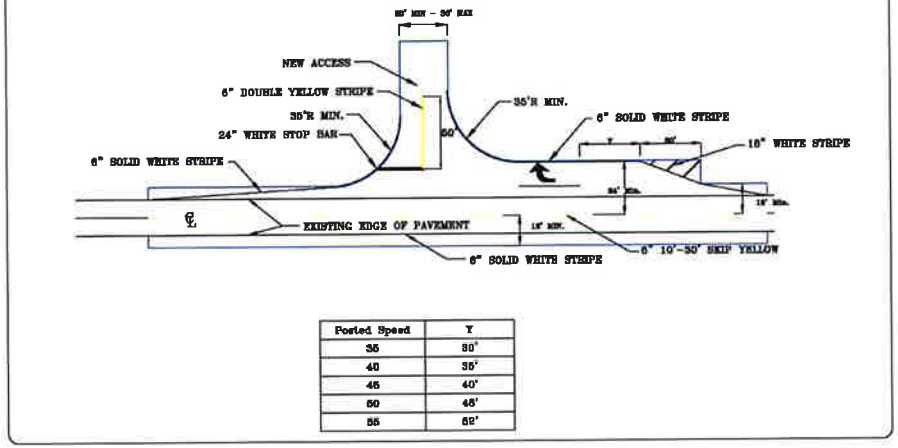
Note: Driveways and roads serving less than 250 AADT or 50 parking spaces are not required to install a 12' lane opposite the centerline as shown above.

Figure A10
Type II Intersection Geometric Plan



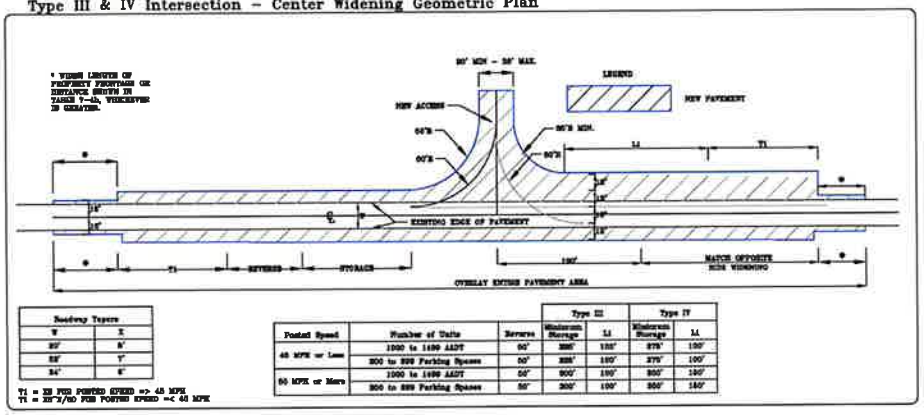
Posted Speed	Number of Units	T1
45 MPH or Less	500 to 999 AADT	210'
	100 to 199 Parking Spaces	210'
50 MPH or More	500 to 999 AADT	250'
	100 to 199 Parking Spaces	250'

Type II Intersection Striping Plan



Posted Speed	Y
35	30'
40	35'
45	40'
50	45'
55	52'

Figure A11
Type III & IV Intersection – Center Widening Geometric Plan

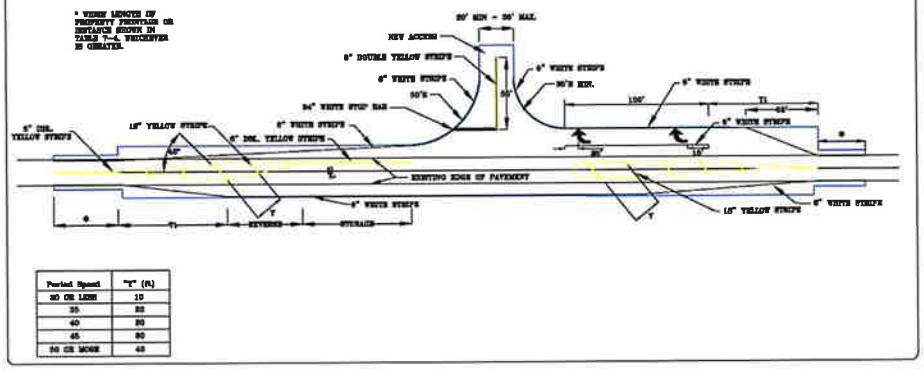


Roadway Tapers	
W	T
22'	5'
23'	7'
24'	8'

T1 = 3S FOR POSTED SPEED => 45 MPH
T1 = S²*3/60 FOR POSTED SPEED =< 45 MPH

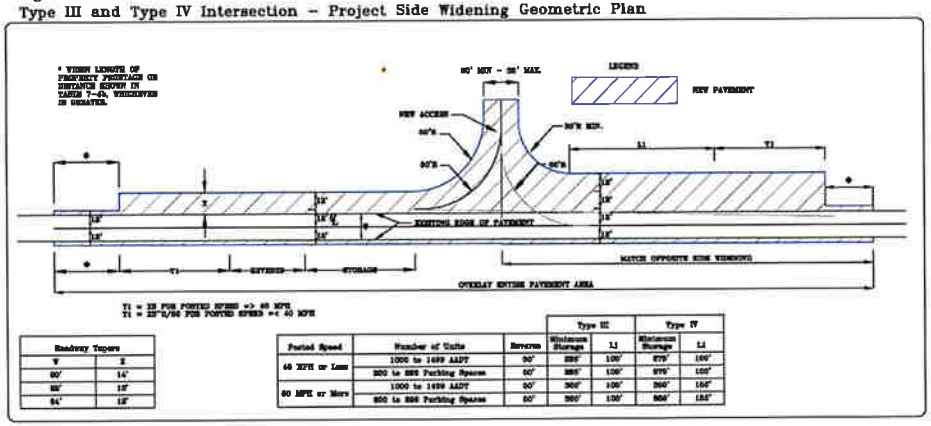
Posted Speed	Number of Units	Reserve	Type III Minimum Storage	Type III L1	Type IV Minimum Storage	Type IV L1
45 MPH or Less	1000 to 1499 ADT	50'	325'	135'	275'	100'
	300 to 599 Parking Spaces	50'	325'	135'	275'	100'
50 MPH or More	1000 to 1499 ADT	50'	900'	190'	800'	140'
	300 to 599 Parking Spaces	50'	300'	100'	800'	140'

Type III & IV Intersection – Center Widening Striping Plan



Posted Speed	"Y" (ft)
30 OR LESS	10
35	22
40	30
45	50
50 OR MORE	45

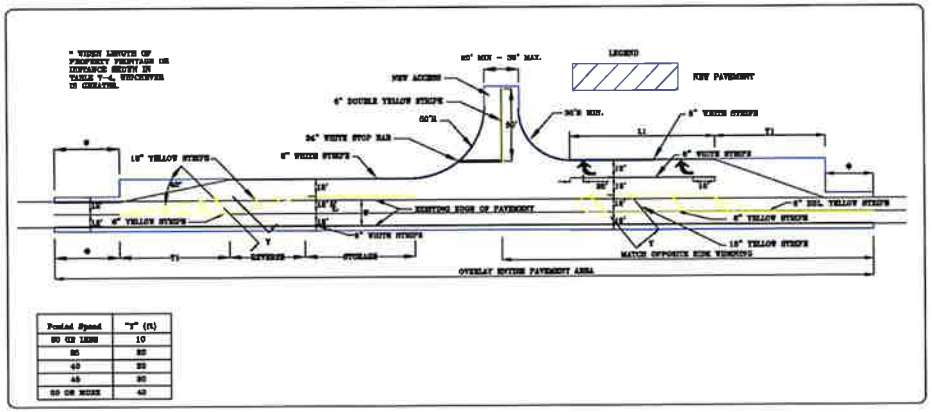
Figure A12
Type III and Type IV Intersection – Project Side Widening Geometric Plan



Roadway Tapers	
T	Z
60'	14'
80'	15'
84'	15'

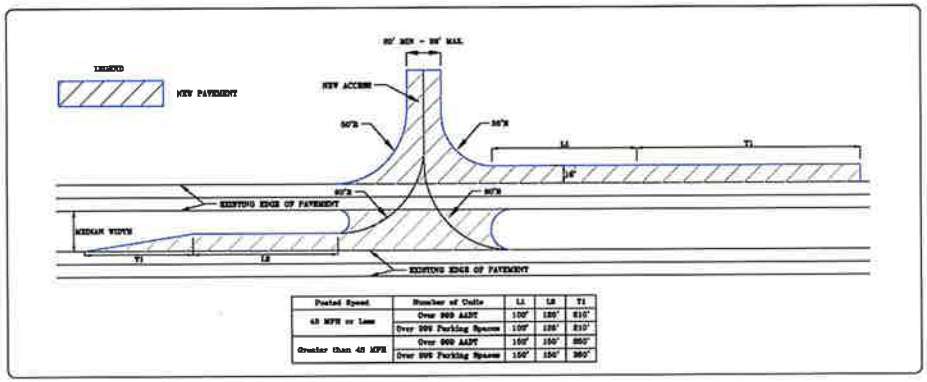
Posted Speed	Number of Units	Reverse	Type III Minimum Storage	Type III L1	Type IV Minimum Storage	Type IV L1
45 MPH or Less	1000 to 1499 AADT	50'	225'	100'	270'	100'
	200 to 299 Parking Spaces	50'	225'	100'	270'	100'
50 MPH or More	1000 to 1499 AADT	50'	300'	100'	360'	150'
	300 to 399 Parking Spaces	50'	300'	100'	360'	150'

Type III and Type IV Intersection – Project Side Widening Striping Plan



Posted Speed	"Y" (ft)
30 OR LESS	10
35	22
40	22
45	30
50 OR MORE	40

Type V Intersection (Divided Highway) Geometric Plan



Posted Speed	Number of Units	L1	L2	T1
45 MPH or Less	Over 900 AADT	150'	120'	510'
	Over 90% Parking Spaces	150'	120'	510'
Greater than 45 MPH	Over 900 AADT	150'	150'	850'
	Over 90% Parking Spaces	150'	150'	360'

Type V Intersection (Divided Highway) Striping Plan

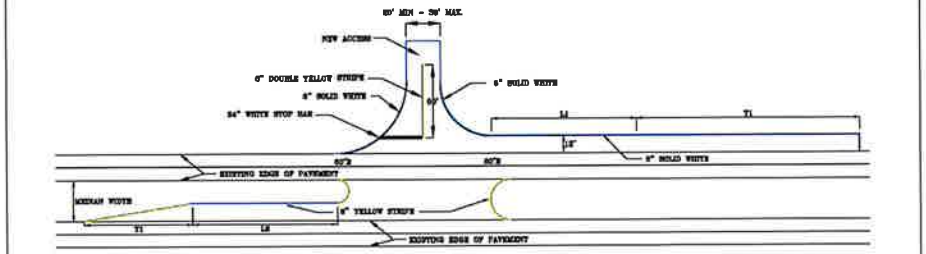
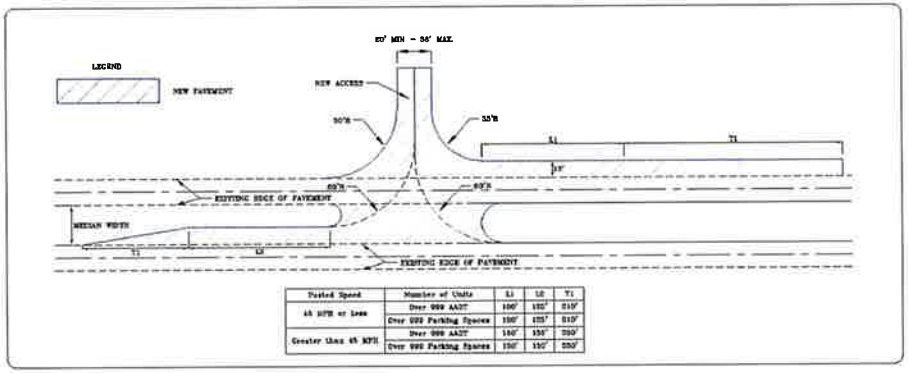
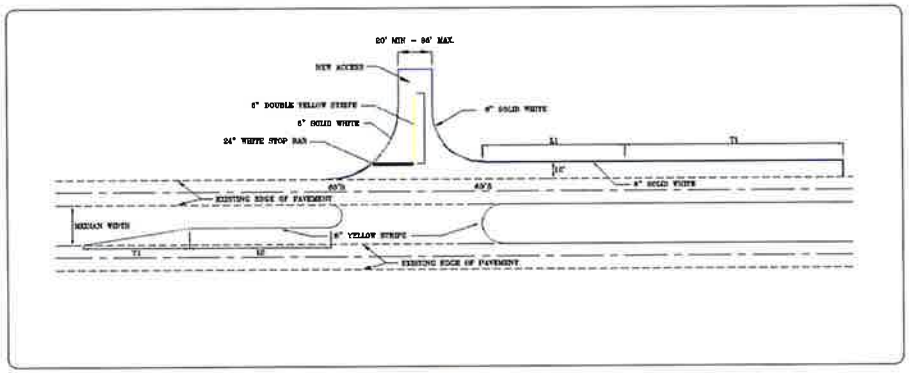


