TRAFFIC IMPACT ANALYSIS

OSTEEN CEMETERY ROAD PROJECT

CITY OF DELTONA, VOLUSIA COUNTY

Prepared for:
Poulos & Bennett, LLC
2602 East Livingston Street
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Prepared by:

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January 2021

Revised
May 2021

TPD № 5427

PROFESSIONAL ENGINEERING CERTIFICATION

I hereby certify that I am a Professional Engineer properly registered in the State of Florida practicing with Traffic Planning & Design, Inc., a corporation authorized to operate as an engineering business, EB-3702, by the State of Florida Department of Professional Regulation, Board of Professional Engineers, and that I have prepared or approved the evaluations, findings, opinions, conclusions, or technical advice attached hereto for:

PROJECT: Osteen Cemetery Road Project

LOCATION: City of Deltona, Volusia County

CLIENT: Poulos & Bennett, LLC

I hereby acknowledge that the procedures and references used to develop the results contained in these computations are standard to the professional practice of Transportation Engineering as applied through professional judgment and experience.

NAME: Turgut Dervish

P.E. No.: 20400

DATE: May 18, 2021

SIGNATURE: _____

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INTRODUCTION

This traffic analysis was performed to assess the impact of the proposed Osteen Cemetery Road project in the City of Deltona, Volusia County. The proposed development consists of a 160-unit single-family subdivision. The development is located on Fernanda Drive approximately 0.40 mile east of Howland Boulevard. **Figure 1** depicts the site location. The site will be served via a full access driveway on Fernanda Drive. **Figure 2** depicts the site plan and its access configuration. The project buildout year is anticipated to be 2024.

The traffic analysis was conducted in accordance with the Guidelines of the Transportation Impact Analysis (TIA) of the River to Sea TPO. Reference data used in the analysis were obtained from the City of Deltona, Volusia County, the Florida Department of Transportation (FDOT), and the Institute of Transportation Engineers (ITE). Additionally, A.M./P.M. peak hour intersection traffic data were obtained by Traffic Planning and Design, Inc. (TPD) personnel.

Osteen Cemetery Road Property
Project № 5427
Figure 1

Project Location Map

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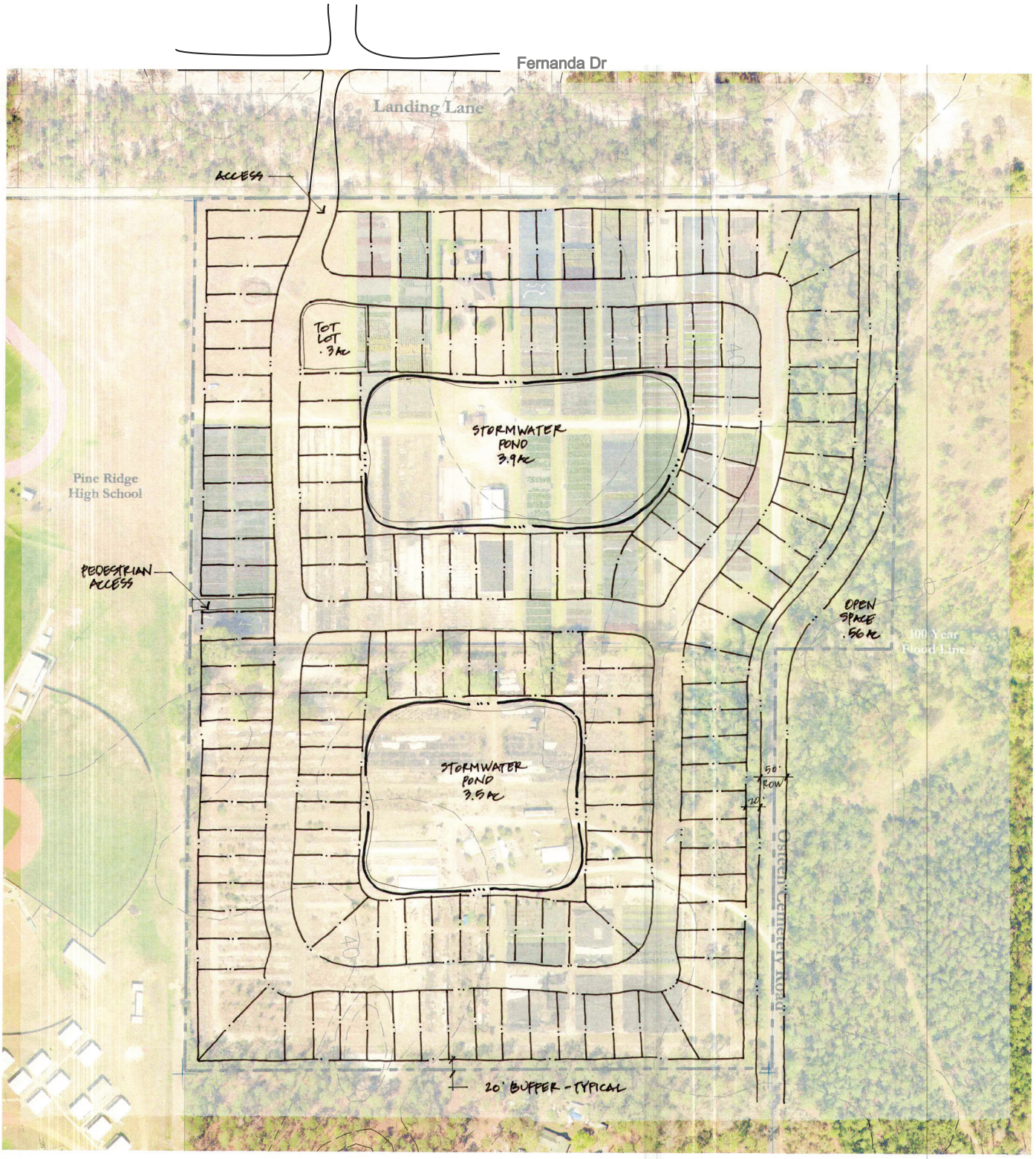

Osteen Cemetery Road Property
Project № 5427
Figure 2

Site Plan N
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EXISTING CONDITIONS ANALYSIS

The existing conditions analysis was conducted for roadway segments and intersections within a study area delineated as per the 3% significance threshold required by the R2C TPO's TIA procedures. Based upon the significance test conducted under the subsequent section of this report, the project's trip generation will not consume 3% or more of any of the area roadways. Therefore, the adjacent roadway segment and major intersections along this segment were included in the analysis as follows:

Roadway Segment

- Howland Boulevard
    - Courtland Blvd to Ft Smith Blvd

Intersections

- Howland Boulevard and Courtland Boulevard
- Howland Boulevard and Goldenhills Street/Fernanda Drive
- Howland Boulevard and Fish Hawk Road/School Entrance
- Howland Boulevard and Ft. Smith Boulevard

The roadway analysis was conducted for the highway P.M. peak hour with data obtained from the Volusia 2019 Average Annual Daily Traffic and Historical Counts spreadsheets. The intersections were analyzed for the A.M. and P.M. peak hours with 7-9 A.M. and 4-6 P.M. turning movement counts made at the study intersections.

Roadway Segment Analysis

The roadway segment was analyzed by comparing the existing two-way P.M. peak hour volumes for the segment with the corresponding peak hour capacity at the adopted Level of Service (LOS) standard. Existing P.M. peak hour volumes and peak hour capacity were obtained from the Volusia County 2019 AADT Spreadsheet. A summary of the existing roadway capacity analysis is presented in **Table 1**, which shows that the study roadway segment is currently operating at a satisfactory Level of Service.

Intersection Analysis

A capacity analysis was conducted for the study intersections using HCS software in accordance with the procedures of the Highway *Capacity Manual (HCM 6E)*. The capacity analysis was performed using the existing intersection geometry, traffic volumes during the A.M. and P.M. peak hours and signal timing/phasing data obtained from Volusia County. Existing turning movement counts obtained by TPD were seasonally adjusted as per FDOT factors. A further adjustment was made by comparing 2020 P.M. counts obtained in the field to 2019 Volusia P.M. counts as follows:

2020 2W Count	2019 2W Count	Adjustment Factor
1,346	1,385	1.03

Figures 3a and 3b depict the adjusted intersection volumes. The unadjusted intersection counts made by 15-minute intervals are included in **Appendix A** along with signal timing data and FDOT's seasonal factors.

The intersection capacity analysis results are summarized in **Table 2.** The results indicate that the study intersections currently operate at satisfactory overall Levels of Service. Detailed HCS analysis worksheets are included in **Appendix B**.

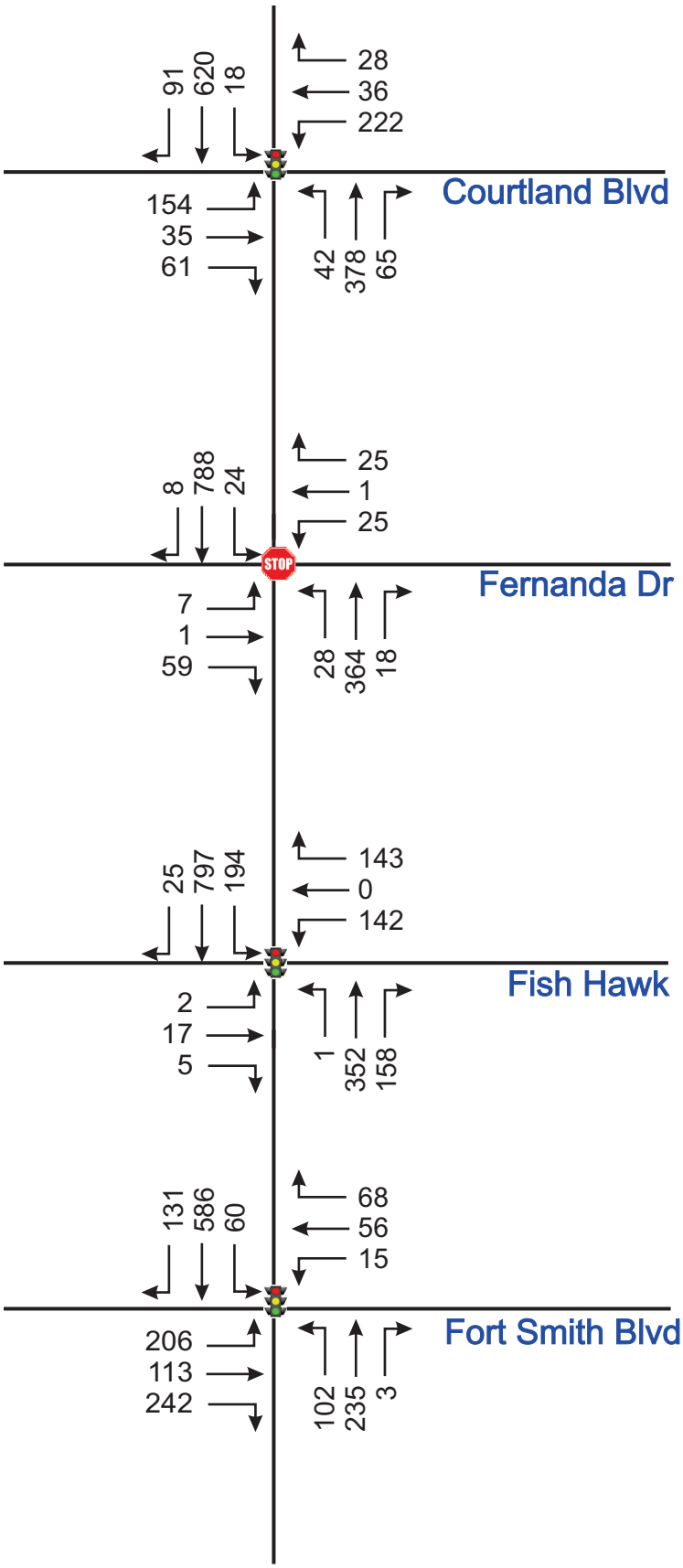
Table 1
Existing Roadway Capacity Analysis

Roadway	Segment	Lns	Adopted LOS		Existing PH Vols*	Within Adopted LOS Stnd?
			LOS	PH2W Cap*		
Howland Blvd.	Courtland Blvd. to Ft Smith Blvd.	4	E	3,410	1,385	YES

*Obtained from Volusia County 2017 AADT & Historical Counts

Table 2
Existing Intersection Capacity Analysis

Intersection	Control	Time Period	EB		WB		NB		SB		Overall	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Howland Blvd & Courtland Blvd	Signal	A.M.	29.7	C	25.9	C	25.1	C	36.0	D	29.9	C
		P.M	26.1	C	31.2	C	28.0	D	23.5	C	31.2	C
Howland Blvd & Goldenhills St/Fernanda Dr	STOP	A.M.	14.8	B	21.6	B	10.1	B	8.5	A	---	---
		P.M	13.5	B	19.5	C	0.4	A	0.4	A	---	---
Howland Blvd & Fish Hawk Rd/School Entrance	Signal	A.M.	50.0	D	58.4	E	12.2	B	10.2	B	18.8	B
		P.M	63.6	E	65.2	E	5.1	A	1.9	A	5.2	A
Howland Blvd & Ft. Smith Blvd	Signal	A.M.	25.8	C	27.6	C	22.7	C	29.8	C	27.1	C
		P.M	24.5	C	28.6	C	23.0	C	28.5	C	25.2	C



Osteen Cemetery Road
Project № 5427
Figure 3a

Existing A.M. Peak Hour Traffic Volumes

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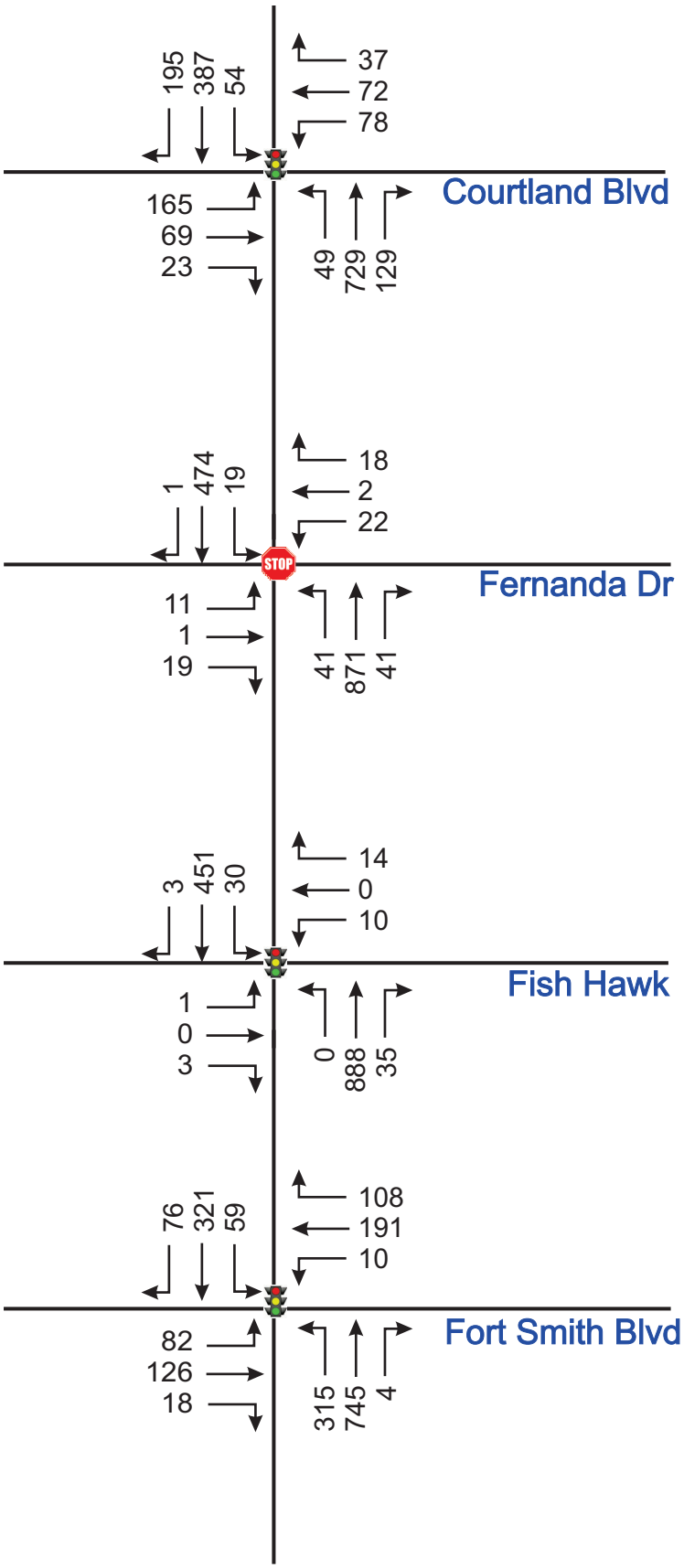

Osteen Cemetery Road
Project № 5427
Figure 3b

Existing P.M. Peak Hour Traffic Volumes

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PROPOSED DEVELOPMENT AND TRIP GENERATION

The proposed development consists of a 160-unit single family subdivision. To determine the impact of this development, an analysis of its trip generation characteristics was conducted. This included the determination of the trips to be generated as well as their distribution and assignment to the surrounding roadways.

Trip Generation

Trip generation rates were obtained from the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 10th Edition*. A summary of the trip generation of the proposed development is shown in **Table 3**. The development is expected to generate 1,602 daily trips, of which 118 will occur in the A.M. peak hour and 160 will occur in the P.M. peak hour. ITE Trip Generation worksheets are included in **Appendix C**.

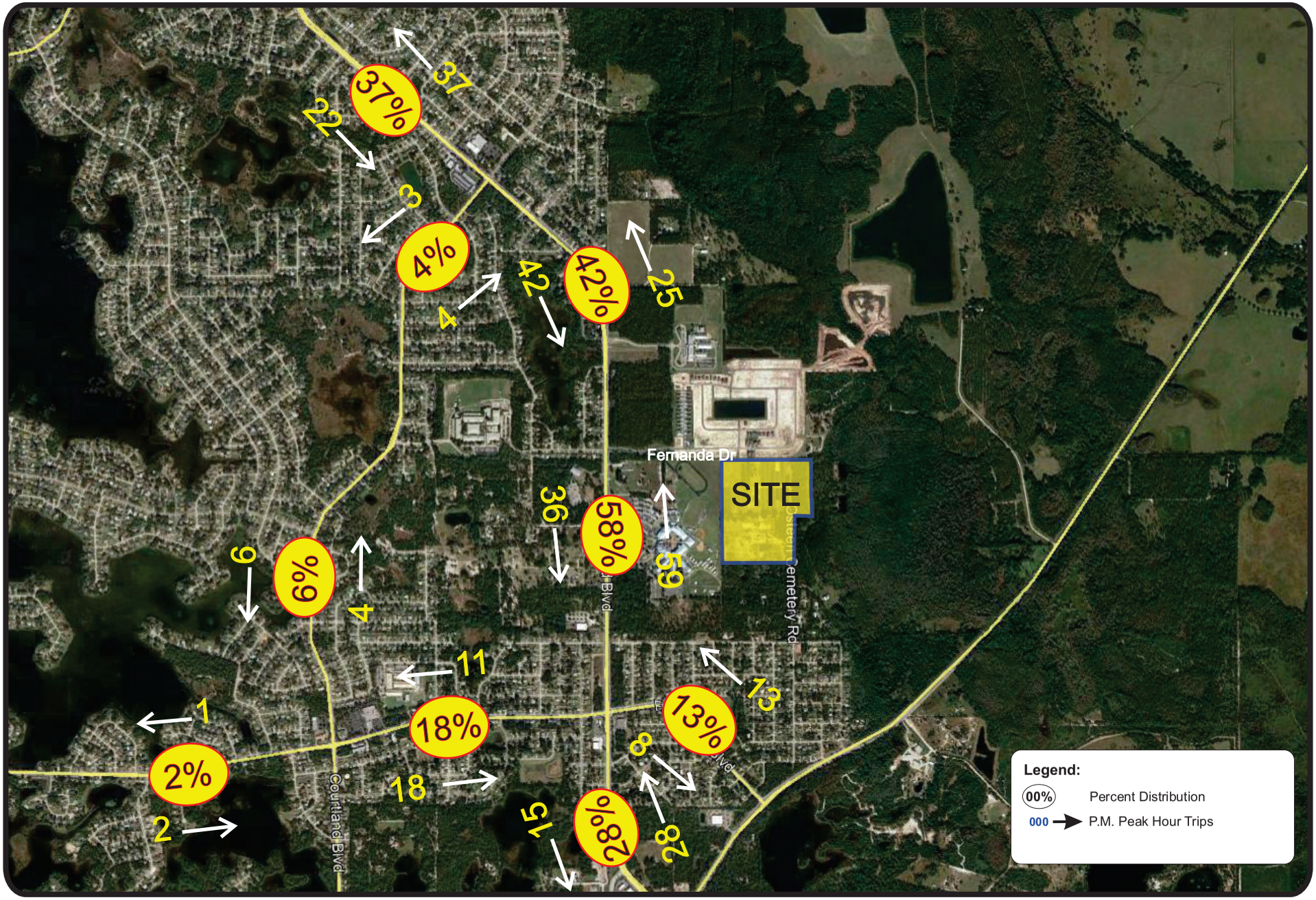
Table 3
Trip Generation Summary

ITE Code	Land Use	Size	Daily		AM Peak Hour				PM Peak Hour			
			Rate	Trips	Rate	Enter	Exit	Total	Rate	Enter	Exit	Total
210	Single Family	160 DU	10.01	1,602	0.74	30	88	118	1.00	101	59	160

**The ITE equations were used as the R-squared correlation coefficient was greater than 0.75*

Trip Distribution/Trip Assignment

The estimation of the distribution of the project's trips in the area was determined with the use of the CFRPM (v.6.1) model. Model distribution plots are included in **Appendix D. Figure 4** illustrates the trip distribution on the area roadways in the project vicinity. This distribution was used to assign the project trips to the study roadway and intersections.



Osteen Cemetery Road Property
Project № 5427
Figure 4

Project Distribution/Assignment

Significance Analysis

As per R2C TPO County TIA procedures and requirements, the influence area of the proposed project will include those roadway segments where project trips consume 3% or more of the adopted Level of Service. Based upon the significance test performed, as shown in **Table 4**, the project will not consume 3% or more of the adopted LOS of any roadway. Therefore, the adjacent roadway segment and major intersections along the segment will be included in the analysis as follows:

Roadway Segment

- Howland Boulevard
  - Courtland Blvd to Ft Smith Blvd

Intersections

- Howland Boulevard and Courtland Boulevard
- Howland Boulevard and Goldenhills Street/Fernanda Drive
- Howland Boulevard and Fish Hawk Road/School Entrance
- Howland Boulevard and Ft. Smith Boulevard

Table 4
Significance Analysis

Roadway Segment	Lns	Adopted LOS		Project Trips		Project Trips as % of Capacity	Significance at 3% Level?
		LOS	Peak Hour 2-Way Capacity	Trip Distribution*	Volume		
Howland Boulevard							
Courtland Blvd to Ft. Smith Blvd	4LD	E	3,410	58%	93	2.73%	No
Fort Smith Boulevard							
Courtland Blvd to Howland Blvd	2L	E	1,480	18%	29	1.96%	No
Howland Blvd to SR 415	2L	E	1,480	13%	21	1.41%	No
Courtland Boulevard							
Howland Blvd to Ft. Smith Blvd	2L	E	960	4%	6	0.63%	No
Ft. Smith Blvd to Doyle Rd	2L	E	960	10%	16	1.767%	No

Critical/Near-Critical Segment Analysis

Based upon the information provided by Volusia County, there are no critical or near-critical roadway segments within a 3-mile radius of the site. A map provided by Volusia County is included in **Appendix E.**

PROJECTED TRAFFIC CONDITIONS

Projected traffic conditions for the project buildout in 2024 were analyzed using P.M. peak hour traffic volumes for the study roadway segments and A.M./P.M. peak hour counts for the study intersections. The analysis was conducted for the projected traffic volumes consisting of background traffic volumes plus project trips. Background traffic volumes were determined by combining existing peak hour traffic volumes with vested trips. Vested trip information obtained from approved developments was compared with traffic growth based upon a 4.5% annual growth for three years. The growth in traffic on the study segment was greater than the vested trips. Therefore, background traffic was estimated with the use of a 4.5% annual growth obtained from a trends analysis of traffic volumes on the study segment. Additionally, trips from undeveloped units of the Fernanda Subdivision were included in the projected traffic volumes. The trends analysis chart is included in **Appendix F** along with the Vested Trip Worksheet.

Roadway Segment Analysis

The projected roadway segment analysis was performed by comparing the projected traffic volume of each segment with the respective capacity at the adopted LOS standard. The analysis as summarized in **Table 5** revealed that the study roadway segment is projected to operate at satisfactory level of service.