Figure A14
Type VI Intersection (Divided Highway) Geometric Plan



Type VI Intersection (Divided Highway) Striping Plan



B. **Materials**

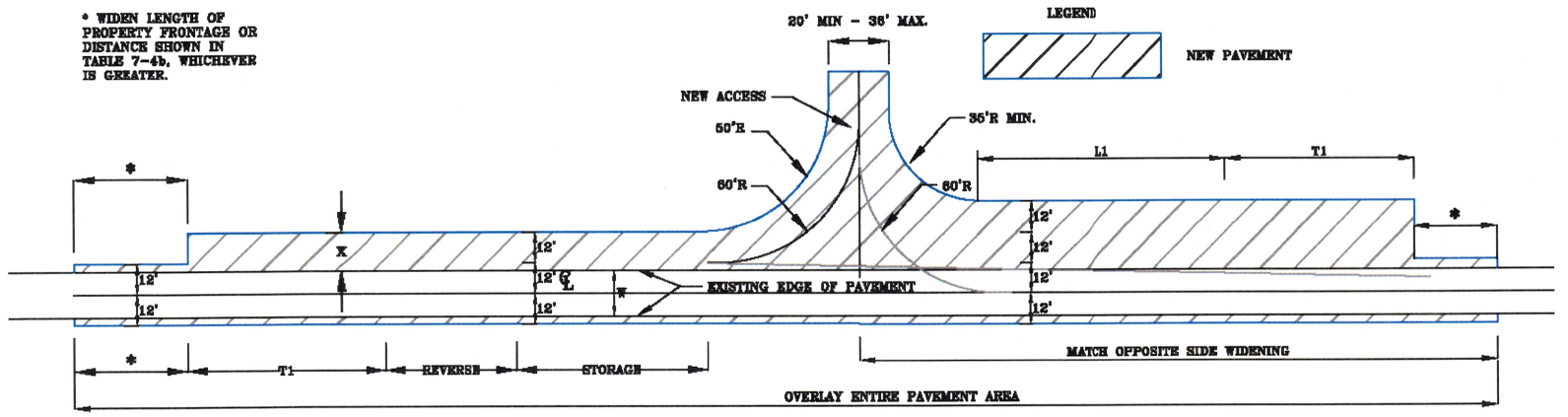
1. Portland Cement shall be Type I or Type I-P and shall comply with the Standard Specifications for Portland Cement ASTM C-145. Cement which is partially set, lumpy or caked shall not be used. One cubic foot of Portland Cement shall be considered to weigh 94 lbs.
2. Water shall be clean and free from substance deleterious to the hardening of the soil cement.
3. Only soils which have proven themselves to produce a high quality soil cement base shall be acceptable. New sources of soil cement material shall be approved by the County Engineer prior to use.

C. **Equipment**

Soil cement may be constructed with any machine, combination of machines or equipment that will produce the results meeting the requirements for soil pulverization, cement application, mixing, uniform depth control, water application, incorporation of materials, compaction, finishing and curing, as required by these specifications.

Figure A12

Type III and Type IV Intersection – Project Side Widening Geometric Plan

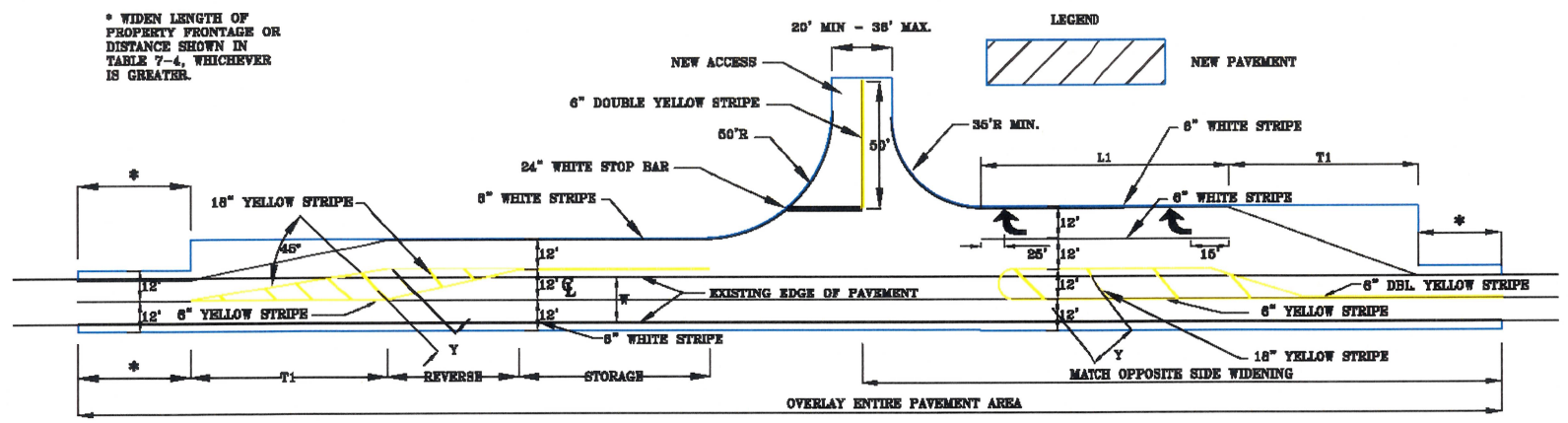


T1 = XS FOR POSTED SPEED => 45 MPH
T1 = XS^2/60 FOR POSTED SPEED =< 40 MPH

Roadway Tapers	
W	X
20'	14'
22'	13'
24'	12'

Posted Speed	Number of Units	Reverse	Type III		Type IV	
			Minimum Storage	L1	Minimum Storage	L1
45 MPH or Less	1000 to 1499 AADT	50'	225'	100'	275'	100'
	200 to 299 Parking Spaces	50'	225'	100'	275'	100'
50 MPH or More	1000 to 1499 AADT	50'	300'	100'	350'	150'
	200 to 299 Parking Spaces	50'	300'	100'	350'	150'

Type III and Type IV Intersection – Project Side Widening Striping Plan



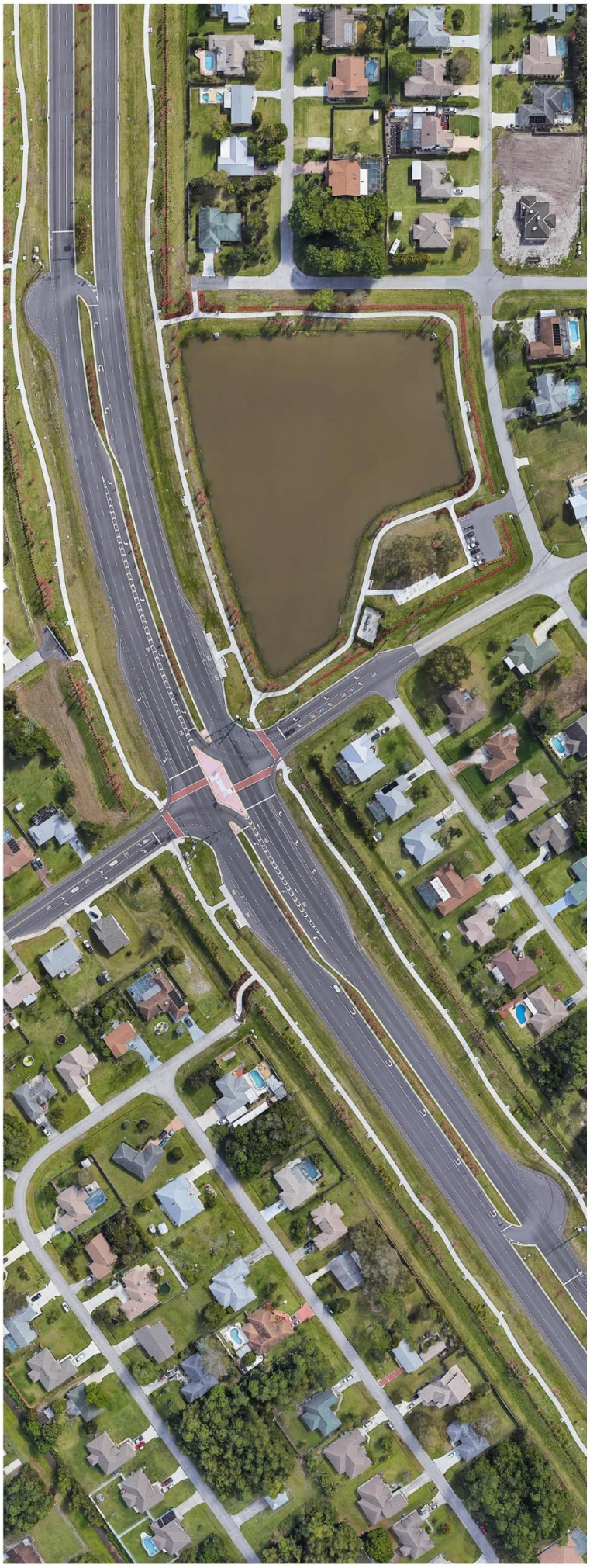
Posted Speed	"Y" (ft)
30 OR LESS	10
35	20
40	20
45	30
50 OR MORE	40

FDOT MULTI MODAL ACCESS MANAGEMENT GUIDEBOOK

LINCKS & ASSOCIATES, LLC

Multimodal Access Management Guidebook

October 2023



STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
SYSTEMS IMPLEMENTATION OFFICE
605 Suwannee Street, MS 19 • Tallahassee, FL 32399
www.fdot.gov/planning

Chapter 6: Turn Lanes and U-Turns

6.1 Overview

For driveways, medians, and median openings, the placement and design of turn lanes and U-turns are critical to avoid potential traffic safety issues. For example, a median opening placed across a left-turn lane at an intersection could create conditions leading to a vehicular crash (See ***Figure 27*** or ***Figure 28***). Locating these roadway openings is discussed in greater detail in ***Chapter 2: Roadway Openings***. This chapter will instead focus on where to locate and design turn lanes and U-turns and how they relate to driveways, medians, and median openings.

6.2 Exclusive Right-Turn Lanes

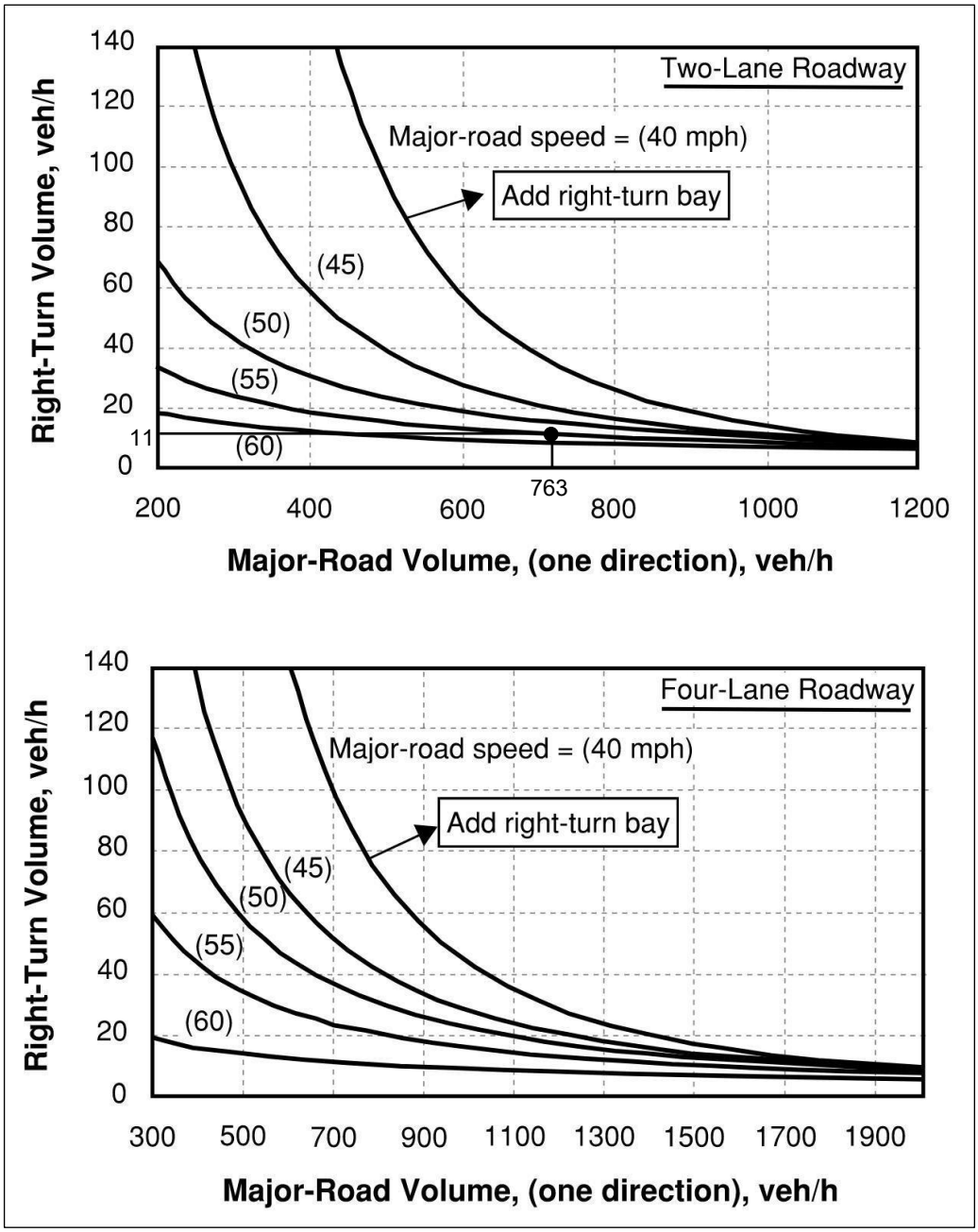
At driveways and intersections, an exclusive right-turn lane separates vehicles that are slowing or stopped to turn from the major road through traffic lanes. This separation minimizes turn-related collisions and eliminates unnecessary delay to through vehicles. Exclusive right-turn lanes are useful where a combination of high roadway speeds, and high right-turn volumes into a driveway are expected. Congestion on the roadway may also be a good reason to use an exclusive right-turn lane. If properly built, they remove the turning vehicle from the through lanes, thereby decreasing the operational and safety impact of right turning vehicles on the through traffic.

It is also important to consider potential pedestrian conflicts since the addition of a right-turn lane increases the crossing distance, time, and exposure for pedestrians. A well-designed right-turn lane can help to reduce pedestrian conflicts by slowing vehicle speeds, increasing pedestrian visibility, and reducing pedestrian exposure with a pedestrian refuge area.

6.2.1 When to Consider Exclusive Right-Turn Lanes

There are instances when adding an exclusive right-turn lane for unsignalized driveways and intersections is beneficial to traffic operations and safety. ***Figure 74*** provides guidance for two-lane and four-lane roadways based on the speed limit of the major roadway, major roadway approach volume, and how many right turns occur per hour. These recommendations are based primarily on the research done in *NCHRP Report 457, Evaluating Intersection Improvements: An Engineering Study Guide, Chapter 2 – Add a Right-Turn Bay on the Major Road*.

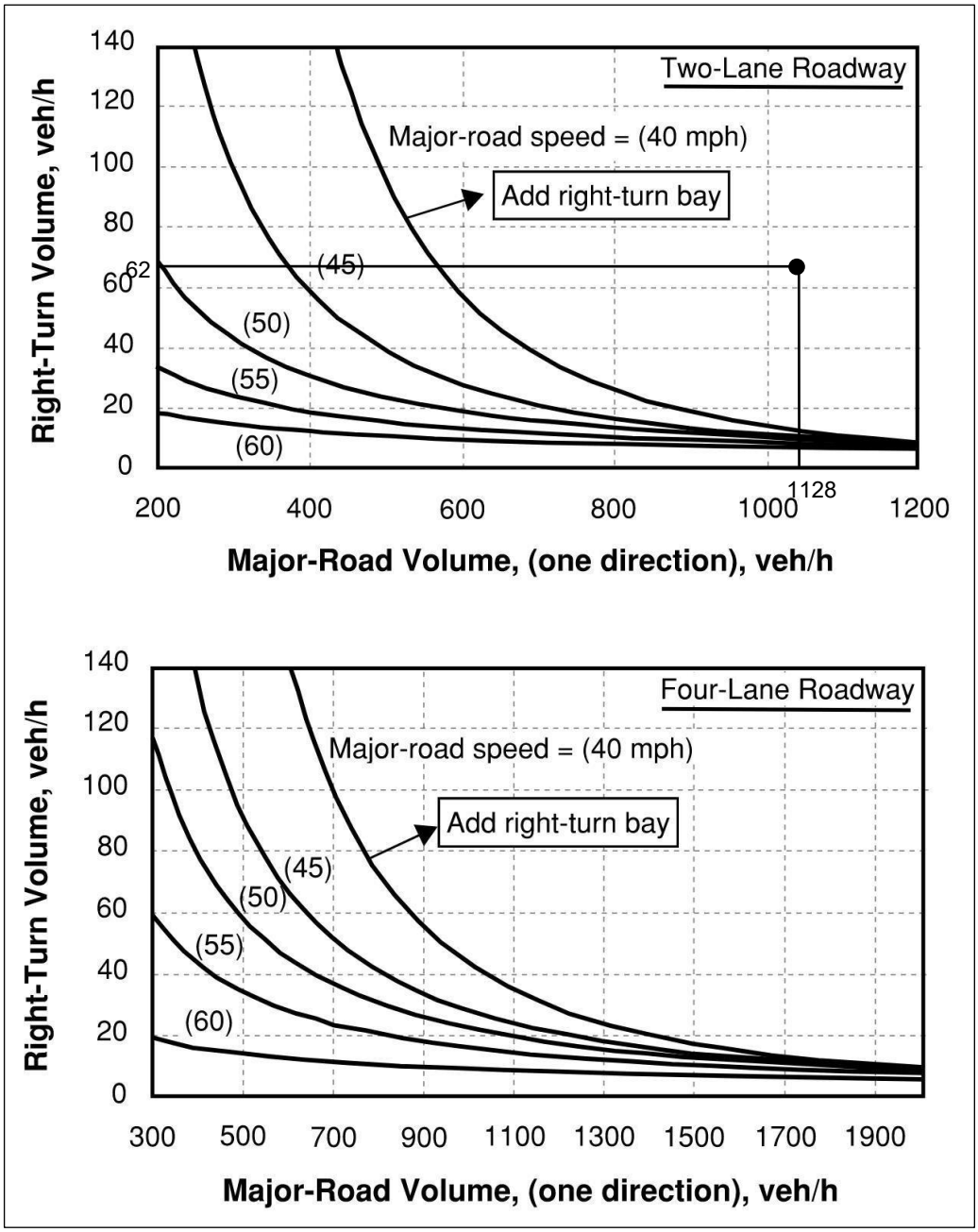
Figure 74 | Recommended Guidelines for Exclusive Right-Turn Lanes to Unsignalized Driveway/Intersection



Dundee Rd &
Access A
PM Peak Hour

Source: NCHRP Report 457, TDOT Highway System Access Manual

Figure 74 | Recommended Guidelines for Exclusive Right-Turn Lanes to Unsignalized Driveway/Intersection



Dundee Rd &
Access B
AM Peak Hour

Source: NCHRP Report 457, TDOT Highway System Access Manual

Figure 77 | Raised Crosswalk at Channelized Right Turn

Source: City of Los Angeles Supplemental Street Design Guide

6.3 Exclusive Left-Turn Lanes

While some principles for right-turn lanes apply to left-turn lanes, there are inherent differences between them.

6.3.1 When Exclusive Left-Turn Lanes are Beneficial

There are several situations when a left-turn lane should be built on the roadway. For example, if on a multilane roadway and there is a median opening that is serving a driveway, there should be a left-turn lane to allow for vehicles to move safely out the way of the through traffic. Exclusive left-turn lanes should be considered at any location serving the public, especially on curves and where speeds are in excess of 45 mph. The *AASHTO Green Book* contains guidance on this issue. However, the guidelines were developed based on delay rather than crash avoidance. Safety is the main reason behind exclusive left-turn lanes.

6.3.2 When to Consider Exclusive Left-Turn Lanes at Unsignalized Intersections and Driveways

Left-turn lane warrants at unsignalized intersections and driveways were included in *NCHRP Report 745, Left-Turn Accommodations at Unsignalized Intersections*. The recommended left-turn lane warrants are provided for the following roadway facilities.

- Rural, two-lane highways (***Figure 78***)
- Rural, four-lane highways (***Figure 79***)
- Urban and suburban roadways (***Figure 80***)

Alternatively, the left-turn warrants based on *NCHRP Report 457*, (See ***Figure 81***) can be used if it is found to be more appropriate and reasonable for a local condition. Engineering judgment should be used when deciding between the NCHRP 745, and NCHRP 457 guidelines.

Figure 78 | Left-Turn Lane Warrants for Two-Lane Rural Roadways (Unsignalized)

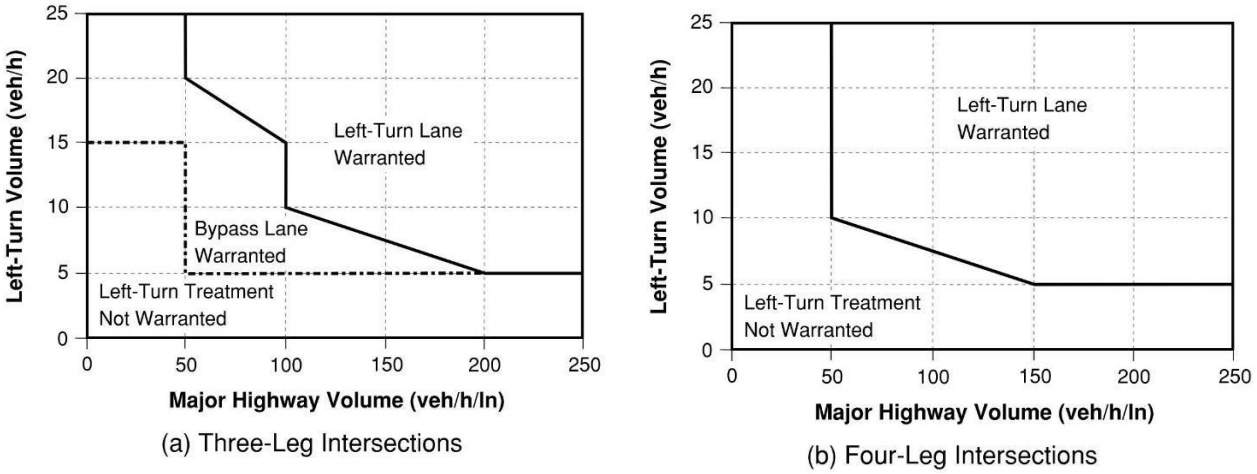


Figure 79 | Left-Turn Lane Warrants for Four-Lane Rural Roadways (Unsignalized)

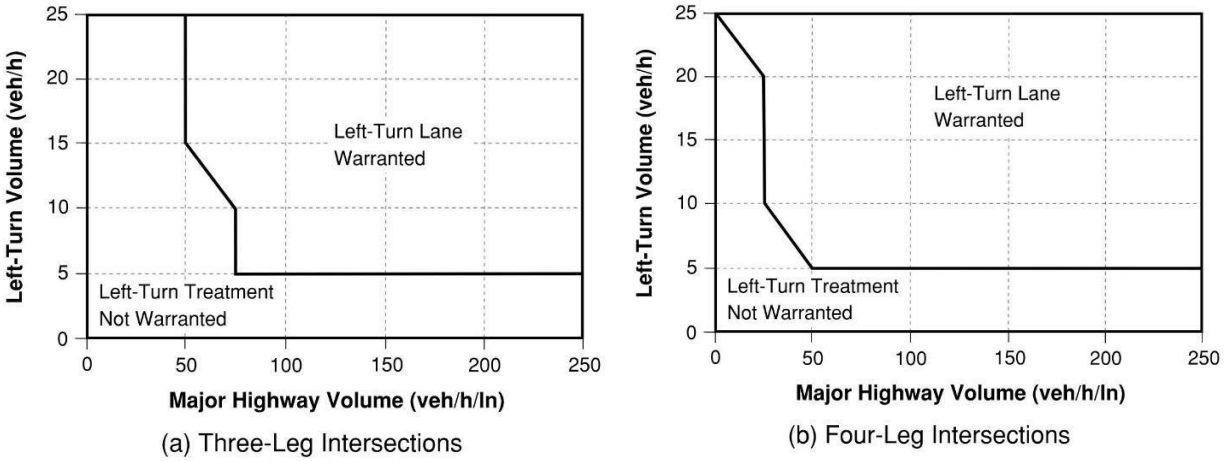
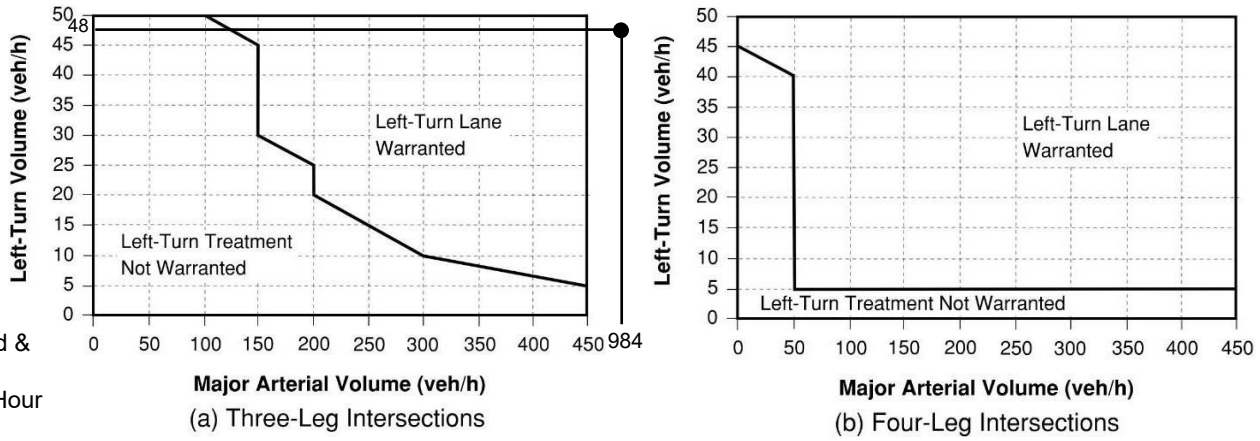