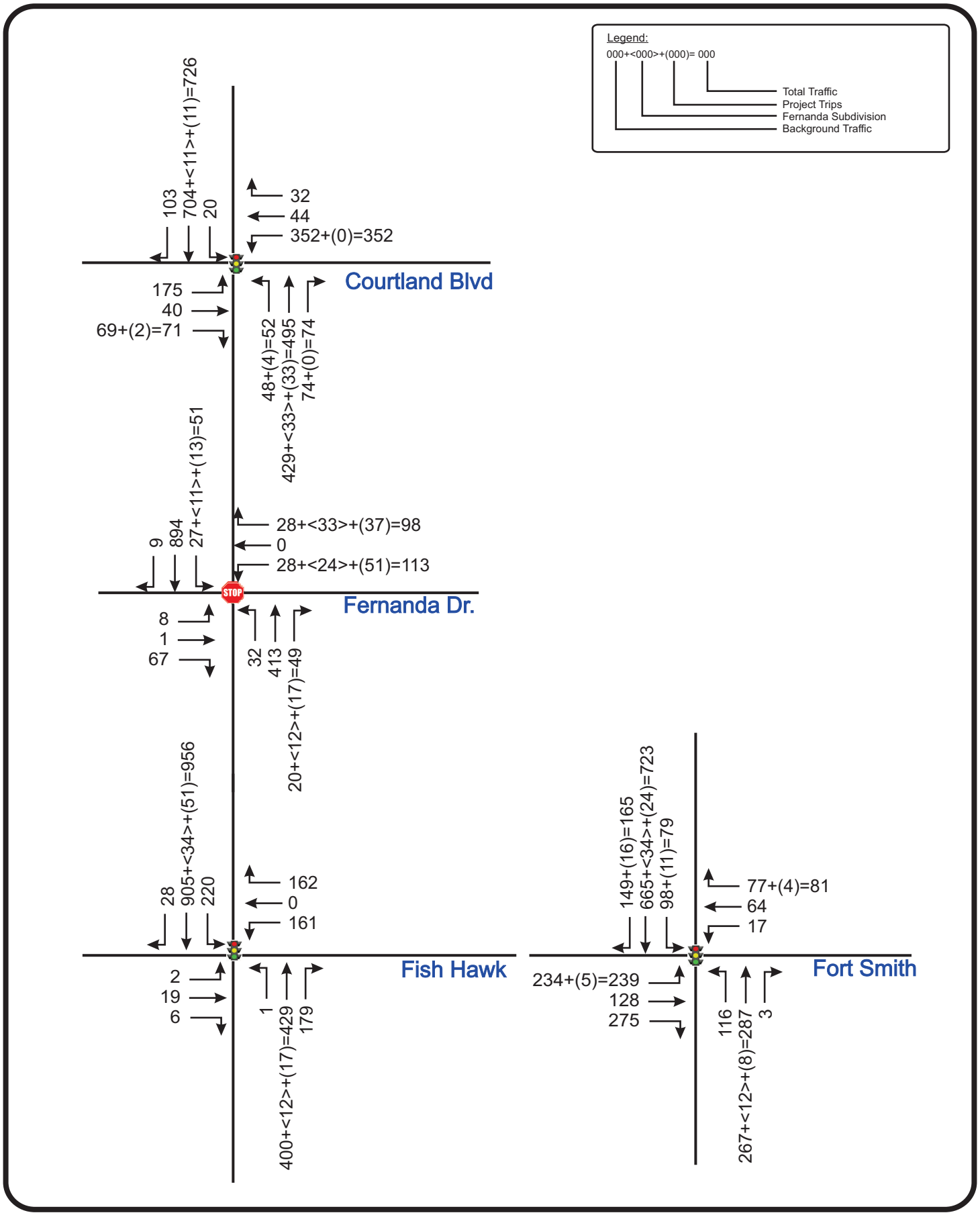
Table 5
Projected Roadway Capacity Analysis

Roadway Segment	Lns	Adopted LOS		2-Way Peak Hour Traffic Volume				Within Adopted LOS Std?
		LOS	2WPH Capacity	Existing	Background*	Project	Total	
Howland Boulevard								
Courtland Blvd to Ft Smith Blvd	4	E	3,410	3,385	1,572	93	1,665	Yes

* Existing x 1.135

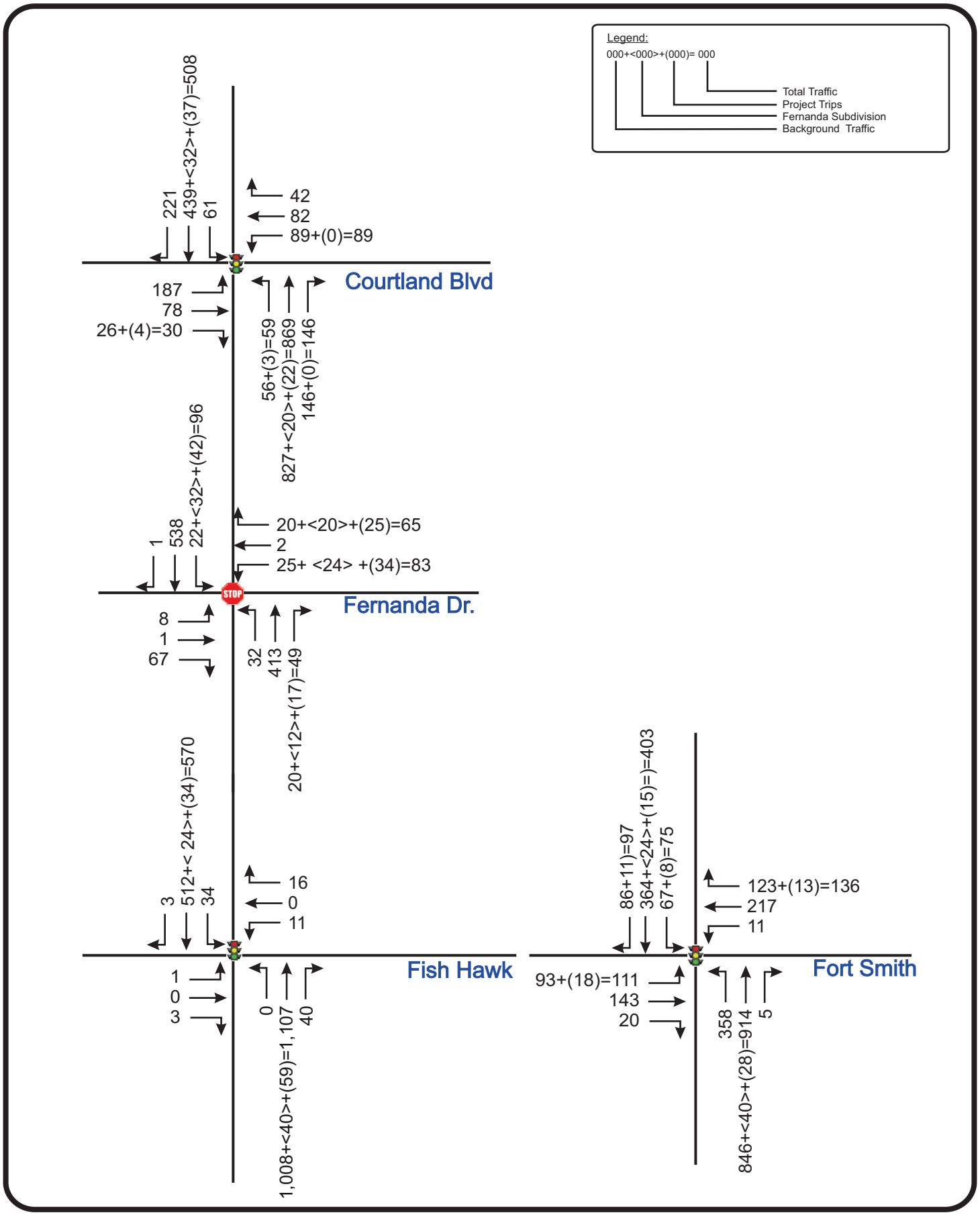
Intersection Analysis

A capacity analysis was conducted at the study intersections utilizing projected traffic volumes and existing/proposed intersection geometry as shown in **Figures 5a and 5b**. This was accomplished utilizing *HCS7* software. The results of this analysis, as included in **Appendix G** and summarized in **Table 6**, indicate satisfactory overall traffic operating conditions at the study intersections.



Osteen Cemetery Road
Project № 5427
Figure 5a

Projected A.M. Peak Hour Traffic Volumes



Osteen Cemetery Road
Project № 5427
Figure 5b

Projected P.M. Peak Hour Traffic Volumes

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Table 6
Projected Intersection Capacity Analysis

Intersection	Control	Time Period	EB		WB		NB		SB		Overall	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Howland Blvd & Courtland Blvd	Signal	A.M.	30.9	C	26.8	C	27.1	C	60.2	E	41.1	D
		P.M	26.5	C	32.0	C	74.0	E	29.8	C	49.6	D
Howland Blvd & Goldenhills St/Fernanda Dr	STOP	A.M.	14.8	B	21.6	C	10.1	B	8.5	A	---	---
		P.M	18.1	C	41.4	E	0.4	A	11.9	B	---	---
Howland Blvd & Fish Hawk Rd/School Entrance	Signal	A.M.	47.9	D	57.0	E	14.5	B	12.7	B	20.2	C
		P.M	63.4	E	65.1	E	5.9	A	2.1	A	5.6	A
Howland Blvd & Ft. Smith Blvd	Signal	A.M.	36.2	D	33.8	C	23.4	C	32.6	C	32.0	C
		P.M	28.7	C	35.5	D	25.1	C	30.1	C	28.2	C

The projected traffic conditions analysis did not consider signalization at Howland Boulevard/Fernanda Drive nor did it consider signalized access to Fernanda Place or the nearby Pride Elementary School. In discussions with Volusia County Traffic Engineering, it was determined the best location for new signal to benefit the school and Fernanda Place would be at Howland Boulevard and Fernanda Drive.

Signalized School/Fernanda Place Access

In order for the Pride Elementary School to also benefit from the proposed signal, a new roadway connection (New York Avenue) from Learning Lane to Fernanda Drive is proposed. This would be along the west property line where a 20-foot right-of way already exists. This right of way would be expanded to 60 feet so that a two-lane roadway can be constructed from Fernanda Drive to Learning Lane which would also provide northern access to Phase 1 Fernanda Place. **Figure 6** depicts the conceptual alignment. The Developer is coordinating with the Volusia County school Board and Volusia County Traffic Engineering to determine a mutually acceptable intersection configuration at Learning Lane and New York Avenue (new road connection).

Osteen Cemetery Road Property
Project № 5427
Figure 6

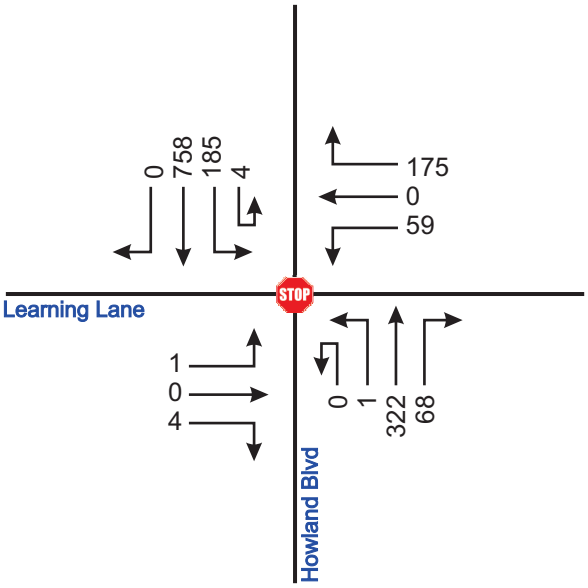
Conceptual New Road Alignment

To determine the potential impact of the new roadway connection, A.M., Mid-Afternoon and P.M. peak hour counts were made at Learning Lane and Howland Boulevard. These counts are summarized in **Figure 7**. A review of this figure reveals that approximately 75% of the school trips is to the north of Howland Avenue. Therefore, some of the school trips to/from south on Howland Boulevard would choose to go through the Fernanda Drive intersection where a signal is proposed.

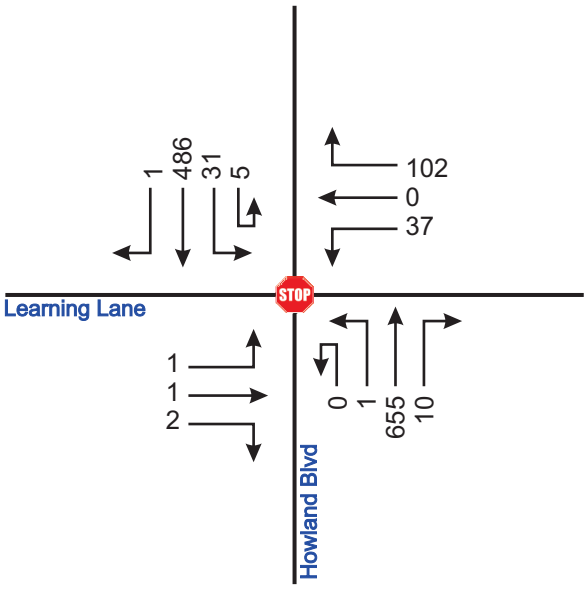
to reach the new roadway connection. This would impact the A.M. peak hour trips at Howland Boulevard/Fernanda Place but not the P.M. peak hour since the school closes mid-afternoon. The revised projected A.M. peak hour trips at Howland Boulevard/Fernanda Drive showing diverted school trips are shown in **Figure 8**. A signalized intersection analysis for this location indicates a satisfactory traffic operating condition (see **Appendix H**). In the analysis, it was assumed that 50% of the school trips entering and 100% departing (to/from south on Howland Boulevard) would divert to utilize the new roadway connection.

Multimodal Analysis

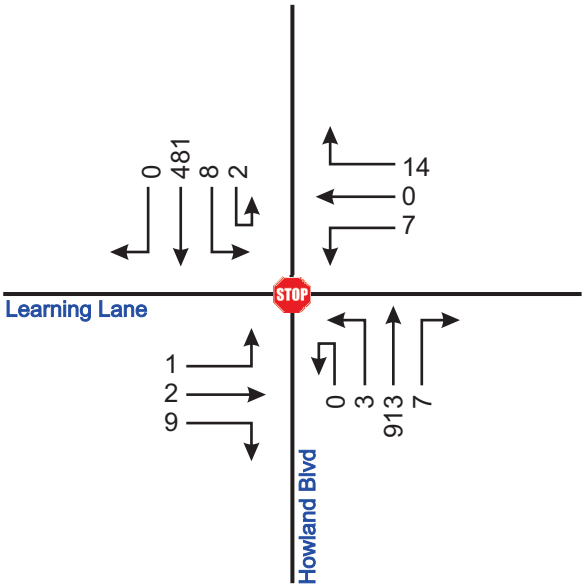
An alternative mode analysis was conducted to ensure alternative modes of transportation were adequately considered as part of the project. In the existing condition, alternative modes of transportation within the study area include both pedestrian and transit facilities. There are five-foot paved sidewalks located along both sides of Fernanda Drive and Howland Boulevard. In addition, Volusia County's public transit system, VOTRAN, operates two (2) bus route, the bus route is Route 22 and 21 (Howland Boulevard). There is one bus stop on Howland Boulevard at Fernanda Drive and other bus stops north and south of this intersection. There are no designated bicycle lanes on Howland Boulevard in this area.



A.M.



Mid-Afternoon



P.M.

Osteen Cemetery Road/Fernanda Drive
Project № 5427
Figure 7

Turning Movement Counts
Howland Blvd & Learning Lane

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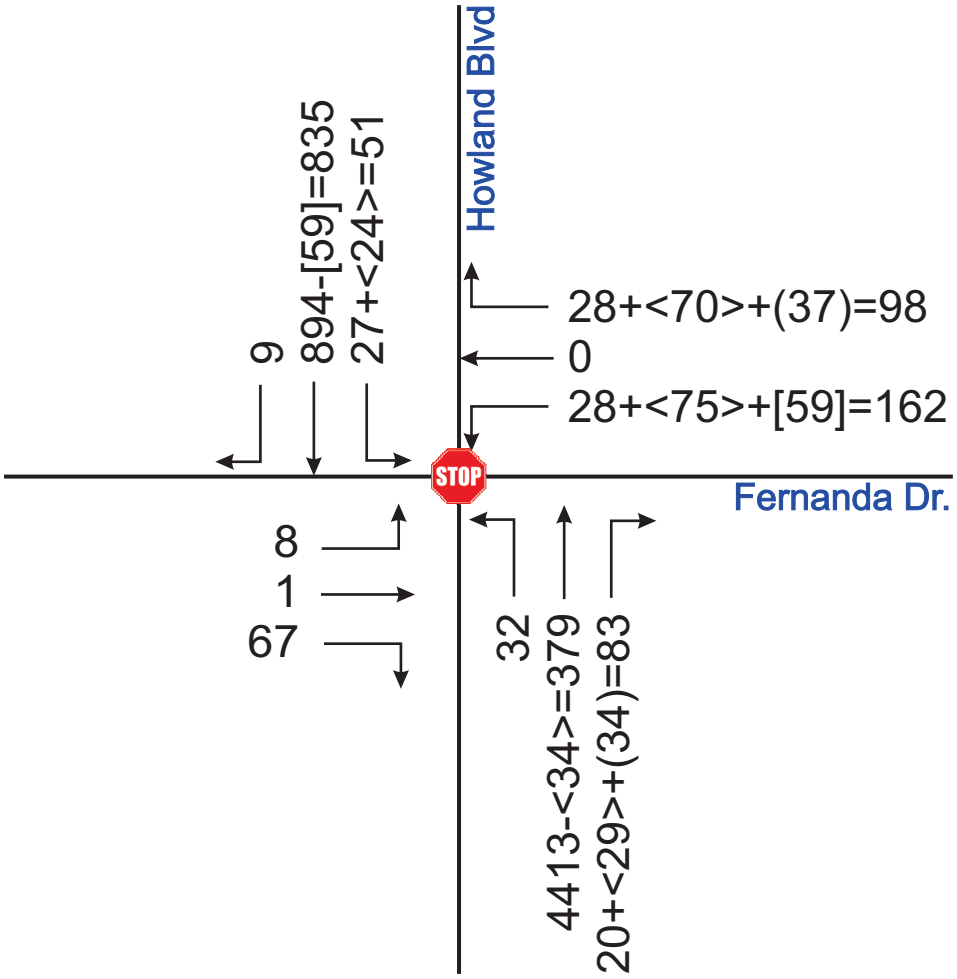

Osteen Cemetery Road
Project № 5427
Figure 8

Revised Projected A.M. Peak Hour Traffic Volumes

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STUDY CONCLUSIONS

This traffic analysis was performed to assess the impact of the Osteen Cemetery Road project in the City of Deltona, Volusia County. The proposed development consists of a 160-unit single-family subdivision located on the south side of Fernanda Drive approximately 0.40 mile east of Howland Boulevard. The project's anticipated buildout year is 2024. The results of the study as documented herein are summarized below:

- The proposed development is expected to generate 1,602 daily trips, of which 118 will occur in the A.M. peak hour and 160 will occur in the P.M. peak hour.

- The study roadway segment currently operates at satisfactory Levels of Service and will continue to do so when project trips are added.

- The intersection analysis indicated that the study intersections currently operate at overall acceptable Levels of Service and are projected to continue to do so upon project buildout in 2024.

- The proposed development will be served on Fernanda Drive which currently serves the Fernanda Subdivision immediately to the north of the proposed development.

- A signal is proposed at Howland Boulevard/Fernanda Drive intersection to serve both Fernanda Place and Pride Elementary School. For this purpose, a new roadway connection (New York Avenue) is proposed to be constructed from Fernanda Drive to Learning Lane.

APPENDICES

APPENDIX A

Turning Movement Counts, Signal Timing Data &
FDOT Seasonal Adjustment Factors

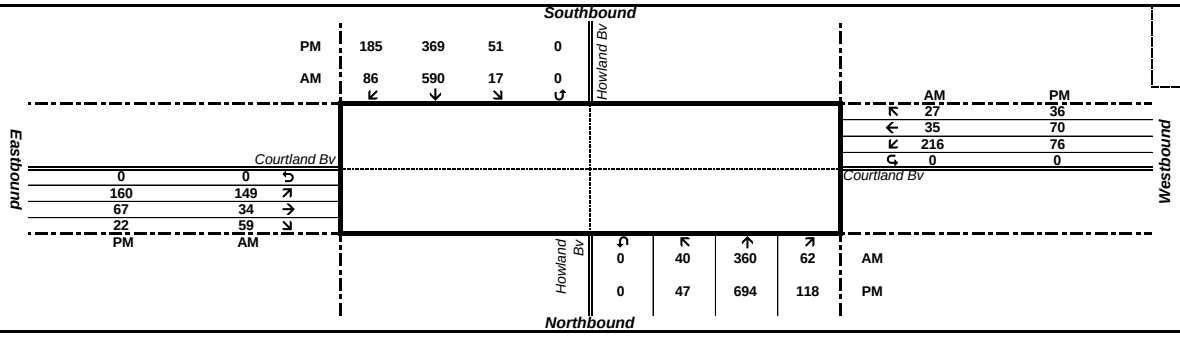
15 MINUTE TURNING MOVEMENT COUNTS

(Cars and Trucks)

DATE: January 15, 2021 (Friday) **CITY:** Deltona **LATITUDE:** 0

LOCATION: Howland Bv & Courtland Bv **COUNTY:** Volusia County **LONGITUDE:** 0

	Howland Bv					Howland Bv						Courtland Bv					Courtland Bv						
TIME	**NORTHBOUND**					**SOUTHBOUND**					**N/S**	**EASTBOUND**					**WESTBOUND**					**E/W**	**GRAND**
BEGIN	**L**	**T**	**R**	***U-turn***	**TOTAL**	**L**	**T**	**R**	***U-turn***	**TOTAL**	**TOTAL**	**L**	**T**	**R**	***U-turn***	**TOTAL**	**L**	**T**	**R**	***U-turn***	**TOTAL**	**TOTAL**	**TOTAL**
07:00 AM	3	40	3	0	**46**	5	128	14	0	**147**	**193**	37	3	10	0	**50**	35	8	7	0	**50**	**100**	**293**
07:15 AM	5	69	11	0	**85**	2	154	22	0	**178**	**263**	41	6	20	0	**67**	57	11	8	0	**76**	**143**	**406**
07:30 AM	16	101	20	0	**137**	4	165	20	0	**189**	**326**	39	4	19	0	**62**	63	10	8	0	**81**	**143**	**469**
07:45 AM	8	99	22	0	**129**	5	135	26	0	**166**	**295**	42	9	11	0	**62**	43	7	6	0	**56**	**118**	**413**
TOTAL	32	309	56	0	**397**	16	582	82	0	**680**	**1,077**	159	22	60	0	**241**	198	36	29	0	**263**	**504**	**1,581**
08:00 AM	11	91	9	0	**111**	6	136	18	0	**160**	**271**	27	15	9	0	**51**	53	7	5	0	**65**	**116**	**387**
08:15 AM	10	94	14	0	**118**	5	102	23	0	**130**	**248**	17	7	8	0	**32**	25	16	6	0	**47**	**79**	**327**
08:30 AM	7	84	19	0	**110**	2	92	23	0	**117**	**227**	34	10	9	0	**53**	23	12	7	0	**42**	**95**	**322**
08:45 AM	8	63	8	0	**79**	5	89	31	0	**125**	**204**	22	9	6	0	**37**	19	19	5	0	**43**	**80**	**284**
TOTAL	36	332	50	0	**418**	18	419	95	0	**532**	**950**	100	41	32	0	**173**	120	54	23	0	**197**	**370**	**1,320**
04:00 PM	10	160	17	0	**187**	7	101	40	0	**148**	**335**	33	14	4	0	**51**	20	15	11	0	**46**	**97**	**432**
04:15 PM	9	133	25	0	**167**	9	114	44	0	**167**	**334**	67	17	7	0	**91**	15	22	7	0	**44**	**135**	**469**
04:30 PM	12	166	36	0	**214**	7	95	42	0	**144**	**358**	51	19	9	0	**79**	15	14	8	0	**37**	**116**	**474**
04:45 PM	10	152	25	0	**187**	9	102	56	0	**167**	**354**	42	19	3	0	**64**	13	12	8	0	**33**	**97**	**451**
TOTAL	41	611	103	0	**755**	32	412	182	0	**626**	**1,381**	193	69	23	0	**285**	63	63	34	0	**160**	**445**	**1,826**
05:00 PM	16	157	25	0	**198**	14	84	43	0	**141**	**339**	45	20	6	0	**71**	21	18	11	0	**50**	**121**	**460**
05:15 PM	4	188	26	0	**218**	10	102	46	0	**158**	**376**	33	20	3	0	**56**	18	14	12	0	**44**	**100**	**476**
05:30 PM	11	185	35	0	**231**	19	103	46	0	**168**	**399**	32	11	5	0	**48**	21	16	7	0	**44**	**92**	**491**
05:45 PM	16	164	32	0	**212**	8	80	50	0	**138**	**350**	50	16	8	0	**74**	16	22	6	0	**44**	**118**	**468**
TOTAL	47	694	118	0	**859**	51	369	185	0	**605**	**1,464**	160	67	22	0	**249**	76	70	36	0	**182**	**431**	**1,895**
AM Peak																						**Peak Hour Factor:**	**0.893**
07:15 AM to 08:15 AM	**40**	**360**	**62**	**0**	**462**	**17**	**590**	**86**	**0**	**693**	**1,155**	**149**	**34**	**59**	**0**	**242**	**216**	**35**	**27**	**0**	**278**	**520**	**1,675**
PM Peak																						**Peak Hour Factor:**	**0.965**
05:00 PM to 06:00 PM	**47**	**694**	**118**	**0**	**859**	**51**	**369**	**185**	**0**	**605**	**1,464**	**160**	**67**	**22**	**0**	**249**	**76**	**70**	**36**	**0**	**182**	**431**	**1,895**