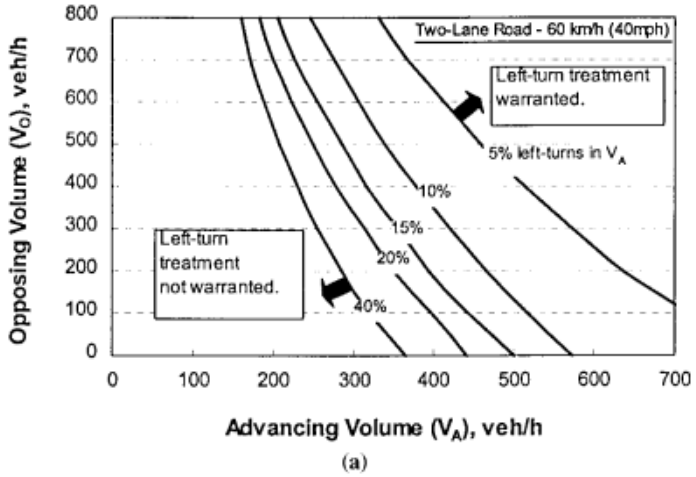
Figure 80 | Left-Turn Lane Warrants for Urban and Suburban Arterials



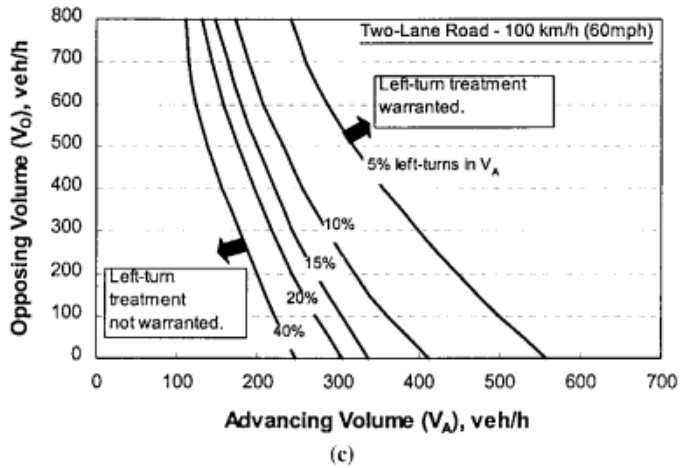
Dundee Rd & Access A PM Peak Hour

Source: NCHRP Report 745

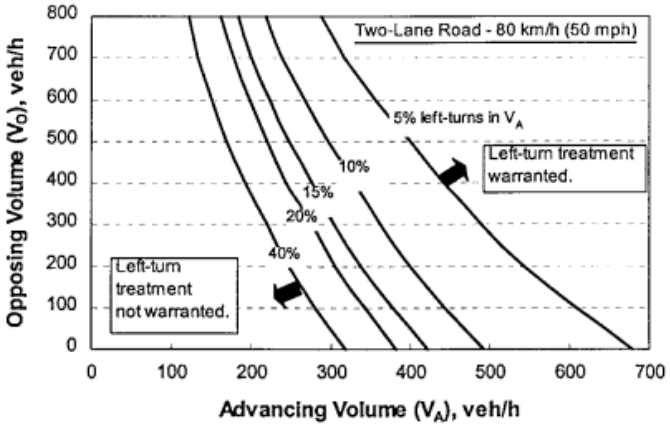
Figure 81 | Left-Turn Lane Warrants (Unsignalized Intersections) – Alternate Method



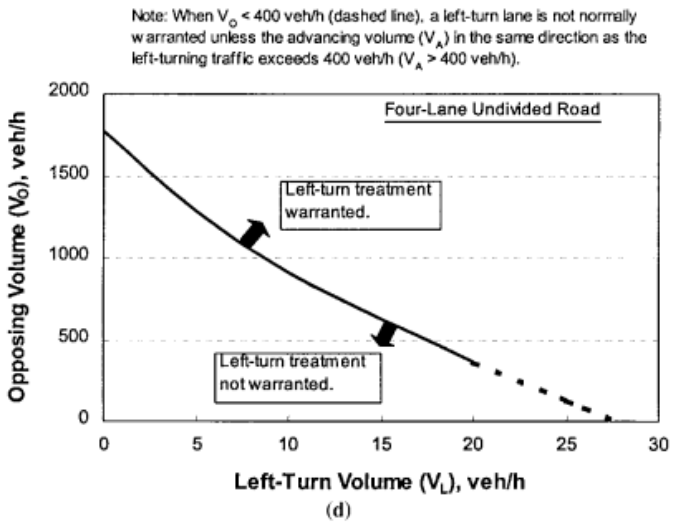
(a)



(c)



(b)



(d)

Source: NCHRP Report 457

6.3.3 Designing Exclusive Left-Turn Lanes

Left-turn movements at unsignalized intersections and driveways that are made from through traffic lanes cause delay and adversely impact safety. Left-turn lanes can reduce the potential for collisions and improve capacity by removing stopped vehicles from the main travel lane.

Similar to right-turn lanes, information on how to design left-turn lanes can be found in *FDM 212 Intersections* and *Standard Plans, Index 711-001*. Sheet 11 of Standard Plans, Index 711-001 provides requirements for clearance distance, brake to stop distance, and deceleration distance by design speed for both curbed and uncurbed medians. ***Section 6.3.4: Important Considerations*** below provides further guidance on left-turn lanes and driveways. ***Section 3.1.2: Median Opening Failures*** provides discussion on the various parameters used in turn lane design, such as decision distance, stopping distance, and other factors.

6.3.4 Important Considerations

Left Turns and Driveways

One area where left turns may need to be discouraged is when the driveway is located near an intersection. In these instances, a driveway may need to be channelized (See ***Section 4.2.9: Channelizing Islands (I)*** for more information) to restrict unsafe vehicular movements. These are also known as "Divisional Islands."[14]

Divisional Islands can provide guidance to drivers on roadways with medians for right-in, right-out movements. However, they are not sufficient to prohibit left turns in or out. The divisional island design might also be useful on an undivided roadway where the driveway is so close to an intersection that the left-turn would be unsafe at any time due to vehicle queuing and visibility restrictions. The most effective way to prohibit left turns is to install restrictive medians. Where space for a median is not available, the traffic engineer can use flexible traffic delineator posts or hardened centerline (see *FDM 210.3.3*) in the main road to discourage left turns.

Separate Left-Turn Exit Lanes for Driveways

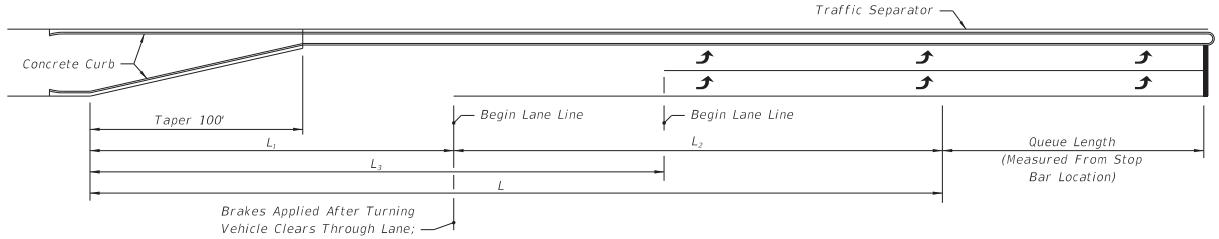
Separate left- and right-turn lanes should be provided on major commercial driveways (Class C or higher driveways with volumes of 600 vpd or more, or 60 vph or more) where both left turns and right turns are permitted to exit. Even a small number of left turns may cause a substantial delay to right turns out of the driveway with a single exit-lane. Separate left- and right-turn lanes may also be considered at driveways with lower volumes based on the expected exiting left turn volume, delay, and area context.

However, it should be noted that separate left- and right-turn lanes are disadvantageous to bicyclists and pedestrians since additional lanes increase crossing distance, time, and exposure. Furthermore, separate left- and right-turn lanes can introduce multiple-threat pedestrian crashes for pedestrians/bicyclists crossing the driveway. Multiple-threat crashes occur when a pedestrian begins crossing in front of a slowed or stopped vehicle and then encounters a second same-direction vehicle in the adjacent lane which does not stop. The view of the pedestrian, and the

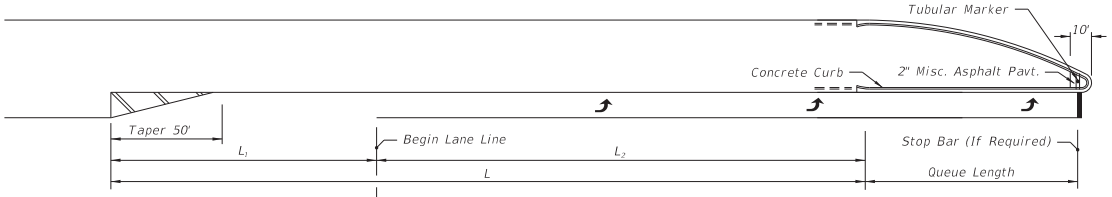
[14] These are colloquially called "Pork Chops".

FDOT DESIGN MANUAL
EXHIBIT 212-1

MEDIAN TURN LANES
MINIMUM DECELERATION LENGTHS



DOUBLE LEFT TURN



SINGLE LEFT TURN

MEDIAN TURN LANES					
Design Speed (mph)	Entry Speed (mph)	Clearance Distance L_1 (ft.)	Brake To Stop Distance L_2 (ft.)	Total Decel. Distance L (ft.)	Clearance Distance L_3 (ft.)
25	15	70	25	95	90
30	20	70	50	120	100
35	25	70	75	145	110
40	30	80	75	155	120
45	35	85	100	185	135
50	44	105	185	290	160
55	48	125	225	350	195
60	52	145	260	405	230
65	55	170	290	460	270
70	58	200	325	525	300

NOTE:

1) For C3 Context Classification roadways with Design Speeds of 50 mph, the following values may be used under constrained conditions:
   - Entry Speed of 40 mph
   - Brake to stop distance (L_2) of 135 ft.
   - Total deceleration distance (L) of 240 ft.

2) For RRR Projects with Design Speeds of 50 mph and Entry Speeds of 40 mph, existing brake to stop distances (L_2) of 135 ft. and total deceleration distances (L) of 240 ft. may be retained.