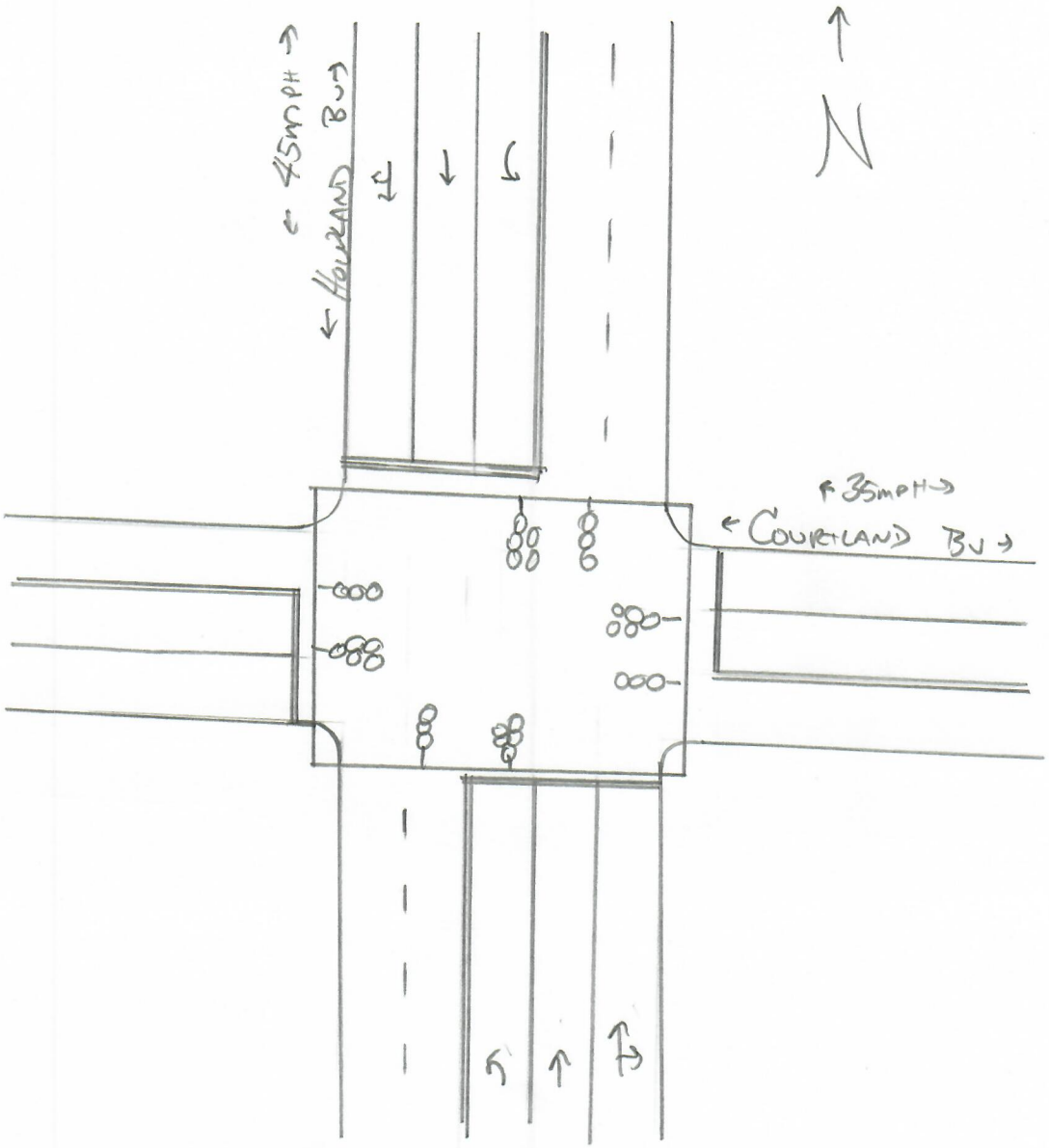
15 MINUTE TURNING MOVEMENT COUNTS

(Trucks Only)

DATE: January 15, 2021 (Friday) **CITY:** Deltona **LATITUDE:** 0

LOCATION: Howland Bv & Courtland Bv **COUNTY:** Volusia County **LONGITUDE:** 0

	Howland Bv					Howland Bv						Courtland Bv					Courtland Bv						
TIME	**NORTHBOUND**					**SOUTHBOUND**					**N/S**	**EASTBOUND**					**WESTBOUND**					**E/W**	**GRAND**
BEGIN	**L**	**T**	**R**	***U-turn***	**TOTAL**	**L**	**T**	**R**	***U-turn***	**TOTAL**	**TOTAL**	**L**	**T**	**R**	***U-turn***	**TOTAL**	**L**	**T**	**R**	***U-turn***	**TOTAL**	**TOTAL**	**TOTAL**
07:00 AM	0	0	0	0	**0**	0	4	1	0	**5**	**5**	0	1	0	0	**1**	1	0	0	0	**1**	**2**	**7**
07:15 AM	0	1	0	0	**1**	0	3	0	0	**3**	**4**	1	0	0	0	**1**	0	1	1	0	**2**	**3**	**7**
07:30 AM	1	2	0	0	**3**	0	0	0	0	**0**	**3**	1	0	0	0	**1**	0	0	0	0	**0**	**1**	**4**
07:45 AM	0	2	0	0	**2**	0	1	0	0	**1**	**3**	0	0	2	0	**2**	1	0	1	0	**2**	**4**	**7**
TOTAL	1	5	0	0	**6**	0	8	1	0	**9**	**15**	2	1	2	0	**5**	2	1	2	0	**5**	**10**	**25**
08:00 AM	1	8	0	0	**9**	0	7	2	0	**9**	**18**	0	0	0	0	**0**	1	0	0	0	**1**	**1**	**19**
08:15 AM	0	1	1	0	**2**	0	1	0	0	**1**	**3**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**3**
08:30 AM	0	2	1	0	**3**	0	2	1	0	**3**	**6**	1	0	0	0	**1**	0	0	0	0	**0**	**1**	**7**
08:45 AM	0	3	0	0	**3**	0	4	1	0	**5**	**8**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**8**
TOTAL	1	14	2	0	**17**	0	14	4	0	**18**	**35**	1	0	0	0	**1**	1	0	0	0	**1**	**2**	**37**
04:00 PM	0	4	0	0	**4**	0	2	0	0	**2**	**6**	0	0	0	0	**0**	2	0	0	0	**2**	**2**	**8**
04:15 PM	0	2	1	0	**3**	0	3	0	0	**3**	**6**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**6**
04:30 PM	0	1	0	0	**1**	0	0	0	0	**0**	**1**	0	0	1	0	**1**	0	0	0	0	**0**	**1**	**2**
04:45 PM	0	4	0	0	**4**	0	4	0	0	**4**	**8**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**8**
TOTAL	0	11	1	0	**12**	0	9	0	0	**9**	**21**	0	0	1	0	**1**	2	0	0	0	**2**	**3**	**24**
05:00 PM	0	3	0	0	**3**	0	1	0	0	**1**	**4**	0	0	0	0	**0**	0	0	1	0	**1**	**1**	**5**
05:15 PM	0	2	1	0	**3**	0	1	0	0	**1**	**4**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**4**
05:30 PM	1	0	0	0	**1**	0	0	0	0	**0**	**1**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**1**
05:45 PM	0	0	0	0	**0**	0	1	0	0	**1**	**1**	0	0	0	0	**0**	1	2	0	0	**3**	**3**	**4**
TOTAL	1	5	1	0	**7**	0	3	0	0	**3**	**10**	0	0	0	0	**0**	1	2	1	0	**4**	**4**	**14**
AM Peak 07:15 AM to 08:15 AM	**2**	**13**	**0**	**0**	**15**	**0**	**11**	**2**	**0**	**13**	**28**	**2**	**0**	**2**	**0**	**4**	**2**	**1**	**2**	**0**	**5**	**9**	**37**
PM Peak 05:00 PM to 06:00 PM	**1**	**5**	**1**	**0**	**7**	**0**	**3**	**0**	**0**	**3**	**10**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**1**	**0**	**4**	**4**	**14**


45MPH
HOWLAND BV
N
35MPH
COURTLAND BV

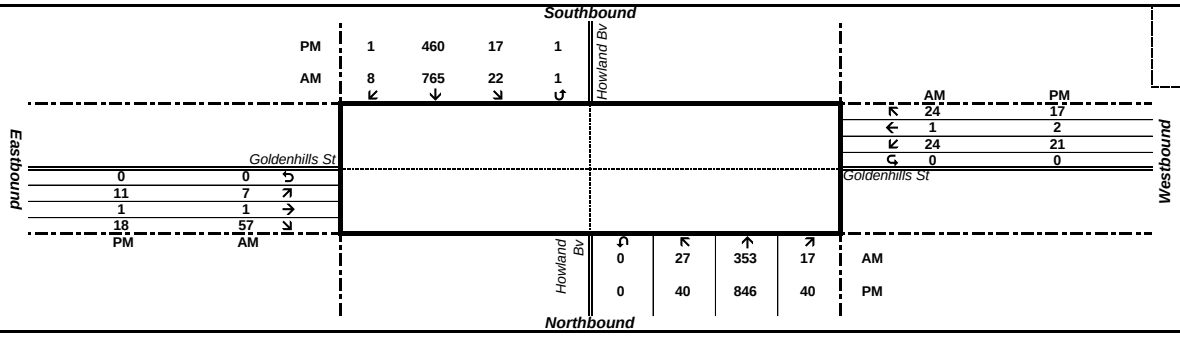
15 MINUTE TURNING MOVEMENT COUNTS

(Cars and Trucks)

DATE: January 20, 2021 (Wednesday) **CITY:** Deltona **LATITUDE:** 0

LOCATION: Howland Bv & Goldenhills St **COUNTY:** Volusia County **LONGITUDE:** 0

	Howland Bv					Howland Bv						Goldenhills St					Goldenhills St						
TIME	NORTHBOUND					SOUTHBOUND					N/S	EASTBOUND					WESTBOUND					E/W	GRAND
BEGIN	L	T	R	*U-turn*	TOTAL	L	T	R	*U-turn*	TOTAL	TOTAL	L	T	R	*U-turn*	TOTAL	L	T	R	*U-turn*	TOTAL	TOTAL	TOTAL
07:00 AM	4	58	3	0	**65**	2	138	0	0	**140**	**205**	1	0	13	0	**14**	12	0	5	0	**17**	**31**	**236**
07:15 AM	2	81	7	0	**90**	4	209	2	0	**215**	**305**	3	1	9	0	**13**	7	0	5	0	**12**	**25**	**330**
07:30 AM	7	91	5	0	**103**	9	188	2	0	**199**	**302**	2	0	11	0	**13**	7	1	14	0	**22**	**35**	**337**
07:45 AM	3	86	2	0	**91**	9	207	3	1	**220**	**311**	1	0	13	0	**14**	5	0	3	0	**8**	**22**	**333**
TOTAL	16	316	17	0	**349**	24	742	7	1	**774**	**1,123**	7	1	46	0	**54**	31	1	27	0	**59**	**113**	**1,236**
08:00 AM	15	95	3	0	**113**	0	161	1	0	**162**	**275**	1	0	24	0	**25**	5	0	2	0	**7**	**32**	**307**
08:15 AM	12	92	4	0	**108**	4	150	2	0	**156**	**264**	1	0	17	0	**18**	5	0	2	0	**7**	**25**	**289**
08:30 AM	11	82	5	0	**98**	2	105	1	0	**108**	**206**	1	0	8	0	**9**	1	1	3	0	**5**	**14**	**220**
08:45 AM	7	69	8	0	**84**	1	80	2	0	**83**	**167**	0	0	6	0	**6**	8	1	1	0	**10**	**16**	**183**
TOTAL	45	338	20	0	**403**	7	496	6	0	**509**	**912**	3	0	55	0	**58**	19	2	8	0	**29**	**87**	**999**
04:00 PM	18	158	7	0	**183**	4	119	3	0	**126**	**309**	0	0	7	0	**7**	4	1	6	0	**11**	**18**	**327**
04:15 PM	12	210	5	0	**227**	6	123	2	0	**131**	**358**	4	1	27	0	**32**	8	3	4	0	**15**	**47**	**405**
04:30 PM	13	206	13	0	**232**	2	99	2	0	**103**	**335**	3	0	14	0	**17**	11	1	5	0	**17**	**34**	**369**
04:45 PM	7	172	4	0	**183**	3	87	4	0	**94**	**277**	2	0	4	0	**6**	6	0	5	0	**11**	**17**	**294**
TOTAL	50	746	29	0	**825**	15	428	11	0	**454**	**1,279**	9	1	52	0	**62**	29	5	20	0	**54**	**116**	**1,395**
05:00 PM	8	181	12	0	**201**	5	126	0	1	**132**	**333**	6	0	5	0	**11**	4	0	3	0	**7**	**18**	**351**
05:15 PM	5	239	7	0	**251**	3	116	0	0	**119**	**370**	2	0	5	0	**7**	3	0	3	0	**6**	**13**	**383**
05:30 PM	15	227	15	0	**257**	7	116	0	0	**123**	**380**	1	1	3	0	**5**	3	2	6	0	**11**	**16**	**396**
05:45 PM	12	199	6	0	**217**	2	102	1	0	**105**	**322**	2	0	5	0	**7**	11	0	5	0	**16**	**23**	**345**
TOTAL	40	846	40	0	**926**	17	460	1	1	**479**	**1,405**	11	1	18	0	**30**	21	2	17	0	**40**	**70**	**1,475**
AM Peak																						**Peak Hour Factor:**	**0.970**
07:15 AM to 08:15 AM	**27**	**353**	**17**	**0**	**397**	**22**	**765**	**8**	**1**	**796**	**1,193**	**7**	**1**	**57**	**0**	**65**	**24**	**1**	**24**	**0**	**49**	**114**	**1,307**
PM Peak																						**Peak Hour Factor:**	**0.931**
05:00 PM to 06:00 PM	**40**	**846**	**40**	**0**	**926**	**17**	**460**	**1**	**1**	**479**	**1,405**	**11**	**1**	**18**	**0**	**30**	**21**	**2**	**17**	**0**	**40**	**70**	**1,475**



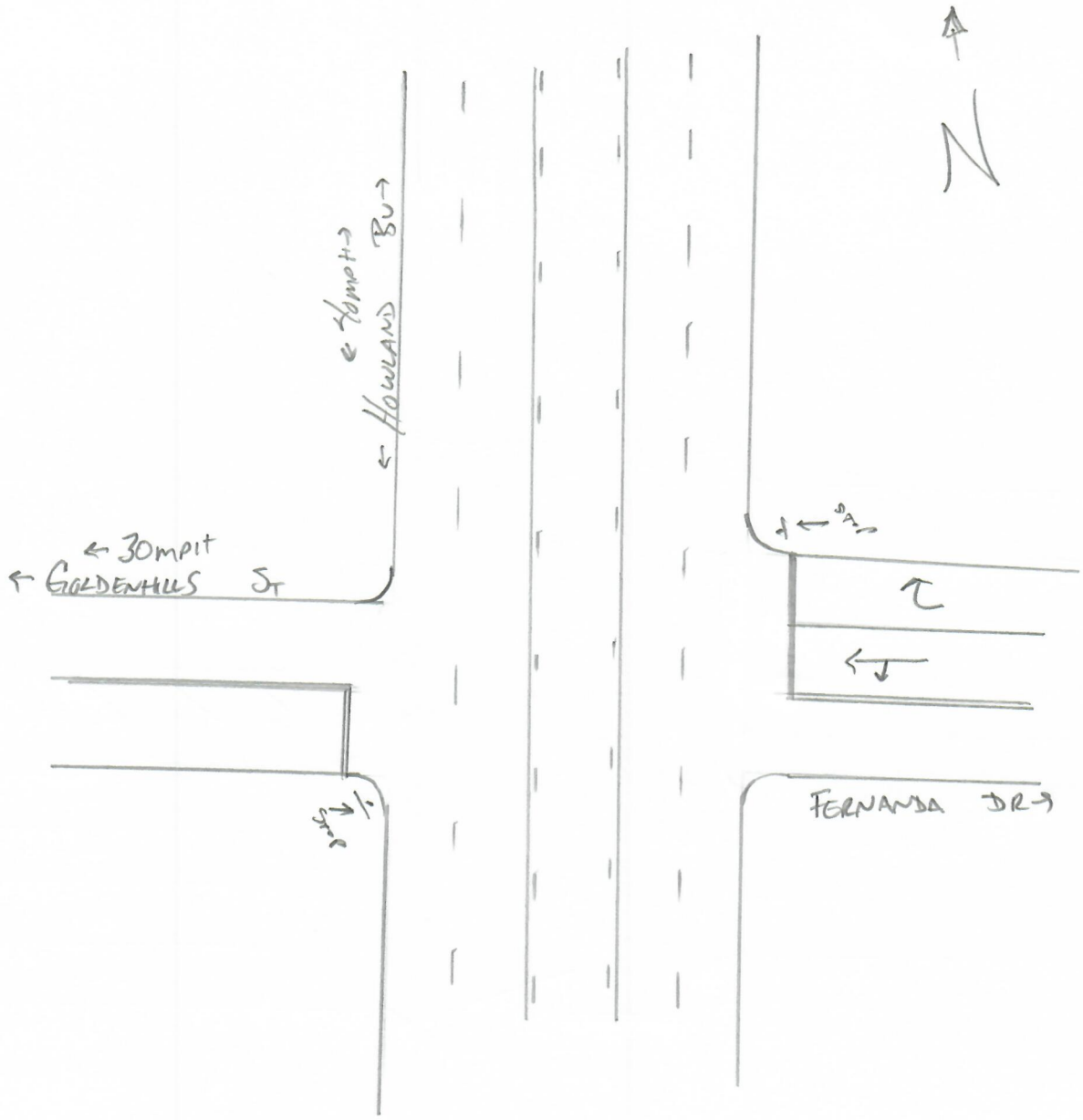
15 MINUTE TURNING MOVEMENT COUNTS

(Trucks Only)

DATE: January 20, 2021 (Wednesday) **CITY:** Deltona **LATITUDE:** 0

LOCATION: Howland Bv & Goldenhills St **COUNTY:** Volusia County **LONGITUDE:** 0

	Howland Bv					Howland Bv						Goldenhills St					Goldenhills St						
TIME	**NORTHBOUND**					**SOUTHBOUND**					**N/S**	**EASTBOUND**					**WESTBOUND**					**E/W**	**GRAND**
BEGIN	**L**	**T**	**R**	***U-turn***	**TOTAL**	**L**	**T**	**R**	***U-turn***	**TOTAL**	**TOTAL**	**L**	**T**	**R**	***U-turn***	**TOTAL**	**L**	**T**	**R**	***U-turn***	**TOTAL**	**TOTAL**	**TOTAL**
07:00 AM	0	1	0	0	**1**	1	2	0	0	**3**	**4**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**4**
07:15 AM	0	3	1	0	**4**	2	1	0	0	**3**	**7**	0	0	0	0	**0**	0	0	1	0	**1**	**1**	**8**
07:30 AM	0	1	1	0	**2**	0	2	0	0	**2**	**4**	0	0	0	0	**0**	0	0	2	0	**2**	**2**	**6**
07:45 AM	0	3	1	0	**4**	0	4	1	0	**5**	**9**	0	0	0	0	**0**	0	0	2	0	**2**	**2**	**11**
TOTAL	0	8	3	0	**11**	3	9	1	0	**13**	**24**	0	0	0	0	**0**	0	0	5	0	**5**	**5**	**29**
08:00 AM	0	10	0	0	**10**	0	8	0	0	**8**	**18**	0	0	1	0	**1**	0	0	1	0	**1**	**2**	**20**
08:15 AM	0	5	0	0	**5**	0	0	0	0	**0**	**5**	1	0	0	0	**1**	1	0	0	0	**1**	**2**	**7**
08:30 AM	0	2	1	0	**3**	0	1	0	0	**1**	**4**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**4**
08:45 AM	2	4	1	0	**7**	0	1	0	0	**1**	**8**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**8**
TOTAL	2	21	2	0	**25**	0	10	0	0	**10**	**35**	1	0	1	0	**2**	1	0	1	0	**2**	**4**	**39**
04:00 PM	5	1	0	0	**6**	0	1	1	0	**2**	**8**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**8**
04:15 PM	1	1	0	0	**2**	0	2	1	0	**3**	**5**	2	0	7	0	**9**	0	0	0	0	**0**	**9**	**14**
04:30 PM	0	1	0	0	**1**	0	4	1	0	**5**	**6**	0	0	1	0	**1**	0	0	0	0	**0**	**1**	**7**
04:45 PM	0	2	0	0	**2**	0	0	1	0	**1**	**3**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**3**
TOTAL	6	5	0	0	**11**	0	7	4	0	**11**	**22**	2	0	8	0	**10**	0	0	0	0	**0**	**10**	**32**
05:00 PM	0	2	0	0	**2**	0	1	0	0	**1**	**3**	2	0	0	0	**2**	0	0	0	0	**0**	**2**	**5**
05:15 PM	0	2	0	0	**2**	0	0	0	0	**0**	**2**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**2**
05:30 PM	0	0	0	0	**0**	0	1	0	0	**1**	**1**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**1**
05:45 PM	0	1	0	0	**1**	0	0	0	0	**0**	**1**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**1**
TOTAL	0	5	0	0	**5**	0	2	0	0	**2**	**7**	2	0	0	0	**2**	0	0	0	0	**0**	**2**	**9**
AM Peak 07:15 AM to 08:15 AM	**0**	**17**	**3**	**0**	**20**	**2**	**15**	**1**	**0**	**18**	**38**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**6**	**0**	**6**	**7**	**45**
PM Peak 05:00 PM to 06:00 PM	**0**	**5**	**0**	**0**	**5**	**0**	**2**	**0**	**0**	**2**	**7**	**2**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**2**	**9**


N
← 30MPH
← GOLDENHILLS ST
← 40MPH →
← HOWARD BLVD →
FERNANDA DR →

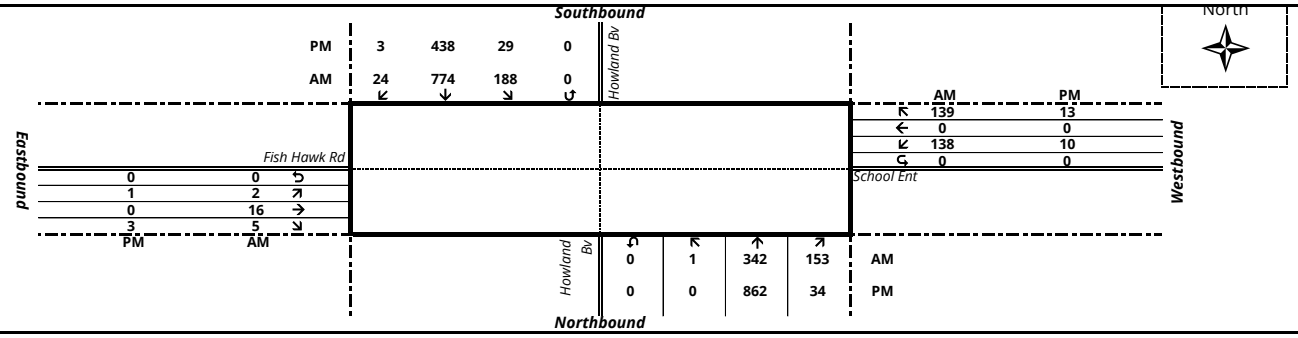
15 MINUTE TURNING MOVEMENT COUNTS

(Cars and Trucks)

DATE: May 8, 2019 (Wednesday) **CITY:** Deltona **LATITUDE:** 0

LOCATION: Howland Bv & Fish Hawk Rd/School Ent **COUNTY:** Volusia County **LONGITUDE:** 0

	Howland Bv					Howland Bv						Fish Hawk Rd					School Ent						
TIME	NORTHBOUND					SOUTHBOUND					N/S	EASTBOUND					WESTBOUND					E/W	GRAND
BEGIN	L	T	R	*U-turn*	TOTAL	L	T	R	*U-turn*	TOTAL	TOTAL	L	T	R	*U-turn*	TOTAL	L	T	R	*U-turn*	TOTAL	TOTAL	TOTAL
07:00 AM	0	77	53	0	**130**	64	202	3	0	**269**	**399**	0	1	2	0	**3**	49	0	36	0	**85**	**88**	**487**
07:15 AM	0	98	53	0	**151**	57	192	20	0	**269**	**420**	1	14	2	0	**17**	48	0	51	0	**99**	**116**	**536**
07:30 AM	1	103	34	0	**138**	39	196	1	0	**236**	**374**	1	1	0	0	**2**	28	0	36	0	**64**	**66**	**440**
07:45 AM	0	64	13	0	**77**	28	184	0	0	**212**	**289**	0	0	1	0	**1**	13	0	16	0	**29**	**30**	**319**
TOTAL	1	342	153	0	**496**	188	774	24	0	**986**	**1,482**	2	16	5	0	**23**	138	0	139	0	**277**	**300**	**1,782**
08:00 AM	0	81	22	0	**103**	15	169	0	0	**184**	**287**	0	0	1	0	**1**	12	0	12	0	**24**	**25**	**312**
08:15 AM	0	95	15	0	**110**	24	143	0	0	**167**	**277**	0	0	0	0	**0**	10	0	12	0	**22**	**22**	**299**
08:30 AM	0	108	12	0	**120**	10	135	1	0	**146**	**266**	0	0	1	0	**1**	9	0	8	0	**17**	**18**	**284**
08:45 AM	1	68	8	0	**77**	12	113	0	0	**125**	**202**	0	0	2	0	**2**	3	0	5	0	**8**	**10**	**212**
TOTAL	1	352	57	0	**410**	61	560	1	0	**622**	**1,032**	0	0	4	0	**4**	34	0	37	0	**71**	**75**	**1,107**
04:00 PM	6	147	0	0	**153**	0	102	0	1	**103**	**256**	4	1	2	0	**7**	1	0	2	0	**3**	**10**	**266**
04:15 PM	2	219	5	0	**226**	6	93	0	0	**99**	**325**	0	0	1	0	**1**	5	0	5	0	**10**	**11**	**336**
04:30 PM	0	206	1	0	**207**	1	73	1	0	**75**	**282**	0	0	0	0	**0**	2	0	0	0	**2**	**2**	**284**
04:45 PM	0	184	1	0	**185**	1	88	1	0	**90**	**275**	0	0	0	0	**0**	1	0	0	0	**1**	**1**	**276**
TOTAL	8	756	7	0	**771**	8	356	2	1	**367**	**1,138**	4	1	3	0	**8**	9	0	7	0	**16**	**24**	**1,162**
05:00 PM	0	195	4	0	**199**	3	105	0	0	**108**	**307**	0	0	1	0	**1**	4	0	2	0	**6**	**7**	**314**
05:15 PM	0	232	2	0	**234**	3	124	1	0	**128**	**362**	0	0	1	0	**1**	0	0	5	0	**5**	**6**	**368**
05:30 PM	0	239	9	0	**248**	7	87	2	0	**96**	**344**	0	0	0	0	**0**	0	0	3	0	**3**	**3**	**347**
05:45 PM	0	196	19	0	**215**	16	122	0	0	**138**	**353**	1	0	1	0	**2**	6	0	3	0	**9**	**11**	**364**
TOTAL	0	862	34	0	**896**	29	438	3	0	**470**	**1,366**	1	0	3	0	**4**	10	0	13	0	**23**	**27**	**1,393**
AM Peak																						**Peak Hour Factor:**	**0.831**
07:00 AM to 08:00 AM	**1**	**342**	**153**	**0**	**496**	**188**	**774**	**24**	**0**	**986**	**1,482**	**2**	**16**	**5**	**0**	**23**	**138**	**0**	**139**	**0**	**277**	**300**	**1,782**
PM Peak																						**Peak Hour Factor:**	**0.946**
05:00 PM to 06:00 PM	**0**	**862**	**34**	**0**	**896**	**29**	**438**	**3**	**0**	**470**	**1,366**	**1**	**0**	**3**	**0**	**4**	**10**	**0**	**13**	**0**	**23**	**27**	**1,393**



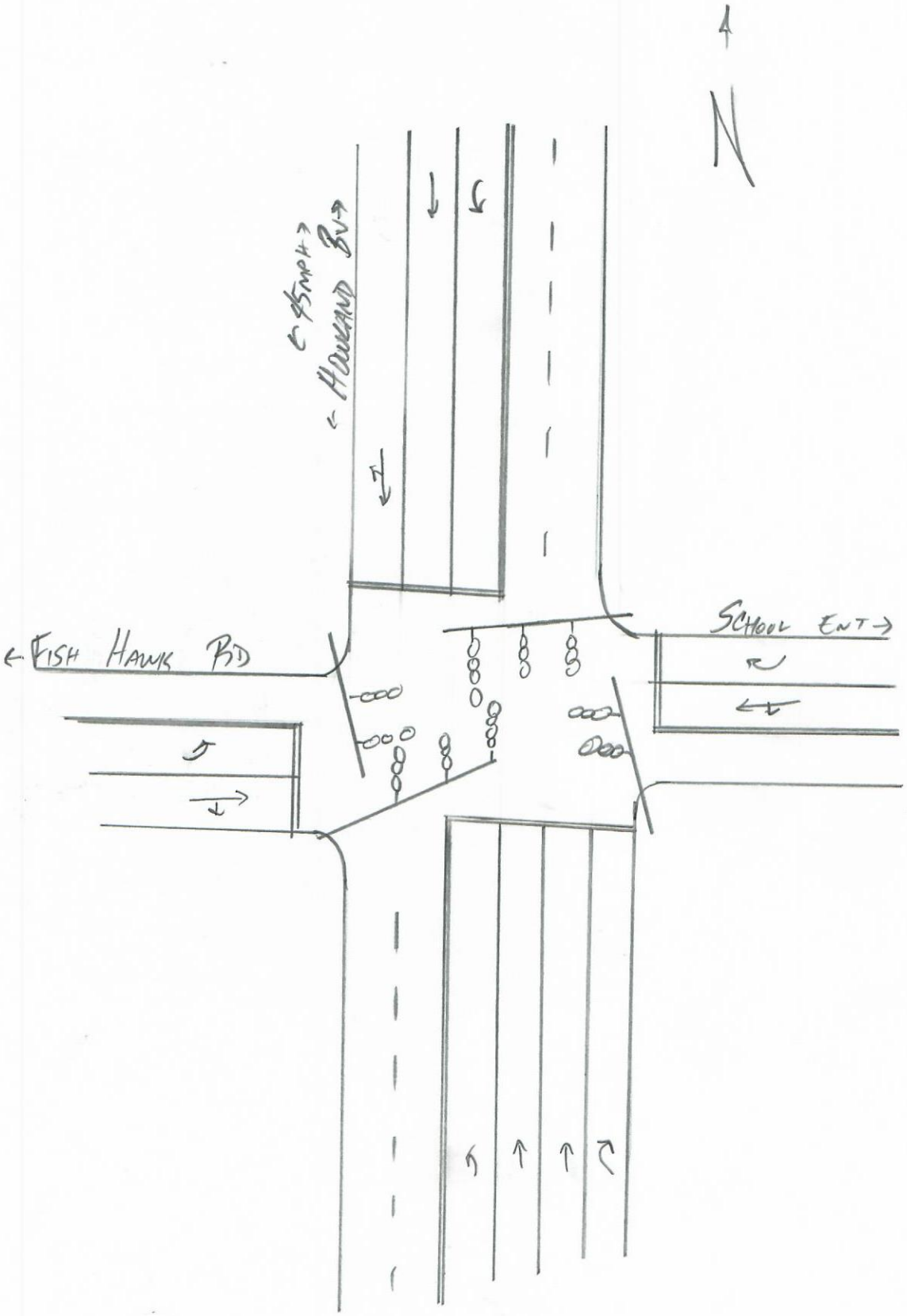
15 MINUTE TURNING MOVEMENT COUNTS

(Trucks Only)

DATE: May 8, 2019 (Wednesday) **CITY:** Deltona **LATITUDE:** 0

LOCATION: Howland Bv & Fish Hawk Rd/School Ent **COUNTY:** Volusia County **LONGITUDE:** 0

	Howland Bv					Howland Bv						Fish Hawk Rd					School Ent						
TIME	**NORTHBOUND**					**SOUTHBOUND**					**N/S**	**EASTBOUND**					**WESTBOUND**					**E/W**	**GRAND**
BEGIN	**L**	**T**	**R**	***U-turn***	**TOTAL**	**L**	**T**	**R**	***U-turn***	**TOTAL**	**TOTAL**	**L**	**T**	**R**	***U-turn***	**TOTAL**	**L**	**T**	**R**	***U-turn***	**TOTAL**	**TOTAL**	**TOTAL**
07:00 AM	0	4	0	0	**4**	0	1	0	0	**1**	**5**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**5**
07:15 AM	0	1	0	0	**1**	0	2	0	0	**2**	**3**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**3**
07:30 AM	0	5	0	0	**5**	0	3	0	0	**3**	**8**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**8**
07:45 AM	0	1	0	0	**1**	2	1	0	0	**3**	**4**	0	0	0	0	**0**	0	0	1	0	**1**	**1**	**5**
TOTAL	0	11	0	0	**11**	2	7	0	0	**9**	**20**	0	0	0	0	**0**	0	0	1	0	**1**	**1**	**21**
08:00 AM	0	3	0	0	**3**	0	7	0	0	**7**	**10**	0	0	0	0	**0**	2	0	0	0	**2**	**2**	**12**
08:15 AM	0	5	0	0	**5**	0	5	0	0	**5**	**10**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**10**
08:30 AM	0	5	0	0	**5**	0	3	0	0	**3**	**8**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**8**
08:45 AM	0	2	0	0	**2**	1	5	0	0	**6**	**8**	0	0	0	0	**0**	1	0	0	0	**1**	**1**	**9**
TOTAL	0	15	0	0	**15**	1	20	0	0	**21**	**36**	0	0	0	0	**0**	3	0	0	0	**3**	**3**	**39**
04:00 PM	0	0	0	0	**0**	0	5	0	0	**5**	**5**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**5**
04:15 PM	0	6	0	0	**6**	0	2	0	0	**2**	**8**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**8**
04:30 PM	0	0	0	0	**0**	0	2	0	0	**2**	**2**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**2**
04:45 PM	0	1	0	0	**1**	0	1	0	0	**1**	**2**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**2**
TOTAL	0	7	0	0	**7**	0	10	0	0	**10**	**17**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**17**
05:00 PM	0	1	0	0	**1**	0	1	0	0	**1**	**2**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**2**
05:15 PM	0	1	0	0	**1**	0	2	0	0	**2**	**3**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**3**
05:30 PM	0	2	0	0	**2**	0	0	0	0	**0**	**2**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**2**
05:45 PM	0	0	1	0	**1**	0	0	0	0	**0**	**1**	0	0	0	0	**0**	0	0	1	0	**1**	**1**	**2**
TOTAL	0	4	1	0	**5**	0	3	0	0	**3**	**8**	0	0	0	0	**0**	0	0	1	0	**1**	**1**	**9**
AM Peak																							
07:00 AM to 08:00 AM	**0**	**11**	**0**	**0**	**11**	**2**	**7**	**0**	**0**	**9**	**20**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**1**	**21**
PM Peak																							
05:00 PM to 06:00 PM	**0**	**4**	**1**	**0**	**5**	**0**	**3**	**0**	**0**	**3**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**1**	**9**


N
← 45MPH →
← HOWARD BLVD
← FISH HAWK RD
SCHOOL ENT →

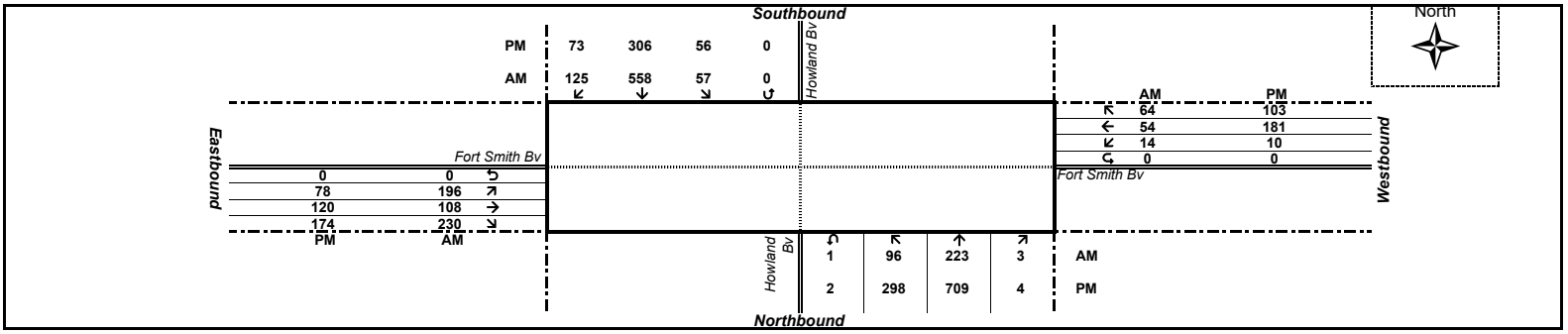
15 MINUTE TURNING MOVEMENT COUNTS

(Cars and Trucks)

DATE: January 15, 2021 (Friday) **CITY:** Deltona **LATITUDE:** 0

LOCATION: Howland Bv & Fort Smith Bv **COUNTY:** Volusia County **LONGITUDE:** 0

	Howland Bv					Howland Bv						Fort Smith Bv					Fort Smith Bv						
TIME	NORTHBOUND					SOUTHBOUND					N/S	EASTBOUND					WESTBOUND					E/W	GRAND
BEGIN	L	T	R	*U-turn*	TOTAL	L	T	R	*U-turn*	TOTAL	TOTAL	L	T	R	*U-turn*	TOTAL	L	T	R	*U-turn*	TOTAL	TOTAL	TOTAL
07:00 AM	16	35	1	0	**52**	14	133	14	0	**161**	**213**	17	19	53	0	**89**	4	10	7	0	**21**	**110**	**323**
07:15 AM	19	40	0	1	**60**	18	140	22	0	**180**	**240**	29	30	68	0	**127**	2	18	12	0	**32**	**159**	**399**
07:30 AM	16	60	1	0	**77**	17	157	29	0	**203**	**280**	28	23	60	0	**111**	5	15	14	0	**34**	**145**	**425**
07:45 AM	33	61	0	0	**94**	15	127	33	0	**175**	**269**	61	20	49	0	**130**	6	10	22	0	**38**	**168**	**437**
TOTAL	84	196	2	1	**283**	64	557	98	0	**719**	**1,002**	135	92	230	0	**457**	17	53	55	0	**125**	**582**	**1,584**
08:00 AM	28	62	2	0	**92**	7	134	41	0	**182**	**274**	78	35	53	0	**166**	1	11	16	0	**28**	**194**	**468**
08:15 AM	17	56	3	1	**77**	20	79	35	0	**134**	**211**	60	28	45	0	**133**	2	16	18	0	**36**	**169**	**380**
08:30 AM	28	71	1	1	**101**	15	98	18	0	**131**	**232**	24	18	36	0	**78**	1	11	5	0	**17**	**95**	**327**
08:45 AM	32	58	1	0	**91**	12	90	8	0	**110**	**201**	21	17	39	0	**77**	1	7	13	0	**21**	**98**	**299**
TOTAL	105	247	7	2	**361**	54	401	102	0	**557**	**918**	183	98	173	0	**454**	5	45	52	0	**102**	**556**	**1,474**
04:00 PM	67	151	5	0	**223**	14	97	22	0	**133**	**356**	16	28	47	0	**91**	4	40	37	0	**81**	**172**	**528**
04:15 PM	92	135	5	3	**235**	18	115	17	0	**150**	**385**	22	30	38	0	**90**	3	31	17	0	**51**	**141**	**526**
04:30 PM	100	172	1	0	**273**	20	92	24	0	**136**	**409**	18	17	38	0	**73**	1	34	26	0	**61**	**134**	**543**
04:45 PM	56	152	5	2	**215**	11	85	28	0	**124**	**339**	24	19	42	0	**85**	2	42	26	0	**70**	**155**	**494**
TOTAL	315	610	16	5	**946**	63	389	91	0	**543**	**1,489**	80	94	165	0	**339**	10	147	106	0	**263**	**602**	**2,091**
05:00 PM	81	177	0	0	**258**	11	89	20	0	**120**	**378**	15	31	44	0	**90**	2	50	28	0	**80**	**170**	**548**
05:15 PM	65	162	2	1	**230**	12	74	11	0	**97**	**327**	32	29	41	0	**102**	4	37	22	0	**63**	**165**	**492**
05:30 PM	80	200	1	0	**281**	13	83	20	0	**116**	**397**	17	29	46	0	**92**	2	47	28	0	**77**	**169**	**566**
05:45 PM	72	170	1	1	**244**	20	60	22	0	**102**	**346**	14	31	43	0	**88**	2	47	25	0	**74**	**162**	**508**
TOTAL	298	709	4	2	**1,013**	56	306	73	0	**435**	**1,448**	78	120	174	0	**372**	10	181	103	0	**294**	**666**	**2,114**
AM Peak																						**Peak Hour Factor:**	**0.924**
07:15 AM to 08:15 AM	**96**	**223**	**3**	**1**	**323**	**57**	**558**	**125**	**0**	**740**	**1,063**	**196**	**108**	**230**	**0**	**534**	**14**	**54**	**64**	**0**	**132**	**666**	**1,729**
PM Peak																						**Peak Hour Factor:**	**0.934**
05:00 PM to 06:00 PM	**298**	**709**	**4**	**2**	**1,013**	**56**	**306**	**73**	**0**	**435**	**1,448**	**78**	**120**	**174**	**0**	**372**	**10**	**181**	**103**	**0**	**294**	**666**	**2,114**



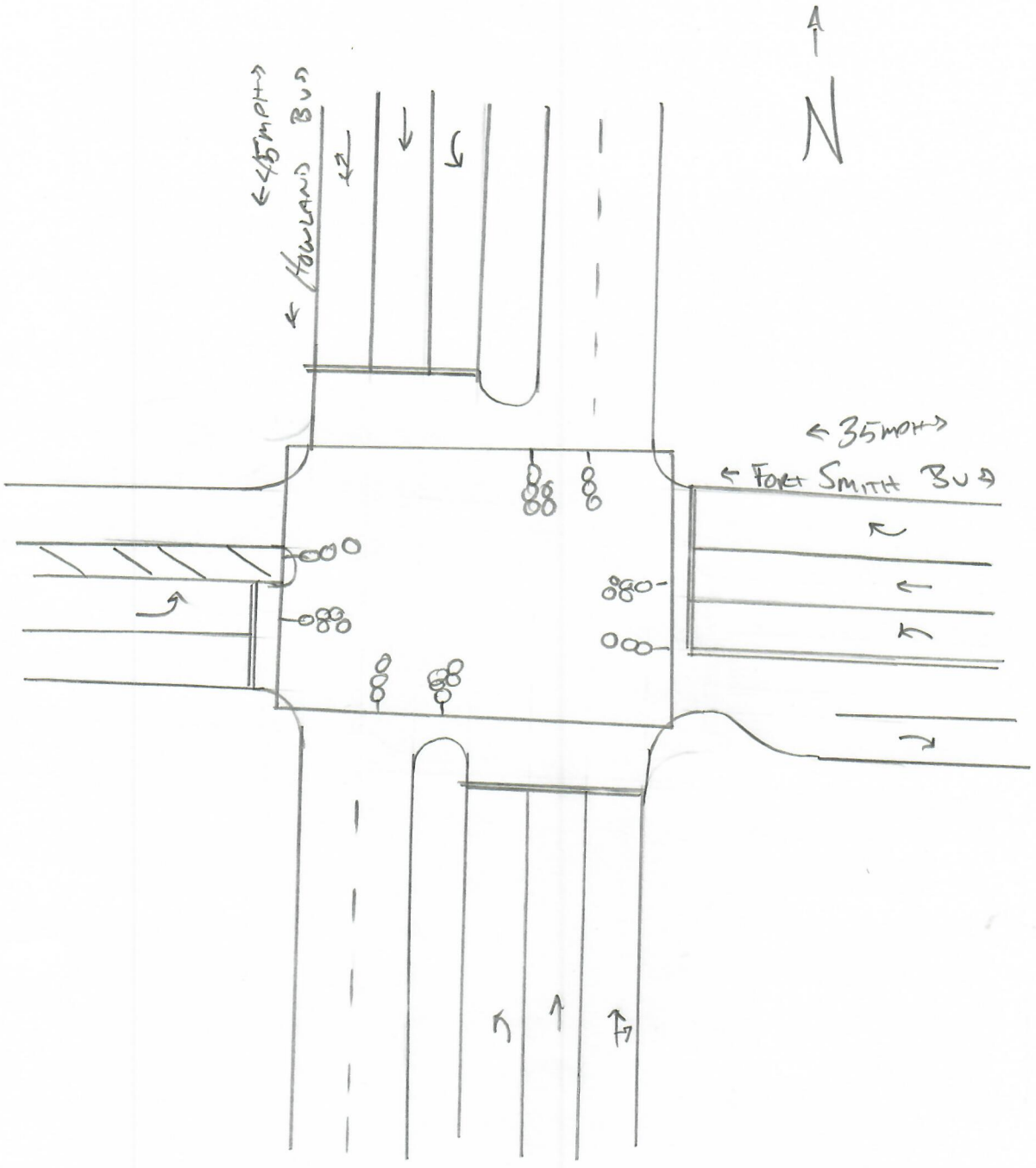
15 MINUTE TURNING MOVEMENT COUNTS

(Trucks Only)

DATE: January 15, 2021 (Friday) **CITY:** Deltona **LATITUDE:** 0

LOCATION: Howland Bv & Fort Smith Bv **COUNTY:** Volusia County **LONGITUDE:** 0

	Howland Bv					Howland Bv						Fort Smith Bv						Fort Smith Bv						
TIME	**NORTHBOUND**					**SOUTHBOUND**					**N/S**	**EASTBOUND**					**WESTBOUND**					**E/W**	**GRAND**
BEGIN	**L**	**T**	**R**	***U-turn***	**TOTAL**	**L**	**T**	**R**	***U-turn***	**TOTAL**	**TOTAL**	**L**	**T**	**R**	***U-turn***	**TOTAL**	**L**	**T**	**R**	***U-turn***	**TOTAL**	**TOTAL**	**TOTAL**
07:00 AM	0	1	0	0	**1**	0	1	1	0	**2**	**3**	0	0	2	0	**2**	0	0	0	0	**0**	**2**	**5**
07:15 AM	0	0	0	0	**0**	0	1	0	0	**1**	**1**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**1**
07:30 AM	0	0	0	0	**0**	0	0	2	0	**2**	**2**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**2**
07:45 AM	6	2	0	0	**8**	0	1	2	0	**3**	**11**	1	0	0	0	**1**	0	0	0	0	**0**	**1**	**12**
TOTAL	6	3	0	0	**9**	0	3	5	0	**8**	**17**	1	0	2	0	**3**	0	0	0	0	**0**	**3**	**20**
08:00 AM	2	3	0	0	**5**	0	3	6	0	**9**	**14**	5	0	2	0	**7**	0	1	1	0	**2**	**9**	**23**
08:15 AM	1	1	0	0	**2**	0	2	1	0	**3**	**5**	2	0	0	0	**2**	0	0	1	0	**1**	**3**	**8**
08:30 AM	1	0	0	0	**1**	1	3	0	0	**4**	**5**	0	0	0	0	**0**	0	0	1	0	**1**	**1**	**6**
08:45 AM	2	1	0	0	**3**	1	2	0	0	**3**	**6**	4	0	0	0	**4**	0	1	1	0	**2**	**6**	**12**
TOTAL	6	5	0	0	**11**	2	10	7	0	**19**	**30**	11	0	2	0	**13**	0	2	4	0	**6**	**19**	**49**
04:00 PM	0	7	0	0	**7**	0	2	0	0	**2**	**9**	3	1	1	0	**5**	0	0	0	0	**0**	**5**	**14**
04:15 PM	1	2	0	0	**3**	0	6	4	0	**10**	**13**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**13**
04:30 PM	1	1	0	0	**2**	0	0	2	0	**2**	**4**	1	0	0	0	**1**	0	0	2	0	**2**	**3**	**7**
04:45 PM	0	3	0	0	**3**	0	3	1	0	**4**	**7**	0	0	0	0	**0**	0	0	2	0	**2**	**2**	**9**
TOTAL	2	13	0	0	**15**	0	11	7	0	**18**	**33**	4	1	1	0	**6**	0	0	4	0	**4**	**10**	**43**
05:00 PM	0	4	0	0	**4**	0	2	0	0	**2**	**6**	0	0	1	0	**1**	0	0	1	0	**1**	**2**	**8**
05:15 PM	0	1	0	0	**1**	0	0	1	0	**1**	**2**	0	1	1	0	**2**	0	0	0	0	**0**	**2**	**4**
05:30 PM	0	1	0	0	**1**	0	0	0	0	**0**	**1**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**1**
05:45 PM	0	0	0	0	**0**	0	2	0	0	**2**	**2**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**2**
TOTAL	0	6	0	0	**6**	0	4	1	0	**5**	**11**	0	1	2	0	**3**	0	0	1	0	**1**	**4**	**15**
AM Peak 07:15 AM to 08:15 AM	**8**	**5**	**0**	**0**	**13**	**0**	**5**	**10**	**0**	**15**	**28**	**6**	**0**	**2**	**0**	**8**	**0**	**1**	**1**	**0**	**2**	**10**	**38**
PM Peak 05:00 PM to 06:00 PM	**0**	**6**	**0**	**0**	**6**	**0**	**4**	**1**	**0**	**5**	**11**	**0**	**1**	**2**	**0**	**3**	**0**	**0**	**1**	**0**	**1**	**4**	**15**


N
←45MPH→
HOWLAND BLVD
←35MPH→
← FORT SMITH BLVD →

COUNTY OF VOLUSIA TRAFFIC SIGNAL TIMING SHEET

LOCATION: Howland Blvd & Courtland Blvd
Deltona

ISOLATED: X

DATE: 2/20/2015

SIGNAL #: 318

CO-ORD:

Design By: M. Tobin

System #: -

Controller Timing Chart

PHASE	1	2	3	4	5	6	7	8	
DIRECTION	WBL	EB	NBL	SB	EBL	WB	SBL	NB	
TURN TYPE	PERM/PROT	-	PERM/PROT	-	PERM/PROT	-	PERM/PROT	-	
MIN GREEN	5	7	5	6	5	7	5	6	
EXTENSION	3	3	3	4	3	3	3	4	
CLEARANCE	5.0	5.0	4.0	4.5	5.0	5.0	4.5	4.0	
ALL RED	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
WALK	-	10	-	10	-	10	-	10	
FDW	-	18	-	23	-	18	-	23	
MAX 1	20	35	20	20	20	35	20	20	
MAX 2	-	-	-	-	-	-	-	-	
MAX 3	-	-	-	-	-	-	-	-	
ADJUST	-	-	-	-	-	-	-	-	
RECALL	-	MIN	-	-	-	MIN	-	-	
DETECTOR	NON-LOCK	LOCK	NON-LOCK	NON-LOCK	NON-LOCK	LOCK	NON-LOCK	NON-LOCK	
FLASH	-	YELLOW	-	RED	-	YELLOW	-	RED	
SET	-	-	-	-	-	-	-	-	
CLEAR	-	-	-	-	-	-	-	-	

BASE DAY		1	2	3	4	5	6	7
MON #1	TIME	00:01-00:00						
	PLAN	FREE						
TUES#1	TIME	00:01-00:00						
	PLAN	FREE						
WED #1	TIME	00:01-00:00						
	PLAN	FREE						
THU #1	TIME	00:01-00:00						
	PLAN	FREE						
FRI #1	TIME	00:01-00:00						
	PLAN	FREE						
SAT #2	TIME	00:01-00:00						
	PLAN	FREE						
SUN #3	TIME	00:01-00:00						
	PLAN	FREE						

Crosswalk Length
P2
62 Feet
P4
69 Feet
P6
59 Feet
P8
80 Feet

CONTROLLER TYPE		CONDITION OF OVERHEAD	New / 11-2009	PROM NUMBER	
3000E		OVERHEAD STREET NAMES	NO		SIGNAL OWNER
PHASES:	8Φ	ILLUMINATED STREET NAMES	YES	8216A 3.7.3	County
CABINET TYPE	V	PRE-EMPTION	NO	IP ADDRESS	LED: YES
CABINET DATE	-	PRE-EMPTION TYPE	N/A	-	

REMARKS:

1	2	3	4
5	6	7	8

COUNTY OF VOLUSIA TRAFFIC SIGNAL TIMING SHEET

LOCATION: Ft. Smith Blvd & Howland Blvd
Deltona

ISOLATED: X

DATE: 3/7/2016

SIGNAL #: 267

CO-ORD:

Design By: M. Tobin

System #: -

Controller Timing Chart

PHASE	1	2	3	4	5	6	7	8	
DIRECTION	SBL	NB	WBL	EB	NBL	SB	EBL	WB	
TURN TYPE	PERM/PROT	-	PERM/PROT	-	PERM/PROT	-	PERM/PROT	-	
MIN GREEN	5	17	5	7	5	17	5	7	
EXTENSION	3	4	3	3	3	3	3	3	
CLEARANCE	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
ALL RED	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
WALK		7		7		7		7	
FDW		19		22		19		22	
MAX 1	25	45	20	35	25	45	20	35	
MAX 2									
MAX 3		60		60		60		60	
ADJUST		10		10		10		10	
RECALL		MIN		-		MIN		-	
DETECTOR	NON-LOCK	LOCK	NON-LOCK	NON-LOCK	NON-LOCK	LOCK	NON-LOCK	NON-LOCK	
FLASH		YELLOW		RED		YELLOW		RED	
SET									
CLEAR									

BASE DAY		1	2	3	4	5	6	7
MON #1	TIME	0:00						
	PLAN	FREE						
TUES#1	TIME	0:00						
	PLAN	FREE						
WED #1	TIME	0:00						
	PLAN	FREE						
THU #1	TIME	0:00						
	PLAN	FREE						
FRI #1	TIME	0:00						
	PLAN	FREE						
SAT #2	TIME	0:00						
	PLAN	FREE						
SUN #3	TIME	0:00						
	PLAN	FREE						

Crosswalk Length
P2
64 Feet
P4
76 Feet
P6
61 Feet
P8
75 Feet

CONTROLLER TYPE		CONDITION OF OVERHEAD	OK
ECONOLITE ASC/3		OVERHEAD STREET NAMES	YES
PHASES:	8Φ	ILLUMINATED STREET NAMES	NO
CABINET TYPE	V	PRE-EMPTION	NO
CABINET DATE	03/2016	PRE-EMPTION TYPE	N/A

PROM NUMBER

IP ADDRESS: -

SIGNAL OWNER: County

LED: YES

REMARKS:

TEMP. CONSTRUCTION TIMES

1	2	3	4
5	6	7	8

COUNTY OF VOLUSIA TRAFFIC SIGNAL TIMING SHEET

LOCATION: Howland Blvd @ Pine Ridge HS
Deltona

FREE: X

DATE: 6/16/2020

SIGNAL #: 335

CO-ORD:

Design By: Sean Castello

NETWORK #:

Volusia County
FLORIDA

Controller Timing Chart

PHASE	1	2	3	4	5	6	7	8	
DIRECTION	SBL	NB	WBL	EB	NBL	SB		WB	
TURN TYPE	PERM/PROT	-	PERM/PROT	-	PERM/PROT	-		-	
MIN GREEN	5	15	5	7	5	15		7	
WALK		7		7		7		7	
PED CLR		15		20		15		20	
YELLOW	4.8	4.8	4.8	4.8	4.8	4.8		4.8	
RED CLR	2.0	2.0	2.0	2.0	2.0	2.0		2.0	
EXTENSION	3	4	3	3	3	4		3	
MAX 1	25	35	25	30	25	35		30	
MAX 2	45	45	45	45	45	45		45	
MAX 3		-		-		-		-	
DYM MAX									
DYM STP									
RECALL		MIN		-		MIN		-	
DETECTOR	NON-LOCK	LOCK	NON-LOCK	NON-LOCK	NON-LOCK	LOCK		NON-LOCK	
FLASH		YELLOW	-	RED		YELLOW		RED	

COORDINATION TIMINGS

PATTERN	1	2	3	4	5	6	7	8	
CYCLE				-	-	-	-	-	
OFFSET				-	-	-	-	-	

PHASE	1	2	3	4	5	6	7	8	
PATTERN 1							-		
PATTERN 2			-				-		
PATTERN 3			-				-	-	
PATTERN 4	-	-	-	-	-	-	-	-	
PATTERN 5	-	-	-	-	-	-	-	-	
PATTERN 6	-	-	-	-	-	-	-	-	
PATTERN 7	-	-	-	-	-	-	-	-	

Controller IP		Switch IP		Camera IP	
Controller Gateway		Switch Gateway		Camera Gateway	

REMARKS:

1	2	4
5	6	8

2019 PEAK SEASON FACTOR CATEGORY REPORT - REPORT TYPE: ALL
CATEGORY: 7900 VOLUSIA COUNTYWIDE

MOCF: 0.95

WEEK	DATES	SF	PSCF
1	01/01/2019 - 01/05/2019	1.02	1.07
2	01/06/2019 - 01/12/2019	1.02	1.07
3	01/13/2019 - 01/19/2019	1.02	1.07
4	01/20/2019 - 01/26/2019	1.00	1.05
5	01/27/2019 - 02/02/2019	0.99	1.04
* 6	02/03/2019 - 02/09/2019	0.97	1.02
* 7	02/10/2019 - 02/16/2019	0.95	1.00
* 8	02/17/2019 - 02/23/2019	0.94	0.99
* 9	02/24/2019 - 03/02/2019	0.94	0.99
*10	03/03/2019 - 03/09/2019	0.93	0.98
*11	03/10/2019 - 03/16/2019	0.92	0.97
*12	03/17/2019 - 03/23/2019	0.93	0.98
*13	03/24/2019 - 03/30/2019	0.93	0.98
*14	03/31/2019 - 04/06/2019	0.94	0.99
*15	04/07/2019 - 04/13/2019	0.95	1.00
*16	04/14/2019 - 04/20/2019	0.96	1.01
*17	04/21/2019 - 04/27/2019	0.97	1.02
*18	04/28/2019 - 05/04/2019	0.98	1.03
19	05/05/2019 - 05/11/2019	0.99	1.04
20	05/12/2019 - 05/18/2019	1.00	1.05
21	05/19/2019 - 05/25/2019	1.00	1.05
22	05/26/2019 - 06/01/2019	1.01	1.06
23	06/02/2019 - 06/08/2019	1.02	1.07
24	06/09/2019 - 06/15/2019	1.02	1.07
25	06/16/2019 - 06/22/2019	1.03	1.08
26	06/23/2019 - 06/29/2019	1.04	1.09
27	06/30/2019 - 07/06/2019	1.04	1.09
28	07/07/2019 - 07/13/2019	1.05	1.11
29	07/14/2019 - 07/20/2019	1.06	1.12
30	07/21/2019 - 07/27/2019	1.05	1.11
31	07/28/2019 - 08/03/2019	1.04	1.09
32	08/04/2019 - 08/10/2019	1.03	1.08
33	08/11/2019 - 08/17/2019	1.02	1.07
34	08/18/2019 - 08/24/2019	1.03	1.08
35	08/25/2019 - 08/31/2019	1.05	1.11
36	09/01/2019 - 09/07/2019	1.06	1.12
37	09/08/2019 - 09/14/2019	1.08	1.14
38	09/15/2019 - 09/21/2019	1.09	1.15
39	09/22/2019 - 09/28/2019	1.07	1.13
40	09/29/2019 - 10/05/2019	1.04	1.09
41	10/06/2019 - 10/12/2019	1.02	1.07
42	10/13/2019 - 10/19/2019	0.99	1.04
43	10/20/2019 - 10/26/2019	1.00	1.05
44	10/27/2019 - 11/02/2019	1.00	1.05
45	11/03/2019 - 11/09/2019	1.01	1.06
46	11/10/2019 - 11/16/2019	1.01	1.06
47	11/17/2019 - 11/23/2019	1.01	1.06
48	11/24/2019 - 11/30/2019	1.02	1.07
49	12/01/2019 - 12/07/2019	1.02	1.07
50	12/08/2019 - 12/14/2019	1.02	1.07
51	12/15/2019 - 12/21/2019	1.02	1.07
52	12/22/2019 - 12/28/2019	1.02	1.07
53	12/29/2019 - 12/31/2019	1.02	1.07

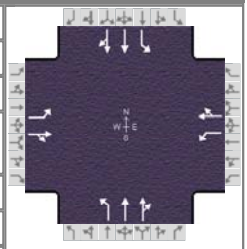
* PEAK SEASON

APPENDIX B

Existing Conditions Capacity Analysis Worksheets

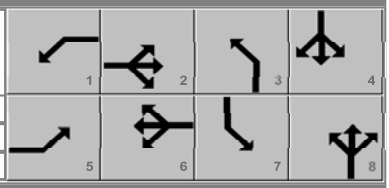
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	TPD, Inc.			Duration, h	0.25
Analyst	BH	Analysis Date	1/21/2021	Area Type	Other
Jurisdiction	City of Deltona	Time Period	A.M. Peak Existing	PHF	0.89
Urban Street	Cortland Blvd	Analysis Year	2021	Analysis Period	1> 7:00
Intersection	Cortland Blvd & Howlan…	File Name	Howland Blvd & Courtland Blvd (A.M.).xus		
Project Description	Osteen Cemetery Road				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	154	35	61	222	36	28	42	378	65	18	620	91

Signal Information												
Cycle, s	72.8	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	Yes	Simult. Gap E/W	On	Green	8.2	3.0	7.1	1.7	0.9	18.9		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	5.0	0.0	5.0	4.5	0.0	4.5		
				Red	3.5	0.0	3.5	3.5	0.0	3.5		



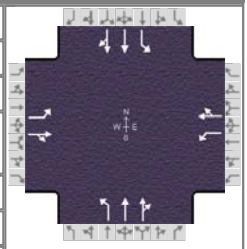
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	4.0	1.1	4.0
Phase Duration, s	16.7	15.6	19.7	18.5	10.6	27.8	9.7	26.9
Change Period, ($Y+R_c$), s	8.5	8.5	8.5	8.5	7.5	8.0	8.0	8.0
Max Allow Headway (*MAH*), s	4.1	4.2	4.1	4.2	4.1	5.1	4.1	5.1
Queue Clearance Time (g_s), s	8.1	6.4	10.7	4.7	3.4	10.3	2.6	16.8
Green Extension Time (g_e), s	0.4	0.6	0.6	0.6	0.1	5.2	0.0	2.1
Phase Call Probability	0.97	1.00	0.99	1.00	0.61	1.00	0.34	1.00
Max Out Probability	0.00	0.00	0.04	0.00	0.00	0.68	0.00	1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	173	108		249	72		47	254	244	20	408	391
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1705		1810	1761		1810	1900	1803	1810	1900	1814
Queue Service Time (g_s), s	6.1	4.4		8.7	2.7		1.4	8.2	8.3	0.6	14.7	14.8
Cycle Queue Clearance Time (g_c), s	6.1	4.4		8.7	2.7		1.4	8.2	8.3	0.6	14.7	14.8
Green Ratio (*g/C*)	0.21	0.10		0.25	0.14		0.30	0.27	0.27	0.28	0.26	0.26
Capacity (*c*), veh/h	404	166		425	243		215	517	491	260	494	471
Volume-to-Capacity Ratio (*X*)	0.428	0.652		0.586	0.296		0.220	0.491	0.497	0.078	0.827	0.828
Back of Queue (*Q*), ft/ln (95 th percentile)	113.9	87.3		163.1	50.3		25.2	159.6	154.1	10.8	303.9	295.7
Back of Queue (*Q*), veh/ln (95 th percentile)	4.6	3.5		6.5	2.0		1.0	6.4	6.2	0.4	12.2	11.8
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	25.1	31.7		23.8	28.2		19.8	22.3	22.3	19.5	25.4	25.4
Incremental Delay (d_2), s/veh	0.7	4.3		1.3	0.7		0.5	1.0	1.1	0.1	10.7	11.3
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	25.8	35.9		25.1	28.9		20.3	23.3	23.4	19.7	36.1	36.7
Level of Service (LOS)	C	D		C	C		C	C	C	B	D	D
Approach Delay, s/veh / LOS	29.7	C		25.9	C		23.1	C		36.0	D	
Intersection Delay, s/veh / LOS	29.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.29	B	2.29	B	1.92	B	1.92	B
Bicycle LOS Score / LOS	0.95	A	1.02	A	0.94	A	1.16	A

HCS7 Signalized Intersection Results Summary

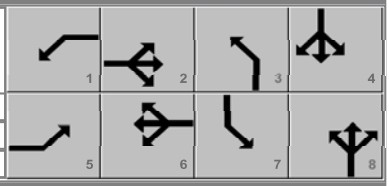
General Information				Intersection Information	
Agency	TPD, Inc.			Duration, h	0.25
Analyst	BH	Analysis Date	1/21/2021	Area Type	Other
Jurisdiction	City of Deltona	Time Period	P.M. Peak Existing	PHF	0.97
Urban Street	Cortland Blvd	Analysis Year	2021	Analysis Period	1> 7:00
Intersection	Cortland Blvd & Howlan…	File Name	Howland Blvd & Courtland Blvd (P.M.).xus		
Project Description	Osteen Cemetery Road				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	165	69	23	78	72	37	49	729	129	54	387	195

Signal Information			
Cycle, s	70.7	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	4.0	3.9	7.0	3.1	0.7	20.0
Yellow	5.0	0.0	5.0	4.0	0.0	4.0
Red	3.5	0.0	3.5	3.5	0.0	3.5



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	4.0	1.1	4.0
Phase Duration, s	16.4	19.4	12.5	15.5	10.6	27.5	11.3	28.1
Change Period, ($Y+R_c$), s	8.5	8.5	8.5	8.5	7.5	8.0	8.0	8.0
Max Allow Headway (*MAH*), s	4.1	4.1	4.1	4.1	4.1	5.1	4.1	5.1
Queue Clearance Time (g_s), s	7.8	5.3	4.8	6.3	3.4	18.1	3.5	12.3
Green Extension Time (g_e), s	0.4	0.7	0.2	0.7	0.1	1.3	0.1	4.9
Phase Call Probability	0.96	1.00	0.79	1.00	0.63	1.00	0.66	1.00
Max Out Probability	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.85

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	170	95		80	112		51	454	430	56	315	285
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1818		1810	1791		1810	1900	1800	1810	1900	1686
Queue Service Time (g_s), s	5.8	3.3		2.8	4.3		1.4	16.1	16.1	1.5	10.1	10.3
Cycle Queue Clearance Time (g_c), s	5.8	3.3		2.8	4.3		1.4	16.1	16.1	1.5	10.1	10.3
Green Ratio (*g/C*)	0.21	0.15		0.16	0.10		0.32	0.28	0.28	0.32	0.28	0.28
Capacity (*c*), veh/h	355	281		309	177		275	523	495	217	541	480
Volume-to-Capacity Ratio (*X*)	0.479	0.337		0.260	0.633		0.184	0.869	0.869	0.256	0.583	0.593
Back of Queue (*Q*), ft/ln (95 th percentile)	108.6	63.2		52.6	86.9		25	339.2	328	27.9	197	182.7
Back of Queue (*Q*), veh/ln (95 th percentile)	4.3	2.5		2.1	3.5		1.0	13.6	13.1	1.1	7.9	7.3
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	24.4	26.6		26.4	30.6		17.8	24.4	24.4	18.8	21.7	21.8
Incremental Delay (d_2), s/veh	1.0	0.7		0.4	3.7		0.3	14.4	15.1	0.6	1.9	2.4
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	25.4	27.3		26.9	34.3		18.2	38.8	39.5	19.4	23.6	24.1
Level of Service (LOS)	C	C		C	C		B	D	D	B	C	C
Approach Delay, s/veh / LOS	26.1	C		31.2	C		38.0	D		23.5	C	
Intersection Delay, s/veh / LOS	31.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.29	B	2.29	B	1.91	B	1.91	B
Bicycle LOS Score / LOS	0.92	A	0.81	A	1.26	A	1.03	A

HCS7 Two-Way Stop-Control Report

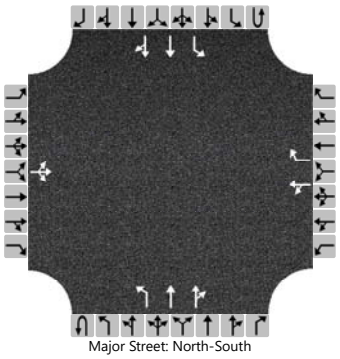
General Information

Analyst	BH
Agency/Co.	TPD, Inc.
Date Performed	1/21/2021
Analysis Year	2024
Time Analyzed	A.M. Peak Projected
Intersection Orientation	North-South
Project Description	Osteen Cemetry Road

Site Information

Intersection	Howland Blvd & Goldenhill
Jurisdiction	City of Deltona
East/West Street	Goldenhill St
North/South Street	Howland Blvd
Peak Hour Factor	0.97
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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	1	0		0	1	1	0	1	2	0	0	1	2	0
Configuration			LTR			LT		R		L	T	TR		L	T	TR
Volume (veh/h)		8	1	67		113	1	98	0	32	413	49	0	51	894	9
Percent Heavy Vehicles (%)		1	1	1		1	1	1	1	1			1	1		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized					No											
Median Type | Storage	Left + Thru								1							

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.52	6.52	6.92		7.52	6.52	6.92		4.12				4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.51	4.01	3.31		3.51	4.01	3.31		2.21				2.21		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			78			118		101		33				53		
Capacity, c (veh/h)			445			251		766		737				1089		
v/c Ratio			0.18			0.47		0.13		0.04				0.05		
95% Queue Length, Q_{95} (veh)			0.6			2.3		0.5		0.1				0.2		
Control Delay (s/veh)			14.8			31.3		10.4		10.1				8.5		
Level of Service (LOS)			B			D		B		B				A		
Approach Delay (s/veh)	14.8				21.6				0.7				0.5			
Approach LOS	B				C											

HCS7 Two-Way Stop-Control Report

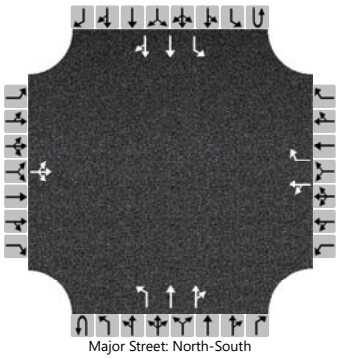
General Information

Analyst	BH
Agency/Co.	TPD, Inc.
Date Performed	1/21/2021
Analysis Year	2021
Time Analyzed	P.M. Peak Existing
Intersection Orientation	North-South
Project Description	Osteen Cemetry Road

Site Information

Intersection	Howland Blvd & Goldenhill
Jurisdiction	City of Deltona
East/West Street	Goldenhill St
North/South Street	Howland Blvd
Peak Hour Factor	0.97
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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	1	0		0	1	1	0	1	2	0	0	1	2	0
Configuration			LTR			LT		R		L	T	TR		L	T	TR
Volume (veh/h)		11	1	19		22	2	18	0	41	871	41	0	19	474	1
Percent Heavy Vehicles (%)		1	1	1		1	1	1	1	1			1	1		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized					No											
Median Type | Storage	Left + Thru								1							

Critical and Follow-up Headways

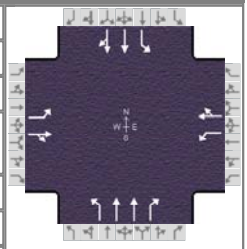
Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.52	6.52	6.92		7.52	6.52	6.92		4.12				4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.51	4.01	3.31		3.51	4.01	3.31		2.21				2.21		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			32			25		19		42				20		
Capacity, c (veh/h)			454			203		543		1077				731		
v/c Ratio			0.07			0.12		0.03		0.04				0.03		
95% Queue Length, Q_{95} (veh)			0.2			0.4		0.1		0.1				0.1		
Control Delay (s/veh)			13.5			25.2		11.9		8.5				10.1		
Level of Service (LOS)			B			D		B		A				B		
Approach Delay (s/veh)	13.5				19.5				0.4				0.4			
Approach LOS	B				C											

HCS7 Signalized Intersection Results Summary

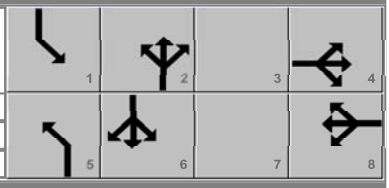
General Information				Intersection Information	
Agency	TPD, Inc.			Duration, h	0.25
Analyst	BH	Analysis Date	Jan 21, 2021	Area Type	Other
Jurisdiction	City of Deltona	Time Period	A.M. Peak Hour Existing	PHF	0.83
Urban Street	Howland Blvd	Analysis Year	2021	Analysis Period	1> 7:00
Intersection	Howland Blvd & Fish Ha…	File Name	Howland Blvd & Fish Hawk Rd (A.M.).xus		
Project Description	Osteen Cemetry Road				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	2	17	5	142	0	143	1	352	158	194	797	25

Signal Information			
Cycle, s	135.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.2	0.8	82.0	20.9	0.0	0.0
Yellow	5.0	5.0	5.0	4.0	0.0	0.0
Red	3.0	3.0	3.0	3.0	0.0	0.0



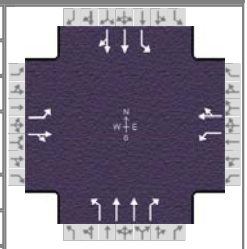
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	1.1	3.0	1.1	4.0
Phase Duration, s		27.9		27.9	8.2	90.0	17.0	98.8
Change Period, ($Y+R_c$), s		7.0		7.0	8.0	8.0	8.0	8.0
Max Allow Headway (*MAH*), s		4.1		4.1	4.0	0.0	4.0	0.0
Queue Clearance Time (g_s), s		15.9		19.7	2.0		8.2	
Green Extension Time (g_e), s		1.3		1.2	0.0	0.0	0.8	0.0
Phase Call Probability		1.00		1.00	0.04		1.00	
Max Out Probability		0.00		0.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	2	27		171	172		1	424	190	234	498	492
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1232	1825		1406	1610		1810	1809	1449	1810	1900	1879
Queue Service Time (g_s), s	0.3	1.7		16.0	13.7		0.0	7.0	8.0	6.2	15.7	15.7
Cycle Queue Clearance Time (g_c), s	13.9	1.7		17.7	13.7		0.0	7.0	8.0	6.2	15.7	15.7
Green Ratio (*g/C*)	0.16	0.16		0.16	0.16		0.61	0.61	0.61	0.69	0.67	0.67
Capacity (*c*), veh/h	120	284		255	250		369	2197	880	717	1278	1264
Volume-to-Capacity Ratio (*X*)	0.020	0.093		0.672	0.689		0.003	0.193	0.216	0.326	0.390	0.390
Back of Queue (*Q*), ft/ln (95 th percentile)	3.6	34.5		243.1	239.1		0.6	123.6	116.1	99.9	257	255.3
Back of Queue (*Q*), veh/ln (95 th percentile)	0.1	1.4		9.7	9.6		0.0	4.9	4.6	4.0	10.3	10.2
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	60.5	48.9		56.4	53.9		10.6	11.8	12.0	7.9	9.8	9.8
Incremental Delay (d_2), s/veh	0.1	0.1		3.1	3.4		0.0	0.2	0.6	0.3	0.9	0.9
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	60.5	49.0		59.5	57.3		10.6	12.0	12.5	8.2	10.7	10.7
Level of Service (LOS)	E	D		E	E		B	B	B	A	B	B
Approach Delay, s/veh / LOS	50.0	D		58.4	E		12.2	B		10.2	B	
Intersection Delay, s/veh / LOS	18.8						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.47	B	2.31	B	1.89	B	1.88	B
Bicycle LOS Score / LOS	0.54	A	1.05	A	1.00	A	1.50	A