NOT TO SCALE

EXHIBIT 212-1
01/01/2024

ITE – TRIP + BIKE + TRANSIT
TRIP GENERATION

Convenience Store/Gas Station - VFP (9-15) (945)

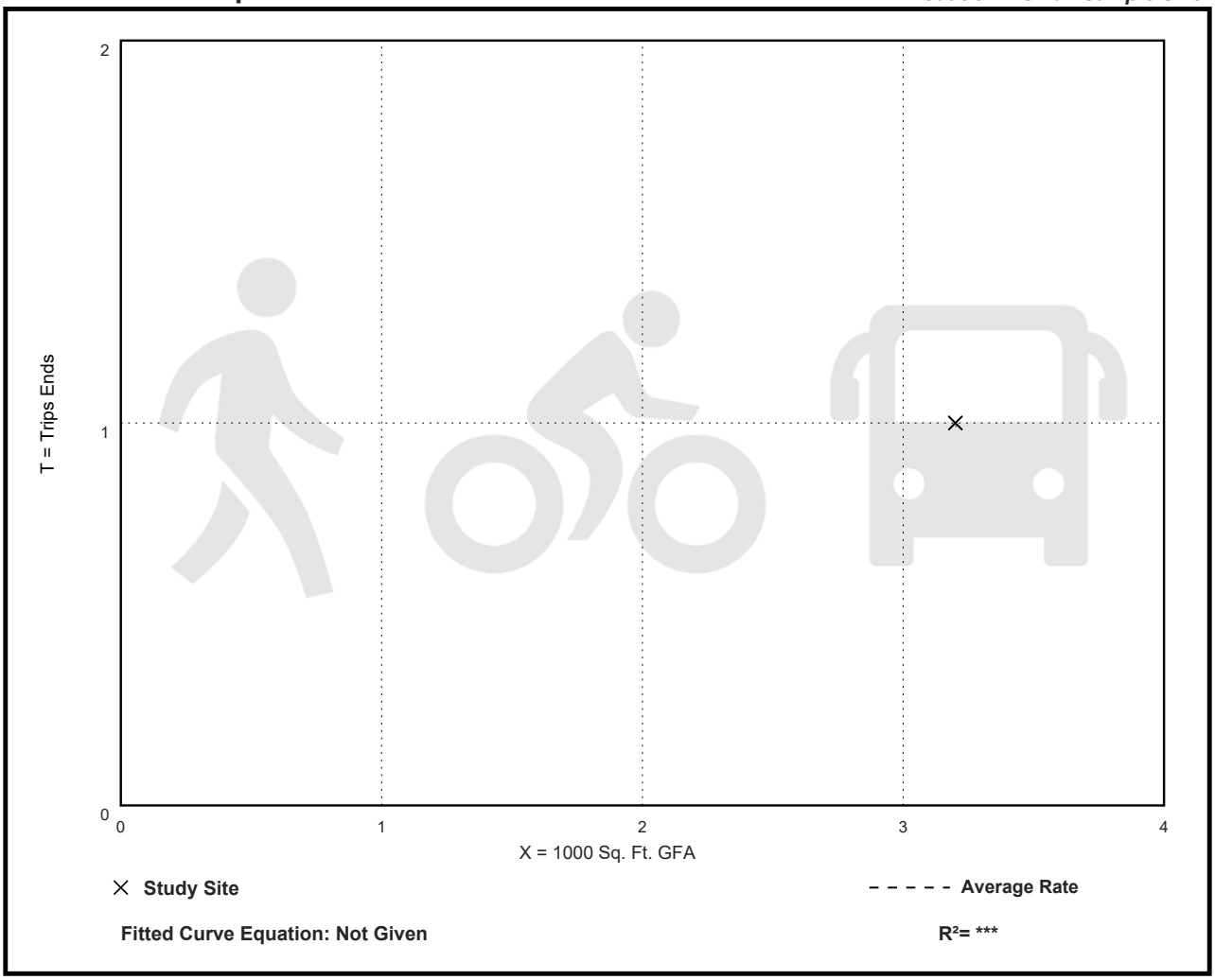
Walk+Bike+Transit Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
Number of Studies: 1
Avg. 1000 Sq. Ft. GFA: 3
Directional Distribution: Not Available

Walk+Bike+Transit Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.31	0.31 - 0.31	***

Data Plot and Equation

Caution – Small Sample Size



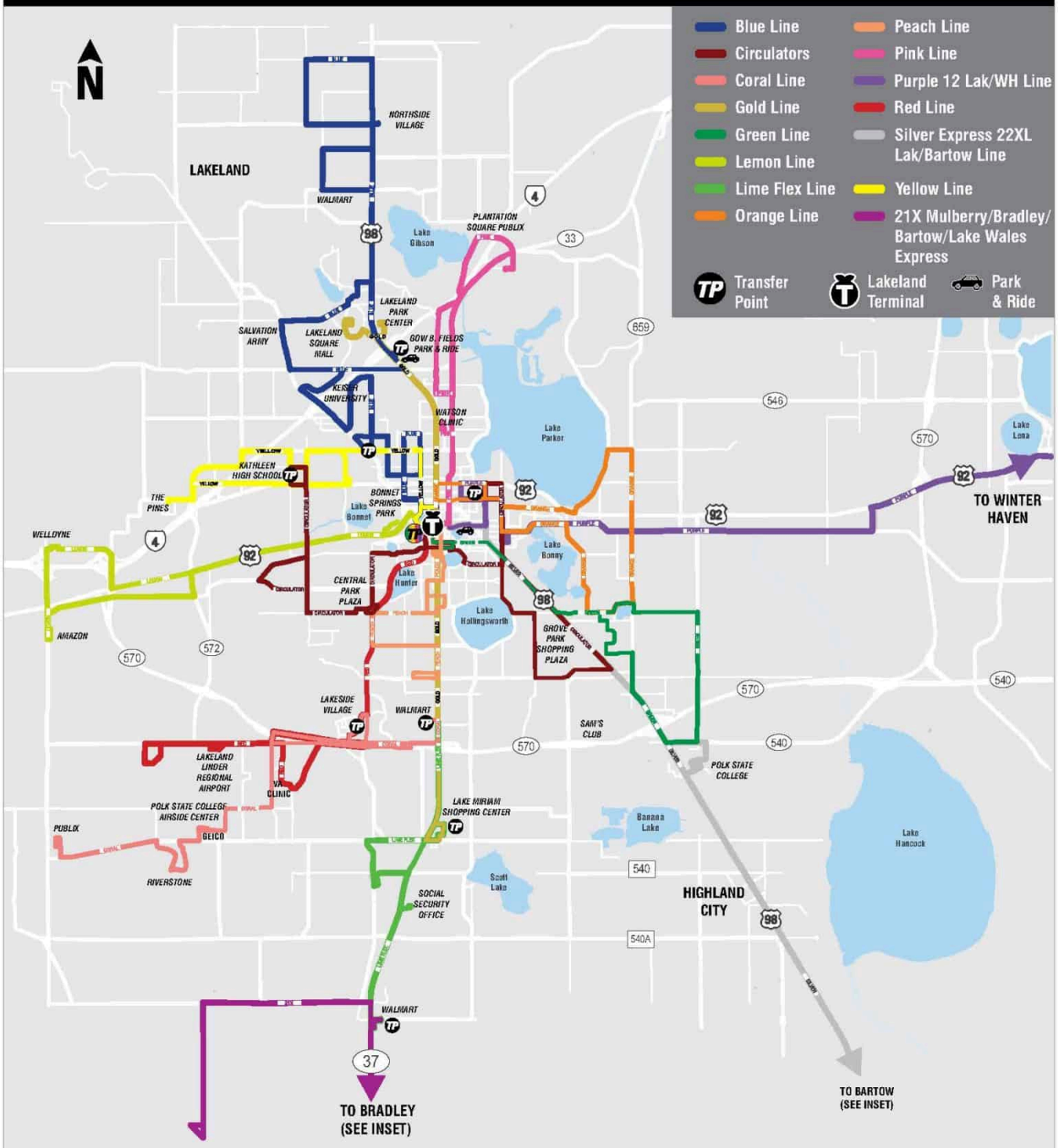
Fitted Curve Equation: Not Given

R^2= ***

POLK COUNTY TRANSIT MAP

WEST COUNTY ROUTES

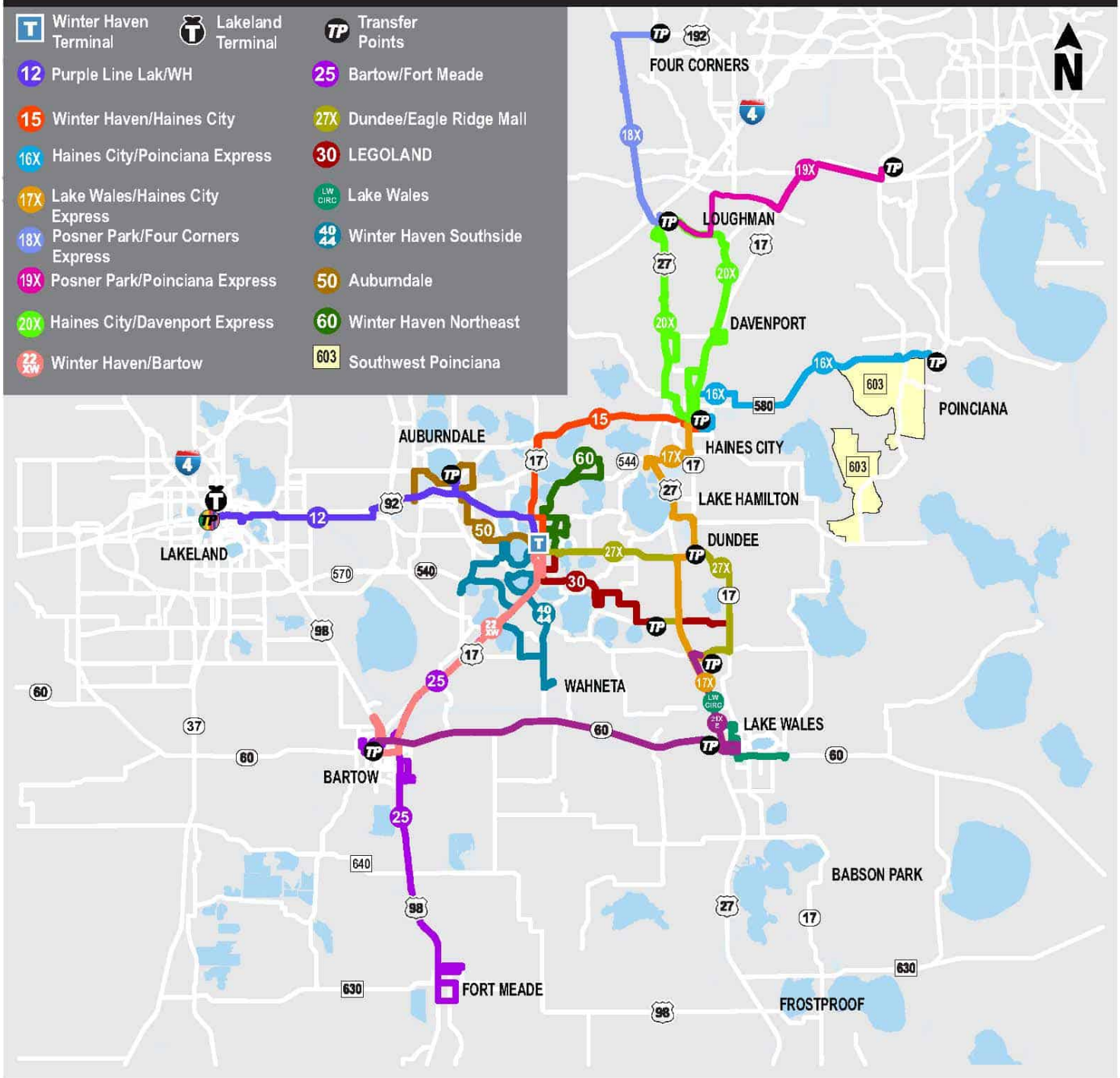
WEEKDAYS
OCTOBER
2022



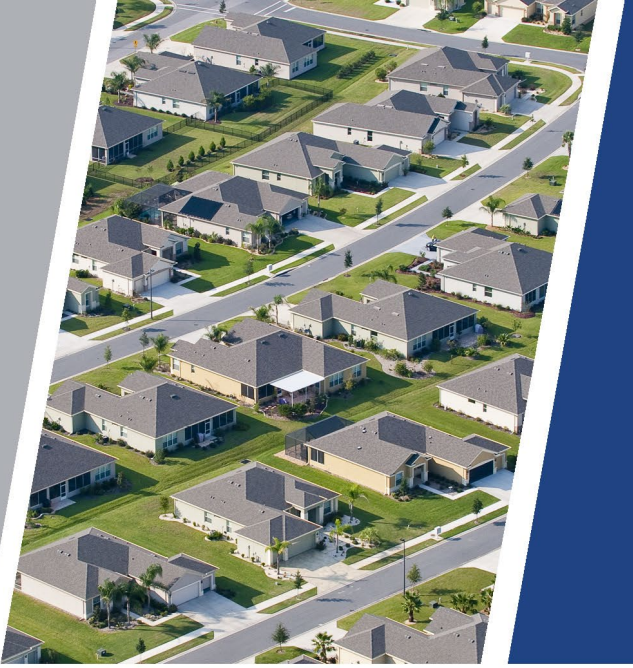
21X - MULBERRY/BRADLEY/BARTOW/LAKE WALES EXPRESS

SILVER EXPRESS 22XL LAKELAND/BARTOW LINE AND 21X - MULBERRY/BRADLEY/BARTOW/LAKE WALES EXPRESS

EAST COUNTY
ROUTES



FDOT MULTIMODAL TRANSPORTATION SITE IMPACT HANDBOOK



Multimodal Transportation Site Impact Handbook

March 2024

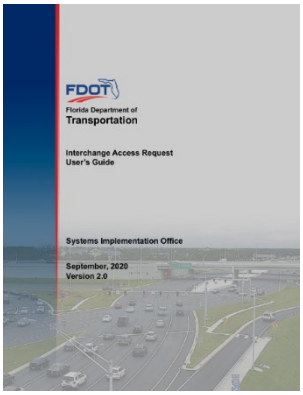
FDOT

ICE has three stages:

1. Stage 1: Screening – completed during a project's initial stage. Federal Highway Administration (FHWA) Capacity Analysis for Planning of Junctions (CAP-X) is an operational analysis tool to evaluate selected types of innovative intersection designs. FDOT has expanded this tool for use in Florida. FHWA's Safety Performance of Intersection Control Evaluations (SPICE) is a separate tool used for safety analysis.
2. Stage 2: Preliminary Control Strategy Assessment – completed following a project's initial stage when more detailed information is available. SPICE is used for a more detailed safety analysis than in Stage 1. FDOT has developed default Synchro templates for operations analysis of certain types of alternative intersections. FDOT ICE Tool is a separate tool for benefit-cost analysis.
3. Stage 3: Detailed Control Strategy Assessment – completed prior to Preliminary Design/Phase I plans. Stage 3 analysis is not required for Project Development and Environment (PD&E) studies as this type of analysis is already included as part of a PD&E.