HCS7 Signalized Intersection Results Summary

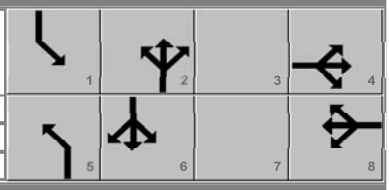
General Information				Intersection Information	
Agency	TPD, Inc.			Duration, h	0.25
Analyst	BH	Analysis Date	Jan 21, 2021	Area Type	Other
Jurisdiction	City of Deltona	Time Period	P.M. Peak Hour Existing	PHF	0.95
Urban Street	Howland Blvd	Analysis Year	2021	Analysis Period	1> 7:00
Intersection	Howland Blvd & Fish Ha…	File Name	Howland Blvd & Fish Hawk Rd (P.M.).xus		
Project Description	Osteen Cemetry Road				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	1	0	3	10	0	14	0	888	35	30	451	3

Signal Information			
Cycle, s	135.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	3.5	103.8	4.7	0.0	0.0	0.0
Yellow	5.0	5.0	4.0	0.0	0.0	0.0
Red	3.0	3.0	3.0	0.0	0.0	0.0



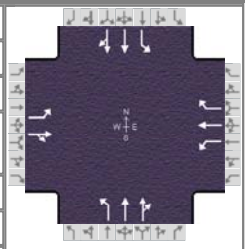
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	1.1	3.0	1.1	4.0
Phase Duration, s		11.7		11.7	0.0	111.8	11.5	123.3
Change Period, (*Y+R c*), s		7.0		7.0	8.0	8.0	8.0	8.0
Max Allow Headway (*MAH*), s		4.1		4.1	0.0	0.0	4.0	0.0
Queue Clearance Time (*g s*), s		3.3		3.2			2.5	
Green Extension Time (*g e*), s		0.1		0.1	0.0	0.0	0.1	0.0
Phase Call Probability		0.67		0.67			0.69	
Max Out Probability		0.00		0.00			0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	1	3		11	15		0	935	37	32	239	239
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1421	1610		1436	1610		1810	1809	1610	1810	1900	1895
Queue Service Time (*g s*), s	0.1	0.3		1.0	1.2		0.0	10.9	0.7	0.5	2.8	2.8
Cycle Queue Clearance Time (*g c*), s	1.3	0.3		1.2	1.2		0.0	10.9	0.7	0.5	2.8	2.8
Green Ratio (*g/C*)	0.03	0.03		0.03	0.03		0.71	0.77	0.77	0.81	0.85	0.85
Capacity (*c*), veh/h	90	56		101	56		771	2783	1239	519	1623	1619
Volume-to-Capacity Ratio (*X*)	0.012	0.057		0.105	0.264		0.000	0.336	0.030	0.061	0.147	0.147
Back of Queue (*Q*), ft/ln (95 th percentile)	1.6	4.9		16.2	23.6		0	150.6	9.3	5.4	26.9	27.2
Back of Queue (*Q*), veh/ln (95 th percentile)	0.1	0.2		0.6	0.9		0.0	6.0	0.4	0.2	1.1	1.1
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (*d 1*), s/veh	64.1	63.0		63.6	63.5		0.0	4.8	3.7	3.1	1.6	1.6
Incremental Delay (*d 2*), s/veh	0.1	0.4		0.5	2.5		0.0	0.3	0.0	0.0	0.2	0.2
Initial Queue Delay (*d 3*), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	64.1	63.4		64.0	66.0		0.0	5.2	3.7	3.2	1.8	1.8
Level of Service (LOS)	E	E		E	E			A	A	A	A	A
Approach Delay, s/veh / LOS	63.6	E		65.2	E		5.1	A		1.9	A	
Intersection Delay, s/veh / LOS	5.2						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.48	B	2.32	B	1.85	B	1.81	B
Bicycle LOS Score / LOS	0.49	A	0.53	A	1.29	A	0.91	A

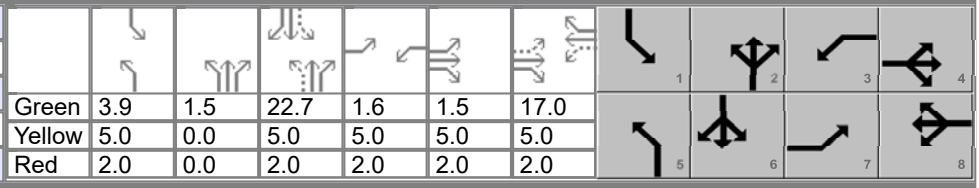
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	TPD, Inc.			Duration, h	0.25
Analyst	BH	Analysis Date	Jan 21, 2021	Area Type	Other
Jurisdiction	City of Deltona	Time Period	A.M. Peak Hour Existing	PHF	0.92
Urban Street	Howland Blvd	Analysis Year	2021	Analysis Period	1> 7:00
Intersection	Howland Blvd & Ft Smit…	File Name	Howland Blvd & Ft Smith Blvd (A.M.).xus		
Project Description	Osteen Cemetery Road				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	206	113	242	15	56	68	102	235	3	60	586	131

Signal Information			
Cycle, s	83.3	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.9	1.5	22.7	1.6	1.5	17.0						
Yellow	5.0	0.0	5.0	5.0	5.0	5.0						
Red	2.0	0.0	2.0	2.0	2.0	2.0						

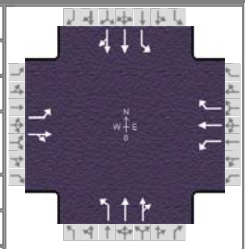
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	1.1	4.0	1.1	3.0	1.1	4.0	1.1	4.0
Phase Duration, s	17.1	32.5	8.6	24.0	12.4	31.2	10.9	29.7
Change Period, ($Y+R_c$), s	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Max Allow Headway (*MAH*), s	4.0	4.1	4.0	4.1	4.0	4.2	4.0	4.2
Queue Clearance Time (g_s), s	9.7	19.1	2.6	5.2	5.6	6.6	4.1	18.3
Green Extension Time (g_e), s	0.5	1.8	0.0	2.0	0.3	4.5	0.1	4.4
Phase Call Probability	0.99	1.00	0.31	1.00	0.92	1.00	0.78	1.00
Max Out Probability	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.02

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	224	386		16	61	74	111	136	122	65	402	377
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1692		1810	1900	1610	1810	1900	1702	1810	1900	1779
Queue Service Time (g_s), s	7.7	17.1		0.6	2.2	3.2	3.6	4.6	4.6	2.1	16.3	16.3
Cycle Queue Clearance Time (g_c), s	7.7	17.1		0.6	2.2	3.2	3.6	4.6	4.6	2.1	16.3	16.3
Green Ratio (*g/C*)	0.35	0.31		0.22	0.20	0.20	0.34	0.29	0.29	0.32	0.27	0.27
Capacity (*c*), veh/h	549	519		199	388	329	259	554	496	414	519	486
Volume-to-Capacity Ratio (*X*)	0.408	0.743		0.082	0.157	0.225	0.428	0.246	0.247	0.157	0.775	0.777
Back of Queue (*Q*), ft/ln (95 th percentile)	134.9	271.2		11.1	42.9	53.1	65.8	86.9	78.3	37.9	287.4	273.9
Back of Queue (*Q*), veh/ln (95 th percentile)	5.4	10.8		0.4	1.7	2.1	2.6	3.5	3.1	1.5	11.5	11.0
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	20.2	25.9		26.0	27.3	27.7	21.3	22.5	22.5	20.1	27.9	27.9
Incremental Delay (d_2), s/veh	0.5	2.8		0.2	0.2	0.3	1.1	0.3	0.4	0.2	2.5	2.7
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	20.7	28.7		26.2	27.4	28.0	22.4	22.9	22.9	20.3	30.4	30.7
Level of Service (LOS)	C	C		C	C	C	C	C	C	C	C	C
Approach Delay, s/veh / LOS	25.8	C		27.6	C		22.7	C		29.8	C	
Intersection Delay, s/veh / LOS	27.1						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	2.29	B	2.11	B	1.92	B
Bicycle LOS Score / LOS	1.49	A	0.74	A	0.79	A	1.18	A

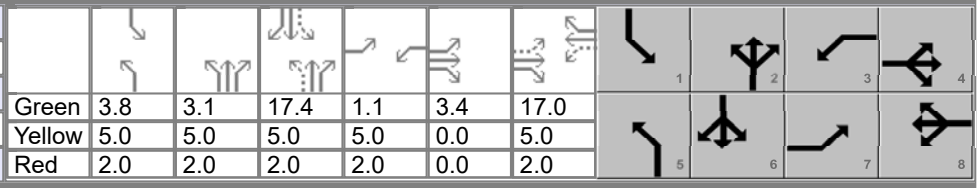
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	TPD, Inc.			Duration, h	0.25
Analyst	BH	Analysis Date	Jan 21, 2021	Area Type	Other
Jurisdiction	City of Deltona	Time Period	P.M. Peak Hour Existing	PHF	0.93
Urban Street	Howland Blvd	Analysis Year	2021	Analysis Period	1> 7:00
Intersection	Howland Blvd & Ft Smit…	File Name	Howland Blvd & Ft Smith Blvd (P.M.).xus		
Project Description	Osteen Cemetery Road				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	82	126	18	10	191	108	315	745	4	59	321	76

Signal Information			
Cycle, s	80.8	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.8	3.1	17.4	1.1	3.4	17.0						
Yellow	5.0	5.0	5.0	5.0	0.0	5.0						
Red	2.0	2.0	2.0	2.0	0.0	2.0						

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	1.1	4.0	1.1	3.0	1.1	4.0	1.1	4.0
Phase Duration, s	11.5	27.4	8.1	24.0	20.9	34.5	10.8	24.4
Change Period, ($Y+R_c$), s	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Max Allow Headway (*MAH*), s	4.0	4.0	4.0	4.0	4.0	4.6	4.0	4.6
Queue Clearance Time (g_s), s	5.0	7.5	2.4	9.7	12.9	17.3	4.2	10.4
Green Extension Time (g_e), s	0.2	1.6	0.0	1.6	0.9	6.7	0.1	7.0
Phase Call Probability	0.86	1.00	0.21	1.00	1.00	1.00	0.76	1.00
Max Out Probability	0.00	0.00	0.00	0.00	0.01	0.07	0.00	0.03

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	88	155		11	205	116	339	424	381	63	218	208
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1858		1810	1900	1610	1810	1900	1707	1810	1900	1775
Queue Service Time (g_s), s	3.0	5.5		0.4	7.7	5.0	10.9	15.3	15.3	2.2	8.2	8.4
Cycle Queue Clearance Time (g_c), s	3.0	5.5		0.4	7.7	5.0	10.9	15.3	15.3	2.2	8.2	8.4
Green Ratio (*g/C*)	0.27	0.25		0.22	0.21	0.21	0.41	0.34	0.34	0.26	0.22	0.22
Capacity (*c*), veh/h	327	470		314	400	339	509	647	581	261	410	383
Volume-to-Capacity Ratio (*X*)	0.270	0.330		0.034	0.514	0.343	0.666	0.656	0.656	0.243	0.533	0.545
Back of Queue (*Q*), ft/ln (95 th percentile)	55.4	102.6		6.9	151.7	82.1	189.4	264.8	243.9	39.9	161.2	154.8
Back of Queue (*Q*), veh/ln (95 th percentile)	2.2	4.1		0.3	6.1	3.3	7.6	10.6	9.8	1.6	6.4	6.2
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	23.3	24.6		24.6	28.2	27.1	18.2	22.6	22.6	23.1	28.1	28.2
Incremental Delay (d_2), s/veh	0.4	0.4		0.0	1.0	0.6	1.5	1.6	1.8	0.5	1.1	1.2
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	23.7	25.0		24.6	29.3	27.7	19.7	24.3	24.4	23.6	29.2	29.4
Level of Service (LOS)	C	C		C	C	C	B	C	C	C	C	C
Approach Delay, s/veh / LOS	24.5	C		28.6	C		23.0	C		28.5	C	
Intersection Delay, s/veh / LOS	25.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	2.29	B	2.10	B	1.93	B
Bicycle LOS Score / LOS	0.89	A	1.04	A	1.43	A	0.89	A

APPENDIX C

ITE Worksheets

Single-Family Detached Housing
(210)

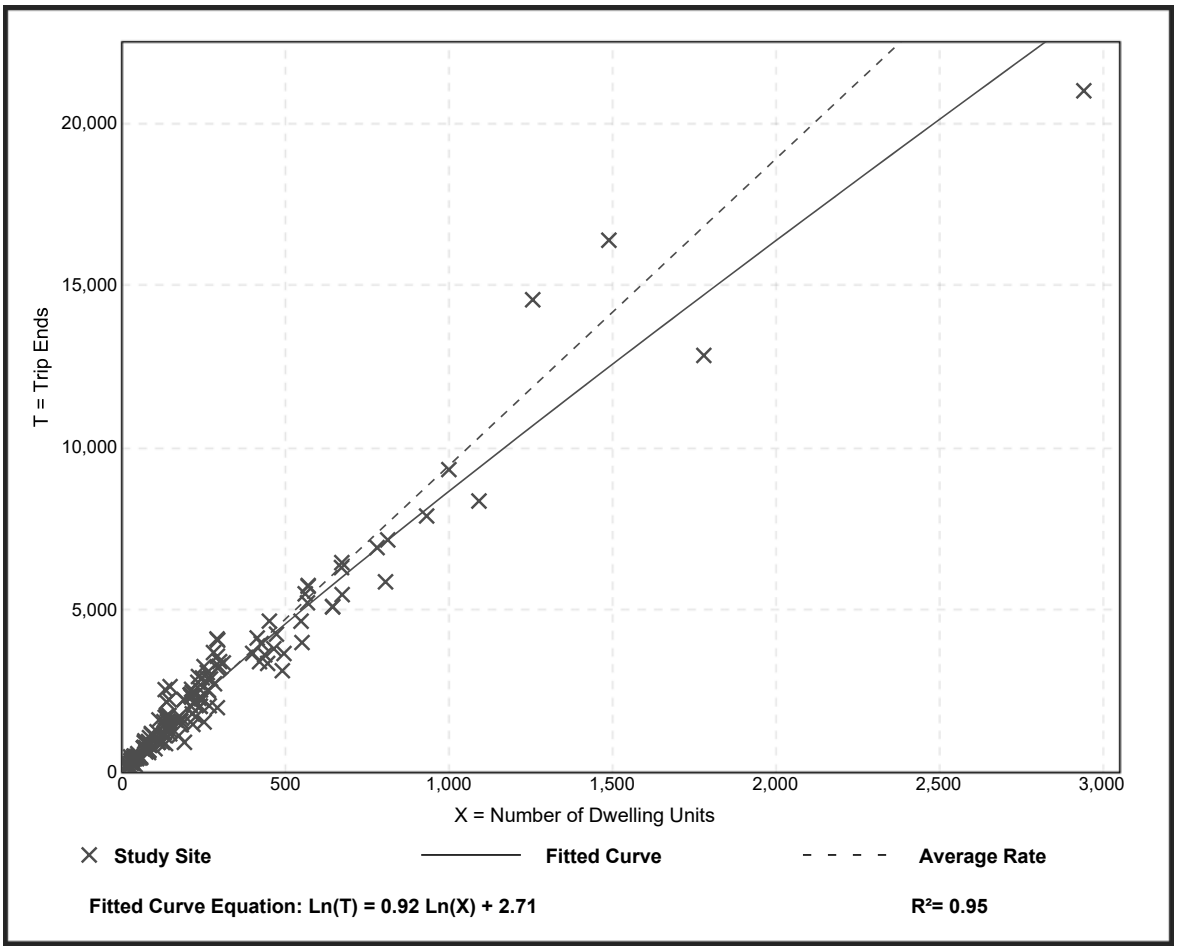
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 159
Avg. Num. of Dwelling Units: 264
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.44	4.81 - 19.39	2.10

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.92 Ln(X) + 2.71 **R^2= 0.95**

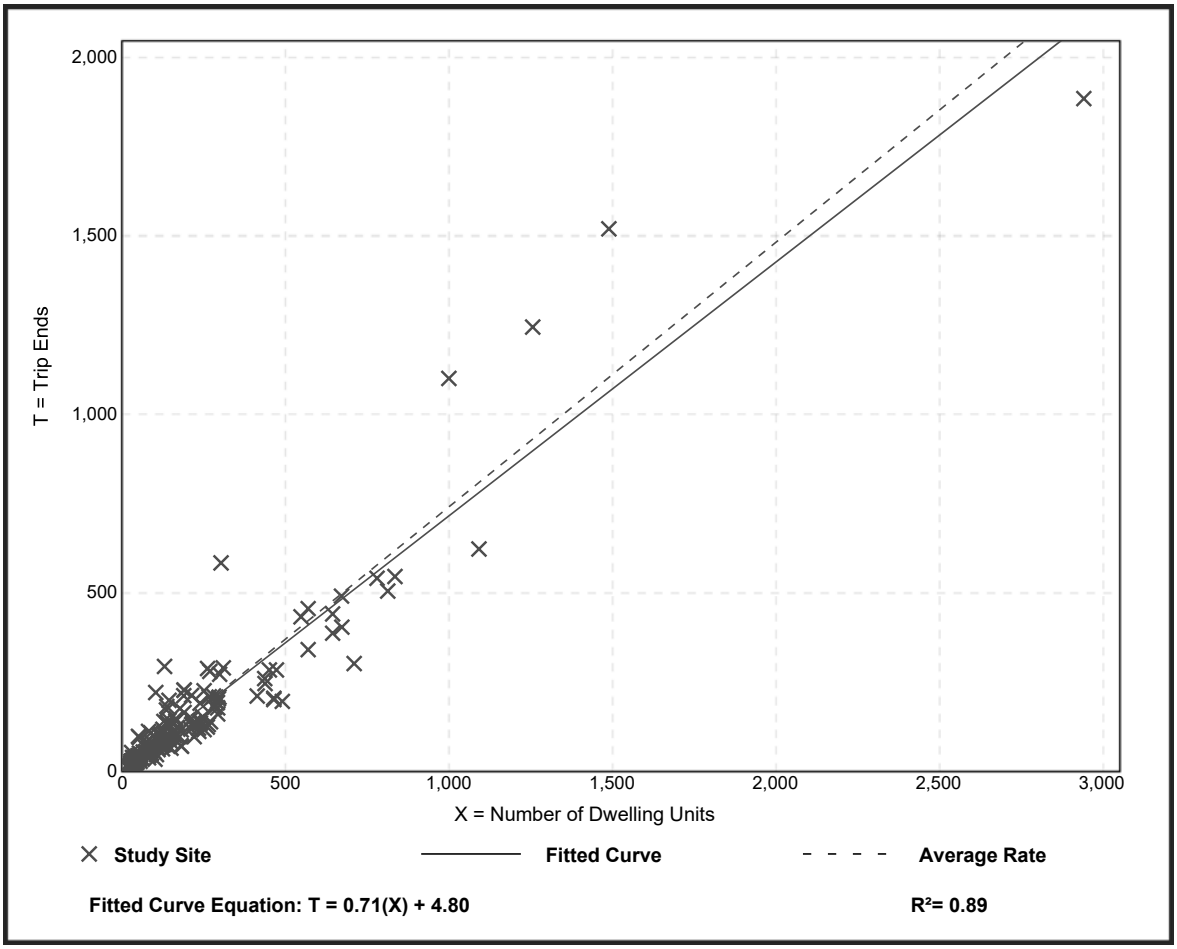
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 173
Avg. Num. of Dwelling Units: 219
Directional Distribution: 25% entering, 75% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.74	0.33 - 2.27	0.27

Data Plot and Equation



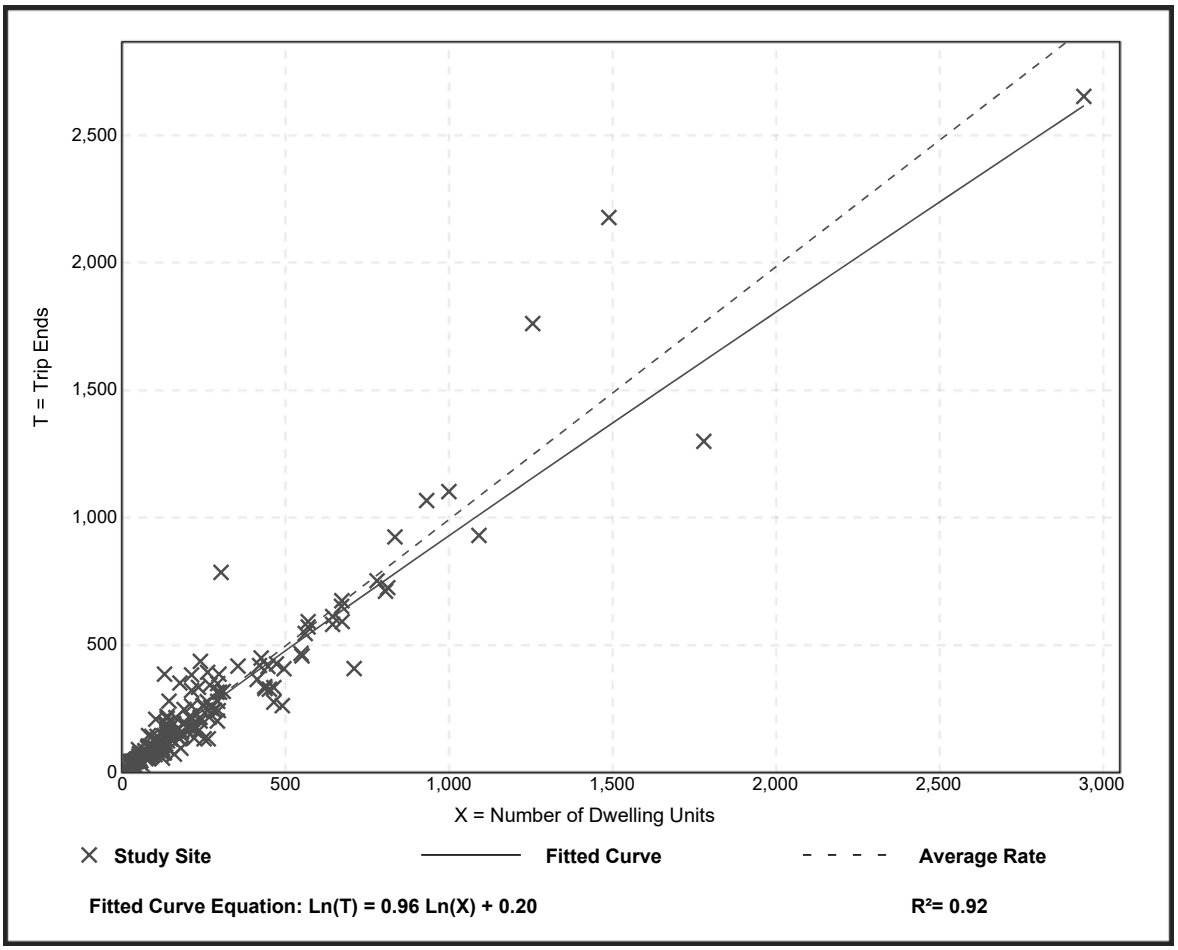
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs: **Dwelling Units**
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: 190
Avg. Num. of Dwelling Units: 242
Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