At the completion of each stage, the appropriate FDOT ICE form is completed and submitted to the DTOE and DDE. FDOT ICE and related forms and tools can be found at:
http://www.fdot.gov/traffic/trafficservices/Intersection_Operations.shtm

4.7.6. Interchange Areas



FDOT's Interchange Access Request User's Guide (IARUG) provides guidance on how to prepare documents that support requests for new or modified access to the Florida interstate system, Florida's Turnpike Enterprise (FTE), and non-interstate limited access facilities on the SHS. This guide states that the Area of Influence (AOI) along a crossroad shall extend a minimum of up to one-half mile in either direction of the proposed access change. To maintain general consistency with this AOI threshold, developments that require a MTIA and are within one-half mile of an interchange should analyze the ramp terminals, at minimum, as part of the MTIA to determine if there will be any impacts to those locations requiring potential mitigation and a need for an interchange access request to modify a ramp or geometry within the limited access right-of-way. For larger developments, additional analysis including the limited access facility and its ramp junctions may be appropriate. It is recommended to coordinate with the FDOT District Interchange Review Coordinator (DIRC) in those cases to determine the appropriate level of analysis. The *Interchange Access Request User's Guide* and the *Traffic Analysis Handbook* are available at:
https://www.fdot.gov/planning/systems/systems-management/systems-management-documents

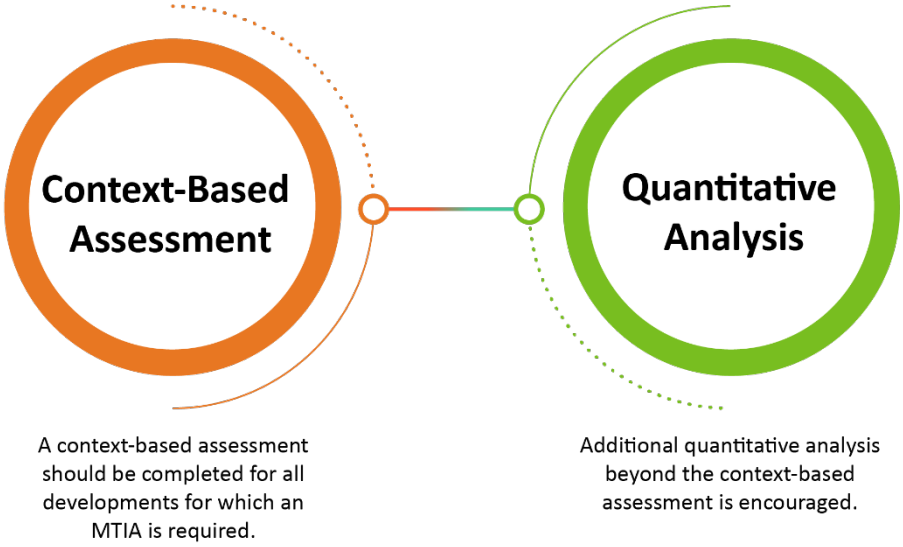
4.8. Pedestrian/Bicycle/Transit Impact Analysis

The traditional MTIA process typically has considered only automobile performance measures to determine a site's impact. In order to promote safe and efficient movement of non-motorized traffic and better mitigate multimodal impact, this Handbook has been updated to include guidelines to assess pedestrian, bicycle, and transit site impact.

4.8.1. Study Requirements

The study requirements for the pedestrian and bicycle impact analysis can vary and should be based on considerations such as the type of development and context classification. There are two approaches to assess a site's impact to bicyclists and pedestrians:

Figure 18 | Two Pedestrian/Bicycle Site Impact Approaches

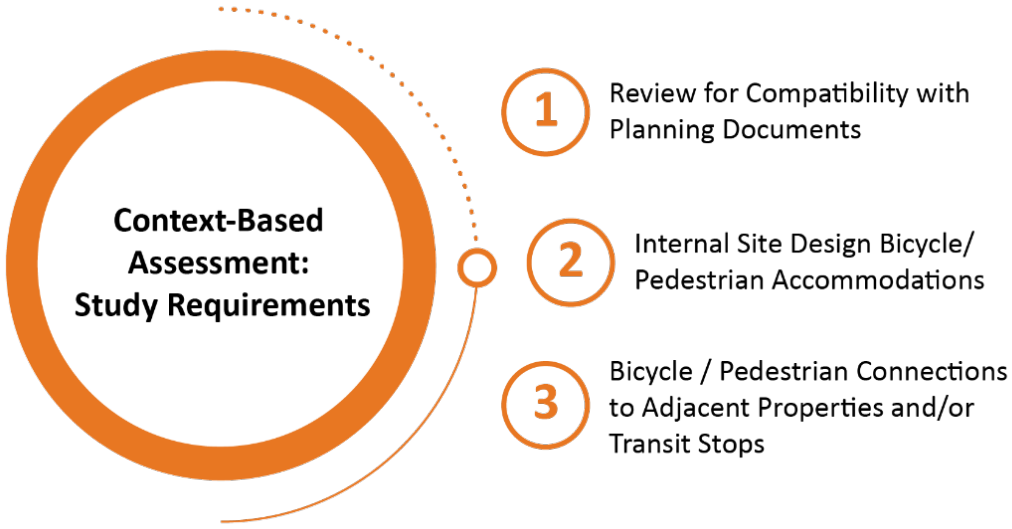


The following sections provide additional details related to the context-based assessment and the suggested methodologies for the quantitative pedestrian and bicycle analysis. Property frontage of developments along the SHS must meet the context-based requirements for non-motorized facilities as contained in the FDM. The quantitative analysis provides an opportunity for the developer to go beyond minimum requirements with incentives for potential mitigation.

4.8.2. Context-Based Assessment

The context-based assessment to review pedestrian and bicycle site impact consists of Steps 1-3:

Figure 19 | Context-Based Assessment Study Requirements



Each step is described below.

1

Review for Compatibility with Planning Documents. The first step of the context-based assessment is to determine if the development is located in an area with a master plan, a FDOT Districtwide master plan, or other planning document that includes pedestrian and bicycle modes. If so, it is recommended to provide a review to ensure the proposed development is consistent with the plan(s). This step should be coordinated with the applicable local government agency, as appropriate.

2

Internal Site Design Pedestrian and Bicycle Accommodations. To provide safe and convenient access to and circulation within developments for all users, the site's design should incorporate pedestrian and bicycle facilities, where appropriate. This step should be coordinated with the applicable local government agency, as appropriate. There are several components for on-site design to accommodate non-motorized users. These include:

a. ***Access Management.*** Traditionally, the goal of access management has been to reduce vehicle conflicts and to favor higher speeds of travel. However, with a change in statewide focus to promoting multimodal transportation, this goal has been refined to the management of modal conflicts. An overarching concept to improve pedestrian and bicycle safety is to reduce the overall number of driveways. Fewer driveways improve safety by decreasing the number of conflict points for all modes of travel, including non-motorized users. The number of

driveways can be reduced by providing consolidated or shared driveways with cross-access between properties, providing a unified internal access to outparcels, creating better networks with balanced driveway connections to the main road and side streets, and eliminating unused or abandoned driveways.

b. ***Driveway / Connection Design.*** Driveway (connection) design has a direct impact on pedestrians and bicyclists. The FDOT ***Access Management Guidebook*** includes pedestrian and bicycle driveway design considerations such as curb radius, driveway width, sight distance, and meeting the requirements of the Americans with Disabilities Act (ADA).

c. ***Site Frontage.*** Frontage improvements can support the site and all modes that may travel to and from the development. These improvements can include sidewalks, bicycle facilities, on-street parking, landscaping/streetscaping, transit stops or shelters, and right-of-way dedication.

d. ***Site Circulation and Pedestrian and Bicycle Access.*** A site can promote pedestrian and bicycle accessibility and connectivity by providing safe and convenient on-site paths. To provide access to the site, the paths should directly connect the external pedestrian and bicycle network(s) to the main entrance of the site's building(s). Paths should also be provided:

    i. Between the parking areas and building entrances. If off-site parking is provided, review the routes between the off-site parking and the building entrances to provide appropriate paths and traffic control at street crossings.
    ii. Between the main entrances of multiple on-site buildings, if present.

    These on-site paths should minimize conflicts with other modes and provide the most direct route to reduce the travel distance for non-motorized users.

e. ***Amenities.*** On-site design can incorporate pedestrian and bicycle amenities to further promote the use of non-motorized modes. Potential amenities include lighting, bicycle parking, bicycle repair stations, showers, lockers, changing rooms, benches, landscaping, and awnings or other shade and/or weather protection.

f. ***Network Review.*** A well-connected street network is beneficial for bicyclists and pedestrians since it can provide shorter and more direct paths to reach destinations. Additionally, a connected street network can better disperse vehicular traffic over multiple facilities, providing safer, lower volume route options for non-motorized users. A development's geographic location within the surrounding transportation network can be reviewed to assess potential improvements to the network's connectivity. This may include review of the street network and the pedestrian and bicycle networks.

Note for Comprehensive Plan Amendments. Although site design details are not typically available for comprehensive plan amendments, appropriate best practices for pedestrian and bicycle design can be reviewed and planned for incorporation in the site plan.

3

Pedestrian and Bicycle Connections to Adjacent Properties and/or Transit Stops. Where feasible, developments should consider neighboring properties and transit stops and provide direct pedestrian and bicycle access. Direct access can minimize the travel distance for non-motorized users.

Providing convenient access between properties will encourage walking or biking and help minimize short auto trips between adjacent properties. Care should be taken to account for appropriate connections to adjacent or related properties, particularly when a street must be crossed to travel between the two properties including appropriate traffic control provisions.

Pedestrian and bicycle paths to/from transit stops near the site should be reviewed for directness and adequacy of the available facilities. These connections should facilitate safe and convenient transit trips ends to/from the site.

This step should be coordinated with the applicable local government agency, as appropriate.

Note for Comprehensive Plan Amendments. Although site design details are not typically reviewed during comprehensive plan amendments, recommended connections to bus stops and compatible neighboring land uses can be reviewed and planned for incorporation in the site plan.

4.8.3. Quantitative Pedestrian and Bicycle Analysis

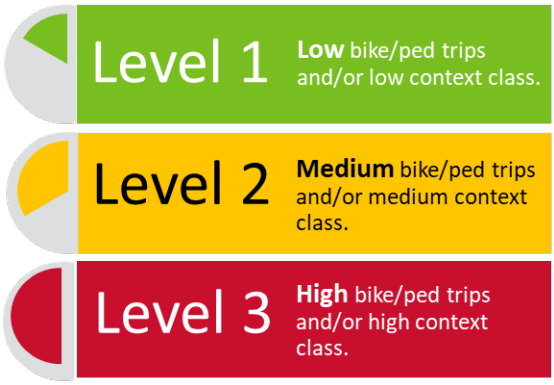
There are numerous quantitative performance measures used to assess bicycle and pedestrian modes. Each measure can provide a different perspective of the system's performance and should be selected based on the purpose and goal of the assessment. The scale of application for performance measures can differ ranging from long-term scenario planning or benchmarking to a near-term standard or target. For the purposes of assessing multimodal site impact, performance measures that can be applied to assess the near-term standard should be used.

Since no singular performance measure can account for all of the aspects of walkability and bikeability, it is recommended to include multiple performance measures to assess potential site impacts to biking and walking. As such, it is recommended that Q/LOS, network connectivity, and system completeness performance measures be included in the MTIA quantitative pedestrian and bicycle analysis (***Figure 20***).

Figure 20 | MTIA Pedestrian / Bicycle Measures of Effectiveness

The level of study for the quantitative analysis can vary based on the site's context and characteristics. The level of study sets the scale, complexity, and elements to be included in the quantitative pedestrian and bicycle impact analysis. In general, a site in a more urban context classification or one that generates a high volume of bicyclists and/or pedestrians should include a larger study area with more analysis components (see ***Figure 21***).

Figure 21 | Pedestrian and Bicycle Quantitative Analysis Study Levels



Guidance on the appropriate level of quantitative pedestrian and bicycle analysis is provided in ***Table 10***, which indicates one of three suggested levels of study based on whether a particular development is projected to have a low, medium, or high volume of peak hour non-motorized trips for a particular context classification. If more than one state roadway provides direct access to the study site, then the highest level of study resulting for the site should be provided.

Table 10 | Level of Pedestrian and Bicycle Study based on Context Classification and Peak Hour Volume

Peak Hour Volume of Non-Motorized Trips	C1	C2	C2T	C3	C4	C5	C6
Low (< 20)	1	1	2	1	1	2	2
Medium (20 – 49)	2	2	2	2	2	3	3
High (≥ 50)	3	3	3	3	3	3	3

Figure 22 | Quantitative Analysis Study Requirements

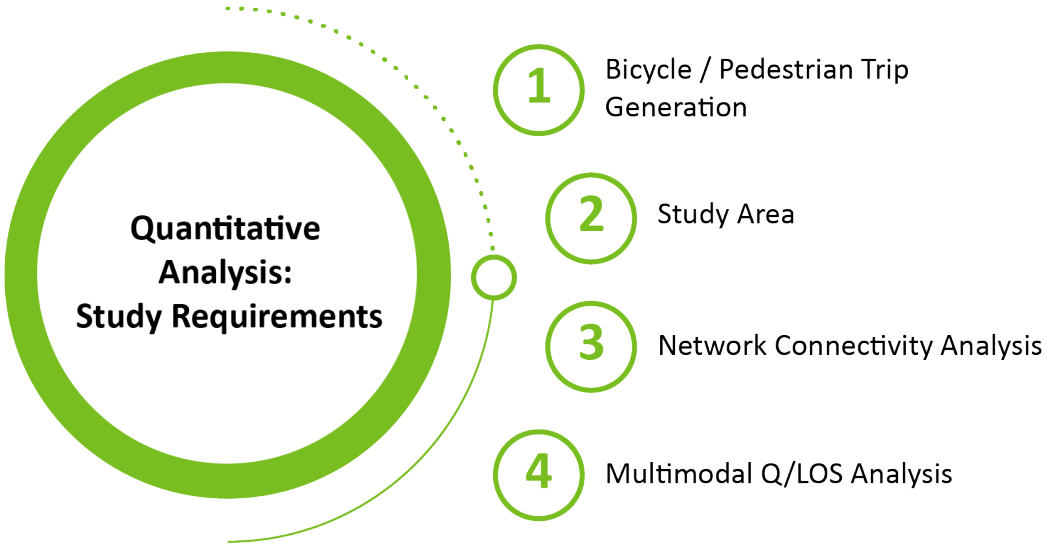


Table 11 shows the steps for the quantitative analysis. Note that Step 1 is required as part of the MTIA for access connection permit applications for driveway classifications C, D, E, F, and G.

Table 11 | Pedestrian and Bicycle Study Requirements – Quantitative Analysis

Analysis Type	Study Requirements	Level of Pedestrian and Bicycle Study		
		Level 1 (Low)	Level 2 (Medium)	Level 3 (High)
Quantitative Analysis	1. Bicycle / Pedestrian Trip Generation	Required when total vehicle trips per day exceeds 600 (driveway connection permit categories C-G). Optional for other study types.		
	2. Study Area	N/A	500-foot radius or nearest signalized intersection beyond 500 feet [1]	1,500-foot radius or nearest signalized intersection beyond 1,500 feet [1]
	3. Network Connectivity Analysis	N/A	Optional	Optional
	4. Multimodal Q/LOS Analysis	N/A	Optional	Optional

Note:

[1] Access connection permit applications for Driveway Categories C, D, E, F, and G should meet the above study area guidance as a minimum or utilize the same study area being evaluated for vehicle trips.

Each step from ***Table 11*** is described below.

1

Pedestrian and Bicycle Trip Generation. The first step beyond the context-based assessment and into the quantitative analysis is to provide pedestrian and bicycle trip generation. Note that this step is part of the required MTIA for any access connection application for driveway category C, D, E, F, or G. This step is otherwise optional, but encouraged, for any other study that requires vehicular trip generation and is necessary to determine the appropriate level of pedestrian and bicycle study as shown in ***Table 10***. The latest ITE *Trip Generation Handbook* provides a methodology to estimate trips by mode. This is further discussed in the ***Estimating Trips by Mode*** section. ITE or other approved methodology can be utilized to estimate non-motorized trips. The site's peak hour of non-motorized trips should be considered.

2

Study Area. As shown in ***Table 10*** and ***Table 11***, the study area determination can vary based on considerations such as context classification and the number of non-motorized trips generated by the site. It is recommended that the study area is measured from each driveway. For Comprehensive Plan Amendments or other types of community planning reviews or technical assistance, a 500-foot radius or nearest signalized intersection is recommended for a Level 2 analysis, and a 1,500-foot radius or nearest signalized intersection is recommended for a Level 3 analysis having more anticipated pedestrian and/or bicycle trips. For an access connection permit review, the study area should extend to the same limits as established for vehicular trips.

Note for Comprehensive Plan Amendments. The driveway(s) location(s) can be assumed for comprehensive plan amendments if they are not yet defined.

3

Network Connectivity Analysis. Network and connectivity performance measures provide a measure of a network's completeness and convenience. Per the FHWA *Guidebook for Measuring Multimodal Network Connectivity*, there are five components of multimodal network connectivity which are network completeness, network density, route directness, access to destinations, and network quality.

For the purposes of a site impact analysis, the Route Directness method can be used to measure network connectivity as it applies to a site. Route directness is the ratio between the actual route a bicyclist or pedestrian will travel between an origin and destination compared to the straight-line distance.

$$Route\ Directness\ Ratio\ = \frac{Shortest\ Path\ Route\ Distance}{Straight\text{–}Line\ Distance}$$

The following steps are recommended to assess the route directness for the site.

a. ***Determine onsite origin point(s).*** The trip origin point onsite should be located at the site's main front door entrance, or a central location for a development. Larger developments may require more than one origin point to measure route

directness. The specific origin point(s) and study area destinations can be determined during methodology development.

b. ***Determine destinations within the study area.*** The route directness ratio can be calculated for each potential origin/destination pair within the study area. Potential origins or destinations include off-site parking, bus stops, schools, parks, residences, places of employment, retail, health/recreation areas, etc.

c. ***Determine actual walking/biking routes.*** The actual walking/biking distance should be measured along designated pedestrian routes, where available, and not along informal routes such as on streets and through landscaping. Where formal routes along sidewalks, paths, or trails are not available, it can be assumed that the pedestrian will walk on the street.

d. ***Review completeness and quality of routes.*** After the walking/biking routes are determined, the quality and completeness of the routes should be reviewed. Design criteria to be considered as a part of this assessment can include availability or lack of facilities (gaps), safety, crossing treatments, design standards, ADA compliance, and appropriate and adequate lighting. All pedestrian and bicycle facilities along state roadways must meet minimum FDOT design criteria based on the FDM. However, consideration should be given to improving facilities beyond the required minimums based on the projected amount of usage (for example, wider sidewalks to accommodate a higher volume of pedestrians).

   The assessment should consider the anticipated volume of non-motorized users using the facilities along each route after the proposed development is in place to determine the suitability of the facilities (e.g., sidewalk width, crosswalk treatment, etc.). This can particularly be necessary for high pedestrian volume areas and/or Level 2 or 3 sites. Pedestrian and bicycle trip distribution is discussed in the ***Pedestrian and Bicycle Trip Distribution and Assignment*** section.

e. ***Calculate route directness ratios.*** Calculate the ratio by dividing the actual route traveled by the straight-line distance.

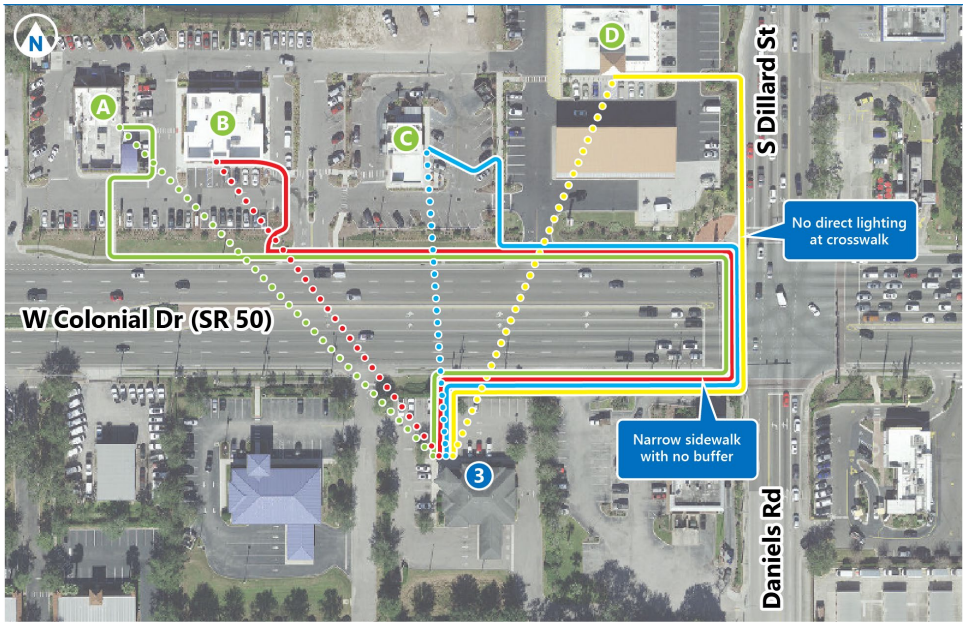
f. ***Determine needed improvements.*** To encourage pedestrian and bicycle trips, walking/biking routes should be safe, convenient, and direct. Indirect and circuitous routes or uncomfortable and unsafe routes can deter walking and biking trips and increase vehicular trips. Based on the findings in Steps d and e, improvements should be identified to improve walking/biking routes and to lower the route directness ratio. A route directness ratio of 1.5 or less should be maintained, where possible. Improvements should be identified to address inadequate or missing pedestrian and bicycle facilities along the designated routes, as identified in Step 6d. To lower the route directness ratio, as determined

in Step 6e, improvements should be identified to decrease the actual route distance (such as the addition of sidewalks, crosswalks, etc.). Where it is not feasible to provide the needed improvements off-site to create shorter paths, onsite infrastructure should be provided to allow for future connections (e.g., stub outs).

The review should also identify and assess locations where pedestrians/bicyclists may cross a roadway where a crosswalk does not exist to shorten their route based on the destinations and paths determined in this assessment. These locations should be assessed to determine if a new crosswalk is warranted based on FDOT guidance and criteria. Furthermore, existing and potential crossing locations along the routes should be reviewed to ensure that an adequate crossing treatment is in place to safely accommodate the anticipated crossing volumes after the addition of the site's pedestrian and bicycle trips. Crossing improvements can include the addition of a new crosswalk, high-visibility markings, raised crosswalk, curb extensions, refuge island, midblock crossing treatments (rectangular rapid-flashing beacons, pedestrian hybrid beacon), leading pedestrian interval at signals, and LED lighting. More information regarding crosswalks and treatments is provided in the ***FDOT Traffic Engineering Manual***.

An example of a route directness analysis is provided in ***Figure 23***.

Figure 23 | Example of Route Directness Analysis



Note for Comprehensive Plan Amendments. Since site details such as main entrance(s) (origin) and onsite pedestrian paths (actual route) are usually not defined for comprehensive plan amendments, assumptions can be made to complete the network connectivity analysis. This analysis is beneficial at the comprehensive plan amendment phase so that pedestrian route directness and quality issues can be identified and addressed during the site plan design, as appropriate.