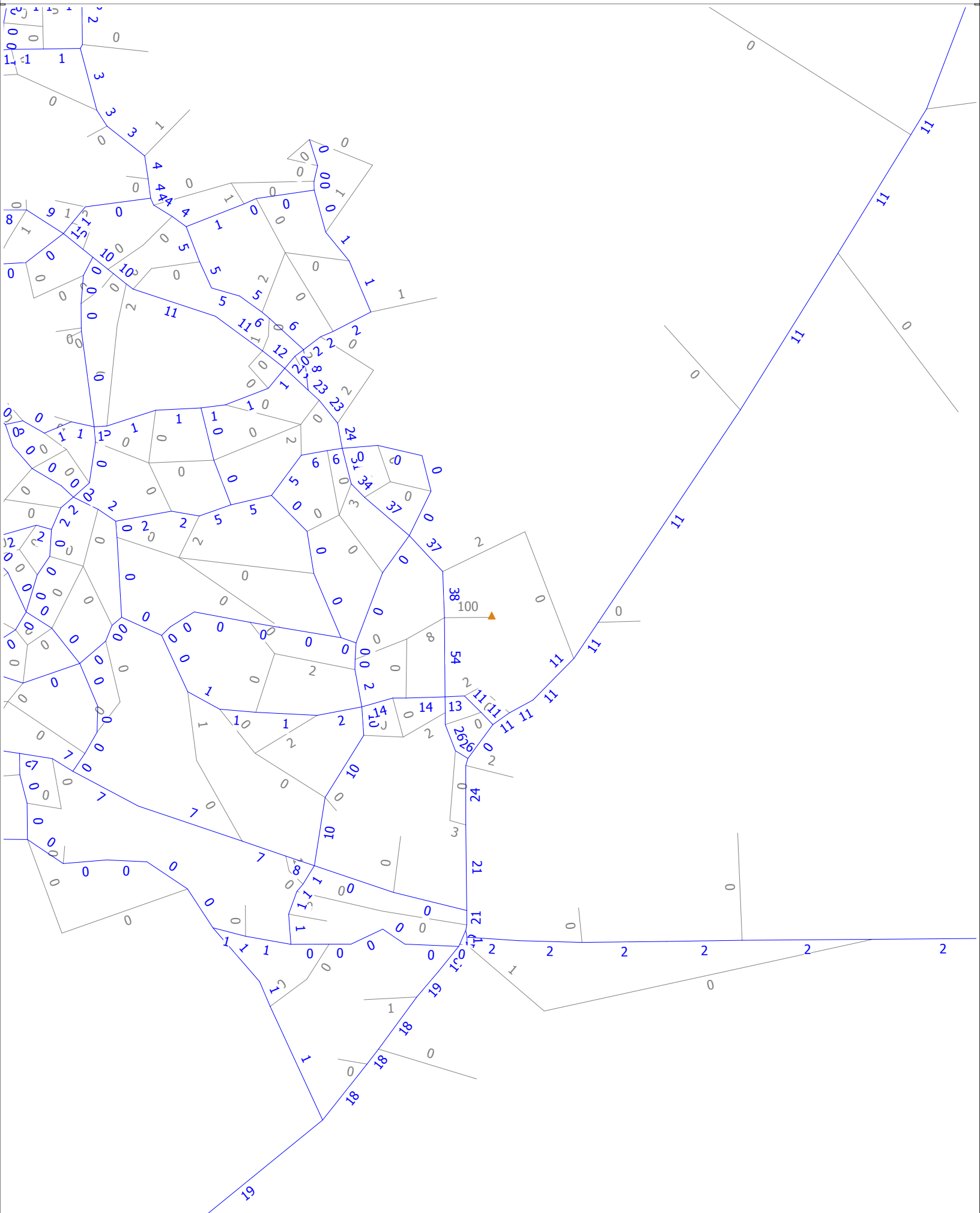
Average Rate	Range of Rates	Standard Deviation
0.99	0.44 - 2.98	0.31

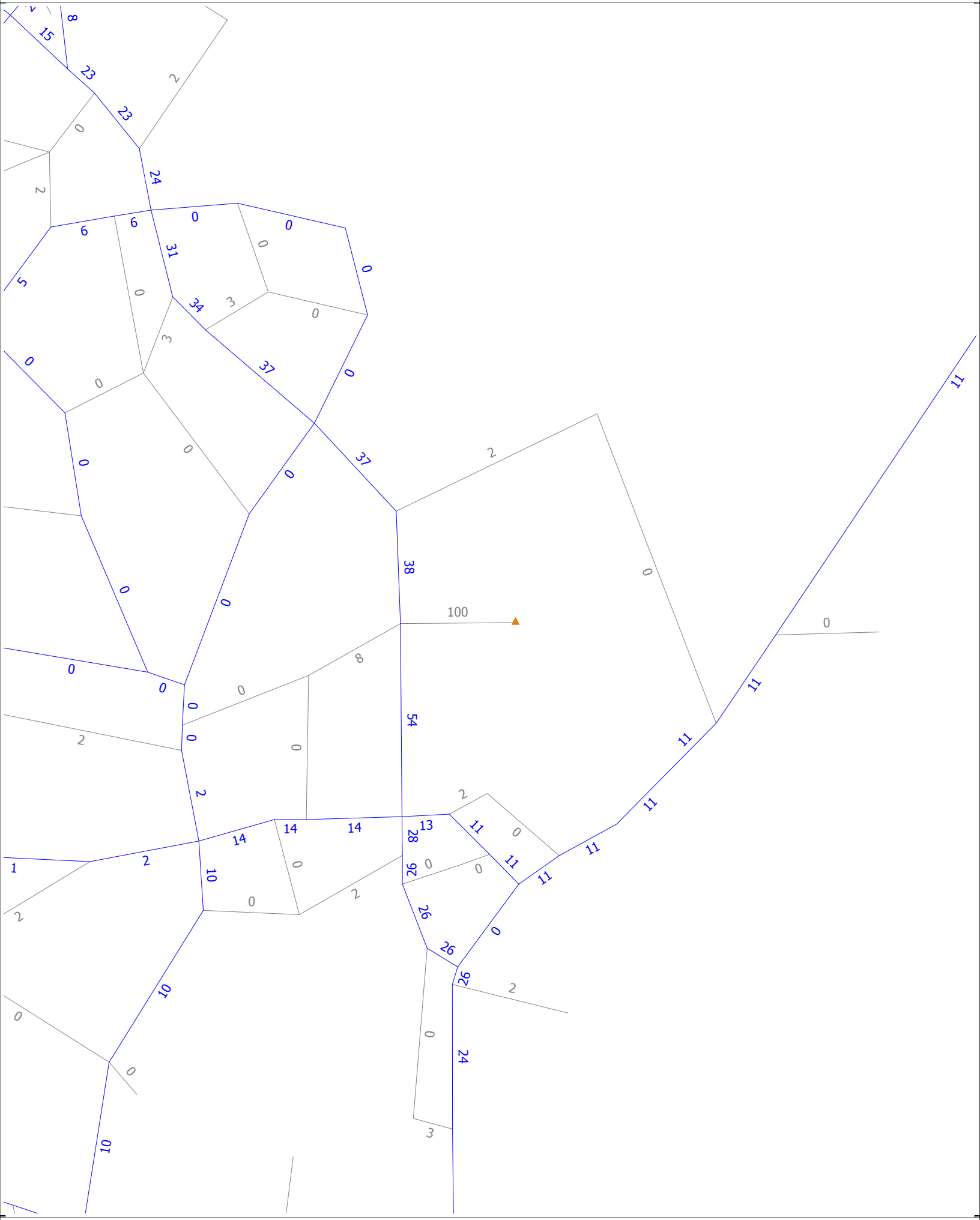
Data Plot and Equation

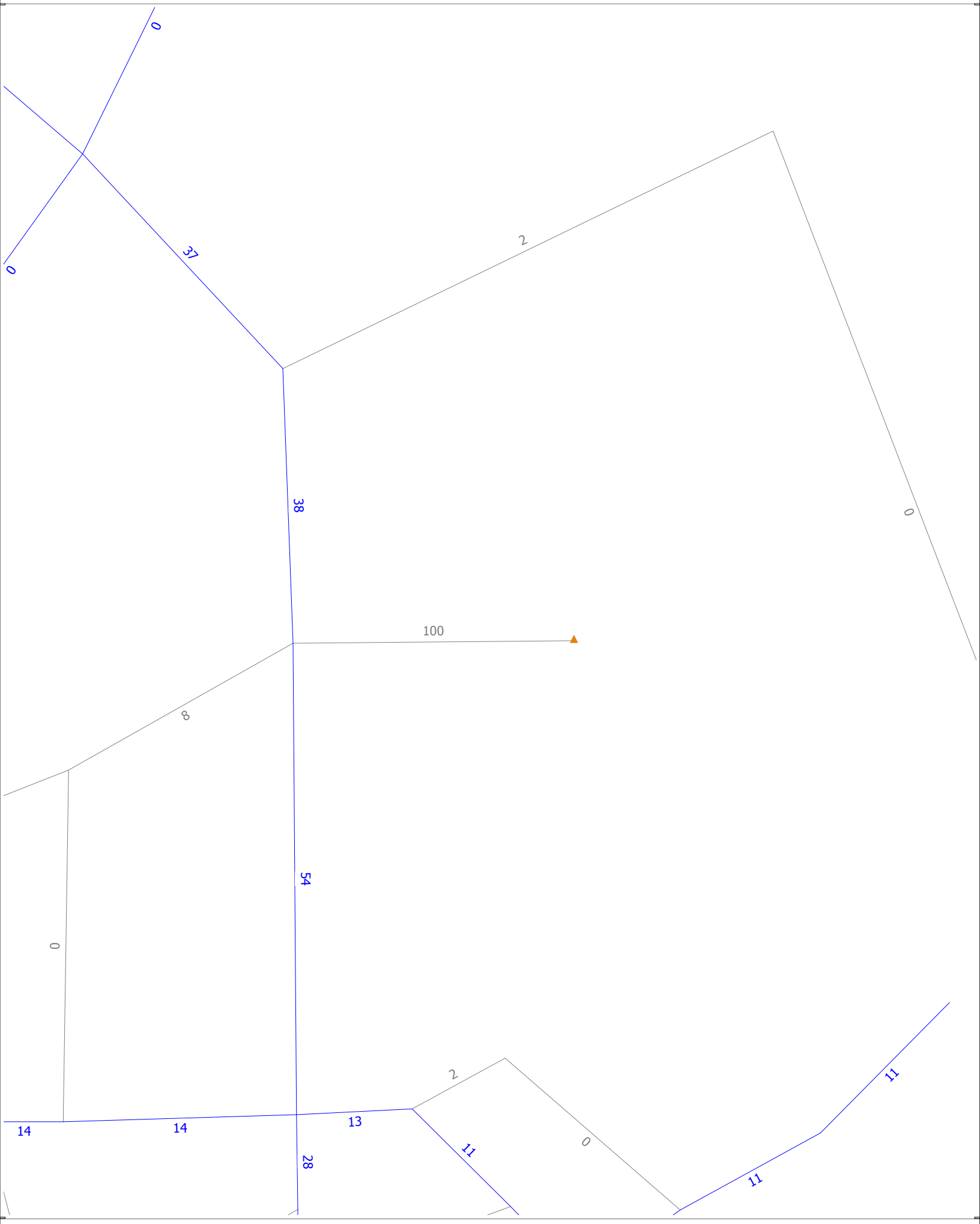


APPENDIX D

Model Distribution Plots



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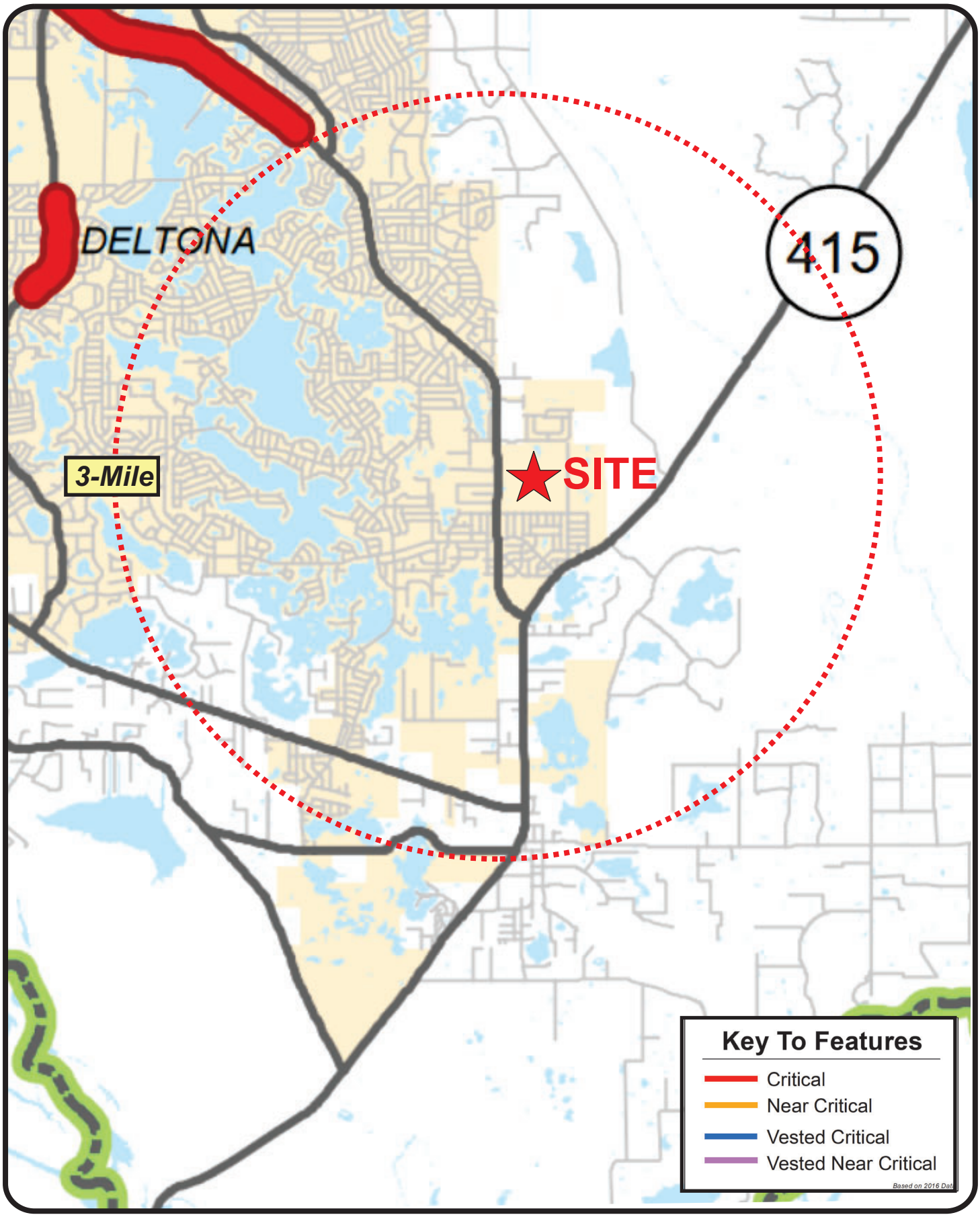
0
37
2
38
0
100
8
0
54
14
14
13
2
11
0
11
11
28

APPENDIX E

Critical/Near-Critical Map



Osteen Cemetery Road
Project № 5427

3 Mile Critical / Near Critical Buffer

N
NTS

APPENDIX F

Vested Trips/Trends Analysis Chart

VESTED TRIP CALCULATION

- FROM APPROVED PROJECTS:
  AM/PM Peak Hour Trips on Howland
  Approved projects – Dixie Ridge PUD
  – Enterprise Green PUD
  – Vineland Preserve
  Two-way Peak Hour Trips
  AM Peak Hour – 81
  PM Peak Hour – 174

- GROWTH BASED UPON TRENDS
  Annual Growth 4.5%
  Three-Year Growth 13.5%
  Growth Factor 1.135

  2W PM Peak Hour Volume on Howland
  1,385 vph
  GROWTH 1,385 × 1.135 = 1,572

  1,572 – 1,385 = 187 vph > 174

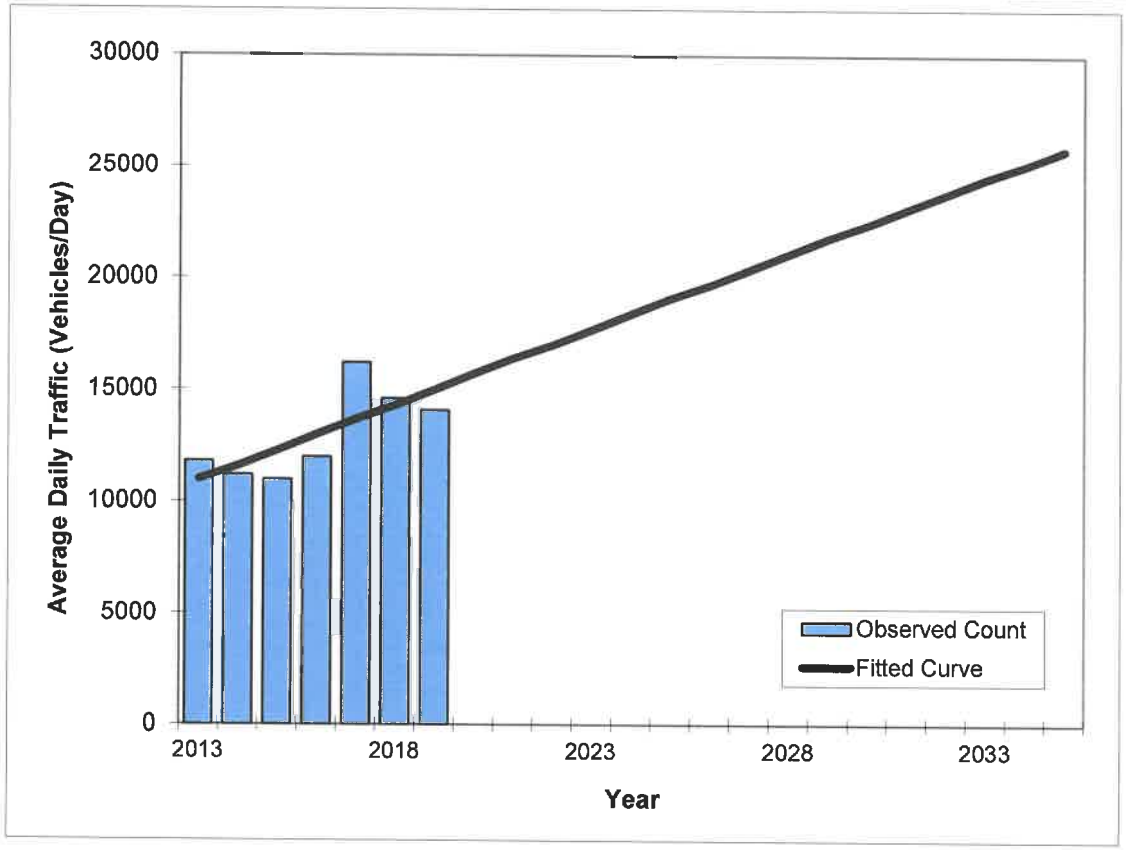
  Use Growth Factor for Background Traffic.

Traffic Trends - V3.0

HOWLAND BOULEVARD -- Fort Smith Blvd

FIN#	1234
Location	1

County:	Volusia
Station #:	
Highway:	HOWLAND BOULEVARD



Year	Traffic (ADT/AADT) Count*	Trend**
2013	11800	11000
2014	11200	11600
2015	11000	12300
2016	12000	13000
2017	16200	13700
2018	14600	14300
2019	14100	15000
2021 Opening Year Trend		
2021	N/A	16400
2023 Mid-Year Trend		
2023	N/A	17700
2025 Design Year Trend		
2025	N/A	19100
TRANPLAN Forecasts/Trends		

*Axle-Adjusted

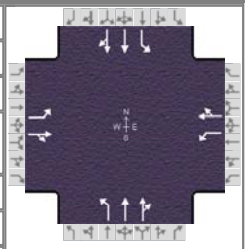
** Annual Trend Increase:	675
Trend R-squared:	53.86%
Trend Annual Historic Growth Rate:	6.06%
Trend Growth Rate (2019 to Design Year):	4.56%
Printed:	21-Jan-21
Straight Line Growth Option	

APPENDIX G

Projected Conditions Capacity Analysis Worksheets

HCS7 Signalized Intersection Results Summary

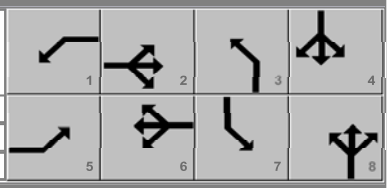
General Information				Intersection Information	
Agency	TPD, Inc.			Duration, h	0.25
Analyst	BH	Analysis Date	1/21/2021	Area Type	Other
Jurisdiction	City of Deltona	Time Period	A.M. Peak Projected	PHF	0.89
Urban Street	Cortland Blvd	Analysis Year	2024	Analysis Period	1> 7:00
Intersection	Cortland Blvd & Howlan…	File Name	Howland Blvd & Courtland Blvd (A.M.).xus		
Project Description	Osteen Cemetery Road				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	175	40	71	252	41	32	52	495	74	20	726	103

Signal Information			
Cycle, s	77.2	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	9.6	3.4	8.2	1.9	1.2	20.0
Yellow	5.0	0.0	5.0	4.5	0.0	4.5
Red	3.5	0.0	3.5	3.5	0.0	3.5



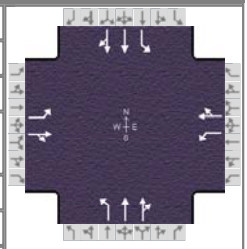
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	4.0	1.1	4.0
Phase Duration, s	18.1	16.7	21.5	20.1	11.1	29.2	9.9	28.0
Change Period, ($Y+R_c$), s	8.5	8.5	8.5	8.5	7.5	8.0	8.0	8.0
Max Allow Headway (*MAH*), s	4.1	4.2	4.1	4.2	4.1	5.1	4.1	5.1
Queue Clearance Time (g_s), s	9.3	7.5	12.4	5.2	3.8	13.7	2.7	21.1
Green Extension Time (g_e), s	0.5	0.7	0.6	0.7	0.1	4.3	0.0	0.0
Phase Call Probability	0.99	1.00	1.00	1.00	0.71	1.00	0.38	1.00
Max Out Probability	0.01	0.00	0.14	0.00	0.00	0.93	0.00	1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	197	125		283	82		58	326	313	22	476	455
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1704		1810	1761		1810	1900	1813	1810	1900	1817
Queue Service Time (g_s), s	7.3	5.5		10.4	3.2		1.8	11.6	11.7	0.7	19.1	19.1
Cycle Queue Clearance Time (g_c), s	7.3	5.5		10.4	3.2		1.8	11.6	11.7	0.7	19.1	19.1
Green Ratio (*g/C*)	0.23	0.11		0.27	0.15		0.31	0.27	0.27	0.28	0.26	0.26
Capacity (*c*), veh/h	428	180		443	264		184	521	497	215	492	471
Volume-to-Capacity Ratio (*X*)	0.459	0.691		0.639	0.310		0.318	0.627	0.630	0.104	0.968	0.968
Back of Queue (*Q*), ft/ln (95 th percentile)	136.8	107.8		194.8	60.7		34.3	227.3	220.8	13.1	459.4	446
Back of Queue (*Q*), veh/ln (95 th percentile)	5.5	4.3		7.8	2.4		1.4	9.1	8.8	0.5	18.4	17.8
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	25.7	33.3		24.4	29.3		21.8	24.6	24.6	21.1	28.3	28.3
Incremental Delay (d_2), s/veh	0.8	4.7		1.5	0.7		1.0	2.8	3.0	0.2	32.4	33.3
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	26.5	38.0		25.9	29.9		22.8	27.3	27.6	21.3	60.7	61.6
Level of Service (LOS)	C	D		C	C		C	C	C	C	E	E
Approach Delay, s/veh / LOS	30.9	C		26.8	C		27.1	C		60.2	E	
Intersection Delay, s/veh / LOS	41.1						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.29	B	2.29	B	1.92	B	1.92	B
Bicycle LOS Score / LOS	1.02	A	1.09	A	1.06	A	1.27	A

HCS7 Signalized Intersection Results Summary

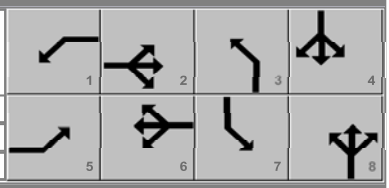
General Information				Intersection Information	
Agency	TPD, Inc.			Duration, h	0.25
Analyst	BH	Analysis Date	1/21/2021	Area Type	Other
Jurisdiction	City of Deltona	Time Period	P.M. Peak Projected	PHF	0.97
Urban Street	Cortland Blvd	Analysis Year	2024	Analysis Period	1> 7:00
Intersection	Cortland Blvd & Howlan…	File Name	Howland Blvd & Courtland Blvd (P.M.).xus		
Project Description	Osteen Cemetery Road				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	187	78	30	89	82	42	59	869	146	61	508	221

Signal Information			
Cycle, s	73.5	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	4.6	4.4	7.9	3.6	0.6	20.5	
Yellow	5.0	0.0	5.0	4.0	0.0	4.0	
Red	3.5	0.0	3.5	3.5	0.0	3.5	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	4.0	1.1	4.0
Phase Duration, s	17.5	20.8	13.1	16.4	11.1	28.0	11.6	28.6
Change Period, ($Y+R_c$), s	8.5	8.5	8.5	8.5	7.5	8.0	8.0	8.0
Max Allow Headway (*MAH*), s	4.1	4.1	4.1	4.1	4.1	5.1	4.1	5.1
Queue Clearance Time (g_s), s	8.8	6.0	5.3	7.0	3.7	22.0	3.8	16.0
Green Extension Time (g_e), s	0.5	0.8	0.2	0.8	0.1	0.0	0.1	3.2
Phase Call Probability	0.98	1.00	0.85	1.00	0.71	1.00	0.72	1.00
Max Out Probability	0.01	0.00	0.00	0.00	0.00	1.00	0.00	1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	193	111		92	128		61	537	510	63	395	356
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1810		1810	1791		1810	1900	1804	1810	1900	1704
Queue Service Time (g_s), s	6.8	4.0		3.3	5.0		1.7	20.0	20.0	1.8	13.9	14.0
Cycle Queue Clearance Time (g_c), s	6.8	4.0		3.3	5.0		1.7	20.0	20.0	1.8	13.9	14.0
Green Ratio (*g/C*)	0.23	0.17		0.17	0.11		0.32	0.27	0.27	0.32	0.28	0.28
Capacity (*c*), veh/h	370	302		323	192		230	517	491	187	531	477
Volume-to-Capacity Ratio (*X*)	0.522	0.368		0.284	0.667		0.264	1.038	1.038	0.336	0.744	0.748
Back of Queue (*Q*), ft/ln (95 th percentile)	127.4	77		61.9	103.1		32.2	561.8	542.3	33.8	272.8	254.9
Back of Queue (*Q*), veh/ln (95 th percentile)	5.1	3.1		2.5	4.1		1.3	22.5	21.7	1.4	10.9	10.2
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	24.6	27.2		26.7	31.6		19.3	26.8	26.8	20.3	24.1	24.1
Incremental Delay (d_2), s/veh	1.1	0.7		0.5	4.0		0.6	49.8	51.0	1.0	6.0	6.9
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	25.7	27.9		27.2	35.5		19.9	76.6	77.7	21.3	30.1	31.0
Level of Service (LOS)	C	C		C	D		B	F	F	C	C	C
Approach Delay, s/veh / LOS	26.5	C		32.0	C		74.0	E		29.8	C	
Intersection Delay, s/veh / LOS	49.6						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.29	B	2.29	B	1.92	B	1.92	B
Bicycle LOS Score / LOS	0.99	A	0.85	A	1.40	A	1.16	A

HCS7 Two-Way Stop-Control Report

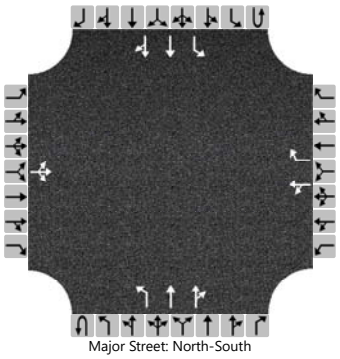
General Information

Analyst	BH
Agency/Co.	TPD, Inc.
Date Performed	1/21/2021
Analysis Year	2024
Time Analyzed	A.M. Peak Projected
Intersection Orientation	North-South
Project Description	Osteen Cemetry Road

Site Information

Intersection	Howland Blvd & Goldenhill
Jurisdiction	City of Deltona
East/West Street	Goldenhill St
North/South Street	Howland Blvd
Peak Hour Factor	0.97
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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	1	0		0	1	1	0	1	2	0	0	1	2	0
Configuration			LTR			LT		R		L	T	TR		L	T	TR
Volume (veh/h)		8	1	67		113	1	98	0	32	413	49	0	51	894	9
Percent Heavy Vehicles (%)		1	1	1		1	1	1	1	1			1	1		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized					No											
Median Type | Storage	Left + Thru								1							

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.52	6.52	6.92		7.52	6.52	6.92		4.12				4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.51	4.01	3.31		3.51	4.01	3.31		2.21				2.21		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			78			118		101		33				53		
Capacity, c (veh/h)			445			251		766		737				1089		
v/c Ratio			0.18			0.47		0.13		0.04				0.05		
95% Queue Length, Q_{95} (veh)			0.6			2.3		0.5		0.1				0.2		
Control Delay (s/veh)			14.8			31.3		10.4		10.1				8.5		
Level of Service (LOS)			B			D		B		B				A		
Approach Delay (s/veh)	14.8				21.6				0.7				0.5			
Approach LOS	B				C											

HCS7 Two-Way Stop-Control Report

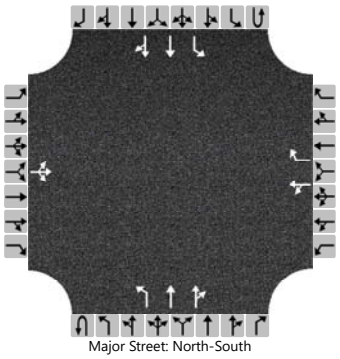
General Information

Analyst	BH
Agency/Co.	TPD, Inc.
Date Performed	1/21/2021
Analysis Year	2024
Time Analyzed	P.M. Peak Projected
Intersection Orientation	North-South
Project Description	Osteen Cemetry Road

Site Information

Intersection	Howland Blvd & Goldenhill
Jurisdiction	City of Deltona
East/West Street	Goldenhill St
North/South Street	Howland Blvd
Peak Hour Factor	0.97
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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	1	0		0	1	1	0	1	2	0	0	1	2	0
Configuration			LTR			LT		R		L	T	TR		L	T	TR
Volume (veh/h)		13	1	22		83	2	65	0	47	948	146	0	96	538	1
Percent Heavy Vehicles (%)		1	1	1		1	1	1	1	1			1	1		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized					No											
Median Type | Storage	Left + Thru								1							

Critical and Follow-up Headways

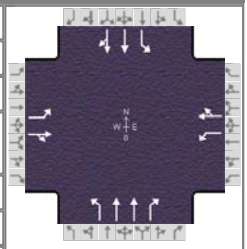
Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.52	6.52	6.92		7.52	6.52	6.92		4.12				4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.51	4.01	3.31		3.51	4.01	3.31		2.21				2.21		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			37			88		67		48				99		
Capacity, c (veh/h)			311			144		471		1018				621		
v/c Ratio			0.12			0.61		0.14		0.05				0.16		
95% Queue Length, Q_{95} (veh)			0.4			3.2		0.5		0.1				0.6		
Control Delay (s/veh)			18.1			62.5		13.9		8.7				11.9		
Level of Service (LOS)			C			F		B		A				B		
Approach Delay (s/veh)	18.1				41.4				0.4				1.8			
Approach LOS	C				E											

HCS7 Signalized Intersection Results Summary

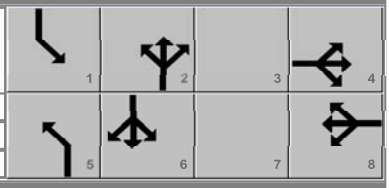
General Information				Intersection Information	
Agency	TPD, Inc.			Duration, h	0.25
Analyst	BH	Analysis Date	Jan 21, 2021	Area Type	Other
Jurisdiction	City of Deltona	Time Period	A.M. Peak Hour Projected	PHF	0.83
Urban Street	Howland Blvd	Analysis Year	2024	Analysis Period	1> 7:00
Intersection	Howland Blvd & Fish Ha…	File Name	Howland Blvd & Fish Hawk Rd (A.M.).xus		
Project Description	Osteen Cemetry Road				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	2	19	6	161	0	162	1	429	179	220	990	28

Signal Information			
Cycle, s	135.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.2	2.3	78.0	23.4	0.0	0.0	
Yellow	5.0	5.0	5.0	4.0	0.0	0.0	
Red	3.0	3.0	3.0	3.0	0.0	0.0	



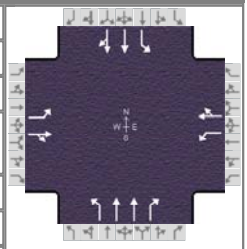
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	1.1	3.0	1.1	4.0
Phase Duration, s		30.4		30.4	8.2	86.0	18.6	96.4
Change Period, ($Y+R_c$), s		7.0		7.0	8.0	8.0	8.0	8.0
Max Allow Headway (*MAH*), s		4.1		4.1	4.0	0.0	4.0	0.0
Queue Clearance Time (g_s), s		17.6		22.0	2.0		9.6	
Green Extension Time (g_e), s		1.4		1.3	0.0	0.0	0.9	0.0
Phase Call Probability		1.00		1.00	0.04		1.00	
Max Out Probability		0.00		0.01	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	2	30		194	195		1	517	216	265	616	610
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1206	1821		1401	1610		1810	1809	1449	1810	1900	1881
Queue Service Time (g_s), s	0.3	1.9		18.2	15.4		0.0	9.5	10.0	7.6	22.4	22.4
Cycle Queue Clearance Time (g_c), s	15.6	1.9		20.0	15.4		0.0	9.5	10.0	7.6	22.4	22.4
Green Ratio (*g/C*)	0.17	0.17		0.17	0.17		0.58	0.58	0.58	0.67	0.65	0.65
Capacity (*c*), veh/h	126	317		278	280		274	2089	837	650	1243	1231
Volume-to-Capacity Ratio (*X*)	0.019	0.095		0.698	0.697		0.004	0.247	0.258	0.408	0.496	0.496
Back of Queue (*Q*), ft/ln (95 th percentile)	3.5	38.3		268.1	261.6		0.7	170.1	147.7	125.9	349.4	347.5
Back of Queue (*Q*), veh/ln (95 th percentile)	0.1	1.5		10.7	10.5		0.0	6.8	5.9	5.0	14.0	13.9
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	59.7	46.8		55.2	52.4		12.7	14.1	14.2	9.3	11.9	12.0
Incremental Delay (d_2), s/veh	0.1	0.1		3.2	3.1		0.0	0.3	0.7	0.4	1.4	1.4
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	59.8	47.0		58.4	55.6		12.7	14.3	14.9	9.7	13.4	13.4
Level of Service (LOS)	E	D		E	E		B	B	B	A	B	B
Approach Delay, s/veh / LOS	47.9	D		57.0	E		14.5	B		12.7	B	
Intersection Delay, s/veh / LOS	20.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.31	B	1.90	B	1.88	B
Bicycle LOS Score / LOS	0.54	A	1.13	A	1.09	A	1.72	B

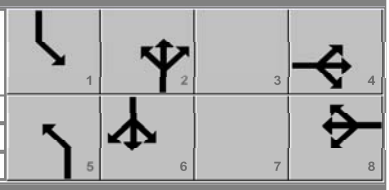
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	TPD, Inc.			Duration, h	0.25
Analyst	BH	Analysis Date	Jan 21, 2021	Area Type	Other
Jurisdiction	City of Deltona	Time Period	P.M. Peak Hour Projected	PHF	0.95
Urban Street	Howland Blvd	Analysis Year	2024	Analysis Period	1> 7:00
Intersection	Howland Blvd & Fish Ha…	File Name	Howland Blvd & Fish Hawk Rd (P.M.).xus		
Project Description	Osteen Cemetry Road				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	1	0	3	11	0	16	0	1107	40	34	570	3

Signal Information												
Cycle, s	135.0	Reference Phase	2									
Offset, s	0	Reference Point	End	Green	3.7	103.4	4.9	0.0	0.0	0.0		
Uncoordinated	No	Simult. Gap E/W	On	Yellow	5.0	5.0	4.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Red	3.0	3.0	3.0	0.0	0.0	0.0		



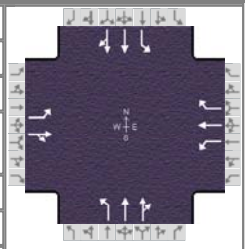
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	1.1	3.0	1.1	4.0
Phase Duration, s		11.9		11.9	0.0	111.4	11.7	123.1
Change Period, (*Y+R c*), s		7.0		7.0	8.0	8.0	8.0	8.0
Max Allow Headway (*MAH*), s		4.1		4.1	0.0	0.0	4.0	0.0
Queue Clearance Time (*g s*), s		3.5		3.4			2.5	
Green Extension Time (*g e*), s		0.1		0.1	0.0	0.0	0.1	0.0
Phase Call Probability		0.71		0.71			0.74	
Max Out Probability		0.00		0.00			0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	1	3		12	17		0	1165	42	36	302	301
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1418	1610		1436	1610		1810	1809	1610	1810	1900	1896
Queue Service Time (*g s*), s	0.1	0.3		1.1	1.4		0.0	15.0	0.8	0.5	3.8	3.8
Cycle Queue Clearance Time (*g c*), s	1.5	0.3		1.3	1.4		0.0	15.0	0.8	0.5	3.8	3.8
Green Ratio (*g/C*)	0.04	0.04		0.04	0.04		0.71	0.77	0.77	0.81	0.85	0.85
Capacity (*c*), veh/h	91	59		103	59		689	2770	1233	423	1619	1616
Volume-to-Capacity Ratio (*X*)	0.012	0.054		0.112	0.286		0.000	0.421	0.034	0.085	0.186	0.186
Back of Queue (*Q*), ft/ln (95 th percentile)	1.6	4.9		17.7	26.9		0	205.2	11	6.4	36.8	37.2
Back of Queue (*Q*), veh/ln (95 th percentile)	0.1	0.2		0.7	1.1		0.0	8.2	0.4	0.3	1.5	1.5
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (*d 1*), s/veh	64.0	62.8		63.4	63.3		0.0	5.5	3.8	3.7	1.8	1.8
Incremental Delay (*d 2*), s/veh	0.1	0.4		0.5	2.6		0.0	0.5	0.1	0.1	0.3	0.3
Initial Queue Delay (*d 3*), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	64.1	63.1		63.9	65.9		0.0	5.9	3.9	3.8	2.0	2.0
Level of Service (LOS)	E	E		E	E			A	A	A	A	A
Approach Delay, s/veh / LOS	63.4	E		65.1	E		5.9	A		2.1	A	
Intersection Delay, s/veh / LOS	5.6						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.48	B	2.32	B	1.85	B	1.81	B
Bicycle LOS Score / LOS	0.49	A	0.53	A	1.48	A	1.01	A

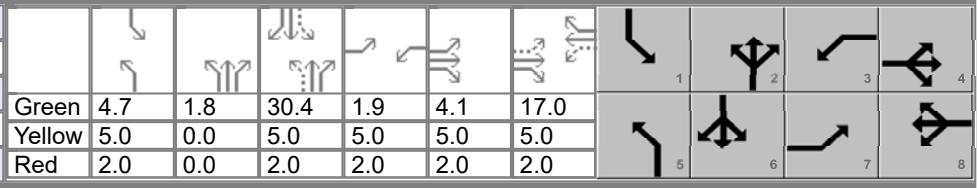
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	TPD, Inc.			Duration, h	0.25
Analyst	BH	Analysis Date	Jan 21, 2021	Area Type	Other
Jurisdiction	City of Deltona	Time Period	A.M. Peak Hour Projected	PHF	0.92
Urban Street	Howland Blvd	Analysis Year	2024	Analysis Period	1> 7:00
Intersection	Howland Blvd & Ft Smit…	File Name	Howland Blvd & Ft Smith Blvd (A.M.).xus		
Project Description	Osteen Cemetery Road				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	239	128	275	17	64	81	116	287	3	79	723	165

Signal Information			
Cycle, s	94.9	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	4.7	1.8	30.4	1.9	4.1	17.0			
Yellow	5.0	0.0	5.0	5.0	5.0	5.0			
Red	2.0	0.0	2.0	2.0	2.0	2.0			

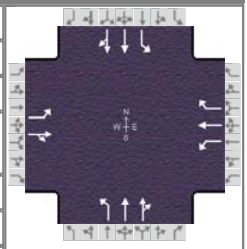
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	1.1	4.0	1.1	3.0	1.1	4.0	1.1	4.0
Phase Duration, s	20.1	35.1	8.9	24.0	13.4	39.2	11.7	37.4
Change Period, ($Y+R_c$), s	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Max Allow Headway (*MAH*), s	4.0	4.1	4.0	4.1	4.0	4.2	4.0	4.2
Queue Clearance Time (g_s), s	12.5	25.3	2.8	6.5	6.4	8.0	5.0	25.0
Green Extension Time (g_e), s	0.5	1.7	0.0	2.3	0.3	6.0	0.2	5.4
Phase Call Probability	1.00	1.00	0.39	1.00	0.96	1.00	0.90	1.00
Max Out Probability	0.12	0.16	0.00	0.00	0.00	0.01	0.00	0.12

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	260	438		18	70	88	126	166	149	86	499	466
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1692		1810	1900	1610	1810	1900	1703	1810	1900	1777
Queue Service Time (g_s), s	10.5	23.3		0.8	3.0	4.5	4.4	6.0	6.0	3.0	23.0	23.0
Cycle Queue Clearance Time (g_c), s	10.5	23.3		0.8	3.0	4.5	4.4	6.0	6.0	3.0	23.0	23.0
Green Ratio (*g/C*)	0.34	0.30		0.20	0.18	0.18	0.39	0.34	0.34	0.37	0.32	0.32
Capacity (*c*), veh/h	525	502		141	340	288	245	645	578	441	609	569
Volume-to-Capacity Ratio (*X*)	0.495	0.873		0.131	0.204	0.305	0.514	0.258	0.258	0.195	0.819	0.819
Back of Queue (*Q*), ft/ln (95 th percentile)	192.7	392.2		15.4	59.9	77.7	81.5	115.7	104.2	54	391	371.2
Back of Queue (*Q*), veh/ln (95 th percentile)	7.7	15.7		0.6	2.4	3.1	3.3	4.6	4.2	2.2	15.6	14.8
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	24.5	31.7		31.8	33.2	33.8	22.6	22.7	22.7	20.0	29.7	29.7
Incremental Delay (d_2), s/veh	0.7	11.1		0.4	0.3	0.6	1.7	0.3	0.3	0.2	3.8	4.1
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	25.2	42.8		32.2	33.5	34.4	24.3	23.0	23.0	20.2	33.6	33.8
Level of Service (LOS)	C	D		C	C	C	C	C	C	C	C	C
Approach Delay, s/veh / LOS	36.2	D		33.8	C		23.4	C		32.6	C	
Intersection Delay, s/veh / LOS	32.0						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	2.30	B	2.11	B	1.92	B
Bicycle LOS Score / LOS	1.64	B	0.78	A	0.85	A	1.35	A

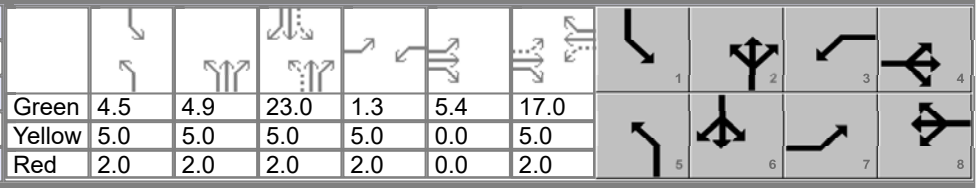
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	TPD, Inc.			Duration, h	0.25
Analyst	BH	Analysis Date	Jan 21, 2021	Area Type	Other
Jurisdiction	City of Deltona	Time Period	P.M. Peak Hour Projected	PHF	0.93
Urban Street	Howland Blvd	Analysis Year	2024	Analysis Period	1> 7:00
Intersection	Howland Blvd & Ft Smit…	File Name	Howland Blvd & Ft Smith Blvd (P.M.).xus		
Project Description	Osteen Cemetery Road				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	111	143	20	11	217	136	358	914	5	75	403	97

Signal Information			
Cycle, s	91.1	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	4.5	4.9	23.0	1.3	5.4	17.0
Yellow	5.0	5.0	5.0	5.0	0.0	5.0
Red	2.0	2.0	2.0	2.0	0.0	2.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	1.1	4.0	1.1	3.0	1.1	4.0	1.1	4.0
Phase Duration, s	13.7	29.4	8.3	24.0	23.4	41.9	11.5	30.0
Change Period, ($Y+R_c$), s	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Max Allow Headway (*MAH*), s	4.0	4.0	4.0	4.0	4.0	4.6	4.0	4.6
Queue Clearance Time (g_s), s	6.7	9.2	2.5	12.4	15.4	23.2	5.0	13.8
Green Extension Time (g_e), s	0.2	1.9	0.0	1.9	1.0	8.2	0.2	9.2
Phase Call Probability	0.95	1.00	0.26	1.00	1.00	1.00	0.87	1.00
Max Out Probability	0.00	0.00	0.00	0.00	0.07	0.26	0.00	0.12

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	119	175		12	233	146	385	521	468	81	276	261
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1859		1810	1900	1610	1810	1900	1706	1810	1900	1773
Queue Service Time (g_s), s	4.7	7.2		0.5	10.4	7.4	13.4	21.2	21.2	3.0	11.6	11.8
Cycle Queue Clearance Time (g_c), s	4.7	7.2		0.5	10.4	7.4	13.4	21.2	21.2	3.0	11.6	11.8
Green Ratio (*g/C*)	0.26	0.25		0.20	0.19	0.19	0.45	0.38	0.38	0.30	0.25	0.25
Capacity (*c*), veh/h	296	456		283	355	300	514	729	655	243	480	448
Volume-to-Capacity Ratio (*X*)	0.404	0.384		0.042	0.658	0.487	0.749	0.714	0.714	0.332	0.575	0.583
Back of Queue (*Q*), ft/ln (95 th percentile)	89.8	138.2		9.1	207.4	127.6	231.5	350.8	322.7	55.8	220.2	211.4
Back of Queue (*Q*), veh/ln (95 th percentile)	3.6	5.5		0.4	8.3	5.1	9.3	14.0	12.9	2.2	8.8	8.5
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	27.2	28.6		29.4	34.4	33.2	19.0	23.8	23.8	24.0	29.8	29.8
Incremental Delay (d_2), s/veh	0.9	0.5		0.1	2.1	1.2	3.2	2.3	2.6	0.8	1.1	1.2
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	28.0	29.2		29.4	36.4	34.4	22.2	26.2	26.4	24.8	30.9	31.0
Level of Service (LOS)	C	C		C	D	C	C	C	C	C	C	C
Approach Delay, s/veh / LOS	28.7	C		35.5	D		25.1	C		30.1	C	
Intersection Delay, s/veh / LOS	28.2						C					

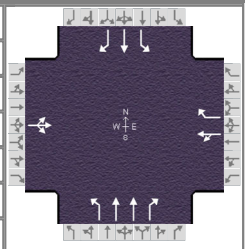
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.29	B	2.29	B	2.10	B	1.93	B
Bicycle LOS Score / LOS	0.97	A	1.13	A	1.62	B	1.00	A

APPENDIX H

Revised Projected Conditions Analysis/Howland Boulevard/Fernanda Drive

HCS7 Signalized Intersection Results Summary

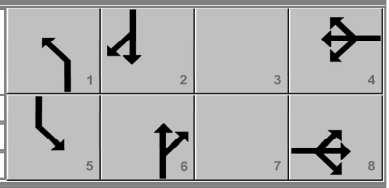
General Information				Intersection Information	
Agency	Volusia County			Duration, h	0.25
Analyst	TPD/jd	Analysis Date	May 17, 2021	Area Type	Other
Jurisdiction	Volusia County	Time Period	AM Peak Hour	PHF	0.98
Urban Street	Howland Blvd	Analysis Year	2021	Analysis Period	1> 7:00
Intersection	Howland Blvd & Fernan…	File Name	Howland Blvd & Fernanda Dr AM Peak.xus		
Project Description	Projected AM Peak Hour				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	8	1	67	162	0	98	32	379	83	51	835	9

Signal Information			
Cycle, s	105.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	3.7	1.0	54.2	11.8	6.3	0.0						
Yellow	4.5	0.0	4.5	4.5	4.5	0.0						
Red	2.5	0.0	2.5	2.5	2.5	0.0						



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		12.0		11.0	2.0	3.0	2.0	3.0
Phase Duration, s		13.3		18.8	10.7	61.2	11.7	62.2
Change Period, (*Y+R c*), s		7.0		7.0	7.0	7.0	7.0	7.0
Max Allow Headway (*MAH*), s		3.3		3.2	3.1	0.0	3.1	0.0
Queue Clearance Time (*g s*), s		6.9		11.4	3.9		5.0	
Green Extension Time (*g e*), s		0.1		0.4	0.0	0.0	0.1	0.0
Phase Call Probability		0.90		1.00	0.61		0.78	
Max Out Probability		0.00		0.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (*v*), veh/h		78			165	100	33	387	85	52	852	9
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1632			1810	1610	1810	1809	1610	1810	1900	1610
Queue Service Time (*g s*), s		4.9			9.4	6.2	1.9	6.1	2.8	3.0	40.5	0.3
Cycle Queue Clearance Time (*g c*), s		4.9			9.4	6.2	1.9	6.1	2.8	3.0	40.5	0.3
Green Ratio (*g/C*)		0.06			0.11	0.11	0.04	0.52	0.52	0.04	0.53	0.53
Capacity (*c*), veh/h		98			203	181	64	1868	831	81	999	847
Volume-to-Capacity Ratio (*X*)		0.789			0.815	0.554	0.514	0.207	0.102	0.644	0.853	0.011
Back of Queue (*Q*), ft/ln (95 th percentile)		95.4			193.1	111.5	39	107.8	45.8	62.4	646.4	4.6
Back of Queue (*Q*), veh/ln (95 th percentile)		3.8			7.7	4.5	1.6	4.3	1.8	2.5	25.9	0.2
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (*d 1*), s/veh		48.7			45.5	44.1	49.8	13.7	13.0	49.3	21.4	11.9
Incremental Delay (*d 2*), s/veh		5.2			3.0	1.0	2.4	0.3	0.2	3.2	9.2	0.0
Initial Queue Delay (*d 3*), s/veh		0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh		53.9			48.6	45.1	52.2	14.0	13.2	52.5	30.6	11.9
Level of Service (LOS)		D			D	D	D	B	B	D	C	B
Approach Delay, s/veh / LOS	53.9	D		47.3	D		16.3	B		31.6	C	
Intersection Delay, s/veh / LOS	30.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.32	B	2.31	B	1.90	B	1.67	B
Bicycle LOS Score / LOS	0.62	A	0.93	A	0.90	A	1.99	B