4

Multimodal Quality/Level of Service (Q/LOS) Analysis. Q/LOS is a measure of the effect of factors that reflects how users may perceive a service condition which can include speed and travel time, traffic interruptions, freedom to maneuver, safety, comfort and convenience, and operating cost. There are numerous tools and methodologies available to measure bicycle and pedestrian Q/LOS. The FHWA ***Guidebook for Developing Pedestrian and Bicycle Performance Measures*** states that "Pedestrian and bicycle level of service can be assessed through various methodologies depending on context and desired outcomes, but generally focus on assessing comfort levels under specific situations." The ***FDOT 2023 Multimodal Quality/Level of Service Handbook*** utilizes Level of Traffic Stress (LTS) to provide an assessment of the quality (or level) of service for bicyclists and pedestrians. The following pedestrian and bicycle Q/LOS analyses are recommended as part of the site impact analysis.

Pedestrian Analysis

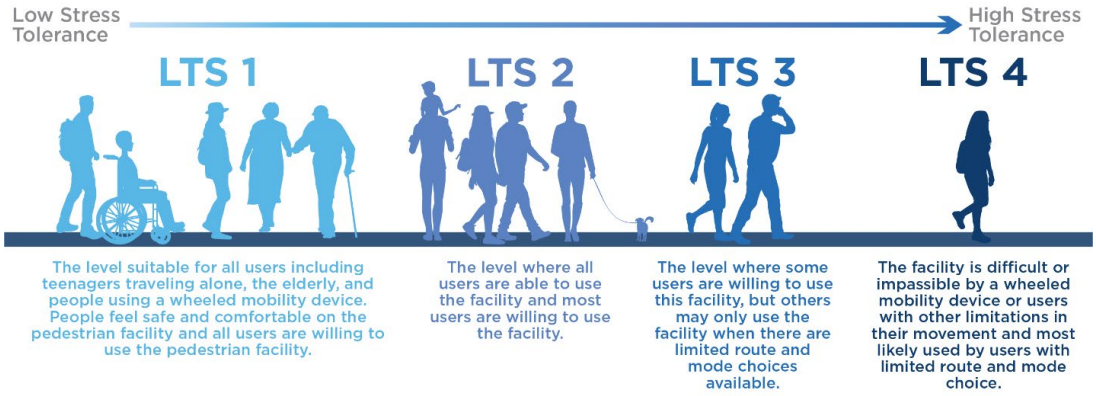
Pedestrian Level of Traffic Stress (PLTS) is a measure of quality (or level) of service for pedestrians. It qualitatively assesses the amount of discomfort people feel when they walk along a roadway within the roadway right-of-way. LTS levels range from 1 to 4, with 1 being the lowest level of stress and 4 being the highest level of stress, as follows:

- PLTS 1: The level suitable for all users including teenagers traveling alone, the elderly, and people using a wheeled mobility device. People feel safe and comfortable on the pedestrian facility and all users are willing to use the pedestrian facility.
- PLTS 2: The level where all users are able to use the facility and most users are willing to use the facility.
- PLTS 3: The level where some users are willing to use this facility, but others may only use the facility when there are limited route and mode choices available.
- PLTS 4: The facility is difficult or impassible by a wheeled mobility device or users with other limitations in their movement and most likely used by users with limited route and mode choice.

PLTS uses six characteristics to assess pedestrians' perceptions of the roadway or nearby roadside environment: existence of a sidewalk, sidewalk continuity, sidewalk width, posted speed, lateral separation of pedestrians from vehicular travel lanes, and presence

of vertical separation. More information on PLTS can be found in the FDOT ***2023 Multimodal Quality/Level of Service Handbook***.

Figure 24 | Pedestrian Level of Traffic Stress



Source: FDOT ***Multimodal Quality/Level of Service Handbook***

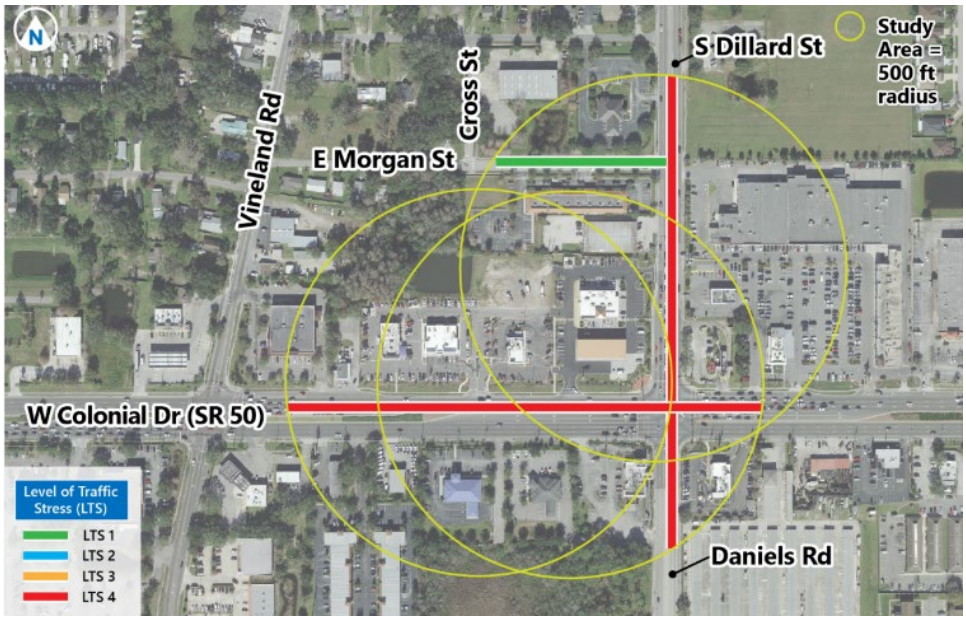
Bicycle Analysis

Bicycle Level of Traffic Stress (BLTS) is a rating given to a road segment or crossing indicating the relative traffic stress that is imposed on bicyclists when they bicycle close to traffic. The BLTS methodology measures the comfort level of specific facilities based on the perception of an average person and can be used to determine how well-connected a bicycle network is. The BLTS methodology includes four classifications for measuring the effects of traffic-based stress on bicycle riders. BLTS levels range from 1 to 4, with 1 being the lowest level of stress and 4 being the highest level of stress, as follows:

- BLTS 1: The level that most children can use confidently.
- BLTS 2: The level that will be tolerated by most adults.
- BLTS 3: The level tolerated by cyclists who are somewhat confident but still prefer having their own dedicated space for riding.
- BLTS 4: The level tolerated only by those characterized as highly confident or those with limited route or mode choice that choose to ride under stressful conditions.

BLTS applies to bicycle facilities within the roadway right-of-way and uses the following characteristics to assess bicyclists' perceptions of the roadway environment: bicycle facility type, bicycle facility width, posted speed, separation from traffic, and AADT. The simple and intuitive BLTS methodology allows a quick assessment of bicyclists' comfort along a corridor or overall transportation network while considering the needs and comfort levels of a wider range of bicyclist ages and abilities and a wider range of bicycle facility types. An example of a BLTS assessment is shown in ***Figure 25***.

Figure 25 | BLTS Example



More information on BLTS can be found in the FDOT ***2023 Multimodal Quality/Level of Service Handbook.***

4.8.4. Pedestrian and Bicycle Trip Distribution and Assignment

In some cases, it is necessary to determine the volume of pedestrian and bicycle trips for specific facilities after the proposed site is in place. This can particularly be necessary for high pedestrian volume areas and/or Level 2 or 3 sites. It is important to determine specific facility needs along the routes, particularly related to intersection and midblock crossing points, including the potential need for new or improved traffic control devices to improve the safety, comfort, and efficiency of walk and bike trips. For example, if a site is adding additional pedestrian trips to a midblock crossing, that midblock crossing should be assessed for conditions after the site is in place to confirm if the existing treatment is adequate or if improvements are needed to accommodate the site.

Pedestrian and bicycle trip distribution is the estimate of where entering trips by these modes originate and where exiting trips go. Origin and destination trips should be determined within and to the edges of the defined pedestrian and bicycle study area. This step, along with the following step of Trip Assignment, will help determine the specific routes within the study area of pedestrian and bicycle trips generated by the site.

As part of the Network Connectivity Analysis Route Directness previously discussed, origins, destinations, and actual pedestrian and bicycle routes are identified. As such, the Route Directness method incorporates most of the pedestrian and bicycle trip distribution and assignment steps. The only missing step is determining the volume of site trips on each route.

As discussed, trip distribution is typically estimated by one of two methods: manual or model. While these methods have historically been used to estimate automobile trip distribution, they could also be modified to estimate pedestrian and bicycle trip distribution. Moreover, there are many existing and new emerging tools and methodologies available to estimate pedestrian and bicycle trip distribution.

4.8.4.1. Manual Methods

The manual method of trip distribution can be applied to bicycles/pedestrians by utilizing the same method for vehicles (applying existing travel patterns, knowledge of the study area, and planning/engineering judgment). The destinations near the site, as identified in the Route Directness method, can be used to determine trip distribution by assigning weights to each. The weights of all the destination points surrounding the site should add up to 100 percent. The actual routes determined in the Route Directness analysis serve as the trip assignment.

Additional data, such as existing pedestrian and bicycle volumes and facilities can be used to determine a manual pedestrian and bicycle trip distribution. The manual method is appropriate for use in most cases due to the smaller pedestrian and bicycle study area size. However, additional tools are discussed below, and new tools continue to emerge.

4.8.4.2. American Community Survey & Census Data

American Community Survey (ACS) and Census Data can be used to estimate pedestrian and bicycle trip distribution. ACS provides pedestrian and bicycle commuting data by census block groups (US Census Bureau, 2017). ACS mode share information can be multiplied by total Census population data to estimate pedestrian and bicycle volumes. These volumes can then be scaled proportionally to the square mileage within a project area to estimate volumes at the corridor-level, and also forecasted into the future using a population growth estimate.

4.8.4.3. Travel Demand Models

Various travel demand modeling tools are widely used today to estimate trip distribution. These models have been traditionally used to estimate automobile trip distribution. When considering these same models to estimate pedestrian and bicycle trip distribution, their capabilities are currently limited. These models do not account for the unique travel characteristics of bicyclists and pedestrians, such as the "D" variables (density, diversity/land use, design, destination accessibility, distance to transit, demand management, demographics) and accessibility to pedestrian and bicycle travel opportunities. Furthermore, TAZ-based models are inherently constrained due to the fact that pedestrian and bicycle trips are typically shorter trips and often occur within a TAZ, as opposed to between TAZs.

However, there are new and emerging travel demand models and/or other tools for pedestrian and bicycle trip generation that can be used, if appropriate. National Cooperative Highway Research Program (NCHRP) Report 770, "Estimating Bicycling and Walking for Planning and Project Development: A Guidebook" provides a summary of the limitations of existing models and an analysis of new and emerging tools available for pedestrian and bicycle trip distribution. The report recommends the GIS Accessibility and PedContext tools as the "best" tools for site-level analysis.

The GIS Walk Accessibility Model was developed as a product of the NCHRP 770 report and includes a spreadsheet and methodology. The model is based on GIS with a geospatial overlay and network path-building to estimate accessibility between points. It can be used as a stand-alone tool or incorporated into a host GIS scenario planning model. The model can be used for site-level applications and provides walk trips. Bike trips can also be estimated with sufficient data. Trip assignment can be provided by a host model.

Output from the PedContext tool includes trip generation and trip distribution. However, only pedestrian trip data is provided. The tool uses a refined four-step process with pedestrian zones instead of TAZs. The tool can be used for site-level analysis and is used as a stand-alone model.

A potential downside of using the GIS Walk Accessibility Model or PedContext tool, as well as other similar emerging pedestrian and bicycle level distribution tools, is they require a greater up-front effort to configure compared to the relatively simple manual method previously described. This is particularly true given the relatively small study area for even the sites with the highest pedestrian and/or bicycle trip generation or most dense, urban contexts.

4.8.4.4. Assignment

Pedestrian and bicycle trips can be assigned to the network based on available or planned pedestrian and bicycle facilities, and based on accessibility to safe and convenient paths to nearby origins and destinations. A travel demand model or other tools can be used, if available. As discussed previously, this step is important to determine potential facility needs to safely accommodate walk and bike trips, particularly at intersection and midblock locations within the study area, including the potential need for new or improved traffic control devices.

The Route Directness analysis, discussed in the ***Quantitative Pedestrian and Bicycle Analysis*** section, incorporates pedestrian and bicycle trip assignment by identifying actual paths to destinations near the site. The following should be considered when determining and reviewing pedestrian and bicycle trip assignment:

- Shortest and most comfortable route to/from nearby origins/destinations
- Presence of pedestrian and bicycle facilities such as sidewalks, bike lanes, shared-use paths/trails, crosswalks, etc.
- Evidence of existing pedestrian or bicycle usage in locations without dedicated facilities, such as the presence of worn paths in grass or vegetation alongside roadways
- Other amenities such as shade from trees or canopies, lighting, benches, etc.