

TRAFFIC IMPACT ANALYSIS

LAKESIDE AT SUNRISE PUD
GROVELAND, FLORIDA



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June 2016

TPD № 4779

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: Lakeside at Sunrise PUD

LOCATION: Groveland, Florida

CLIENT: Hanover Land Company

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.

P.E. No: 20400

DATE: June 7, 2016

SIGNATURE: _____



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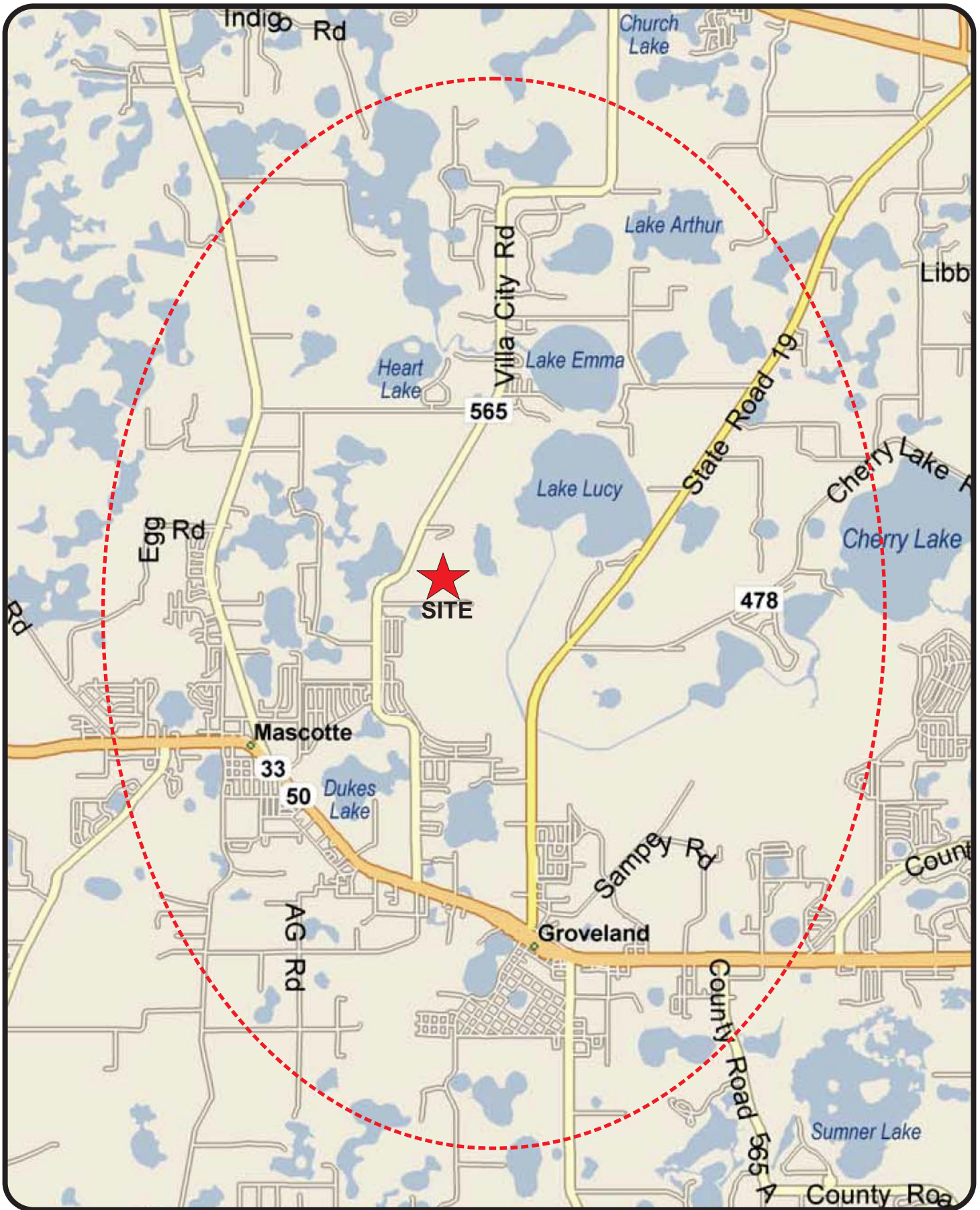
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INTRODUCTION

This analysis was undertaken in order to assess the traffic impact of a proposed residential subdivision in the City of Groveland, Florida. Located on Villa City Road (CR 565) just north of Sunrise Ridge Boulevard, the proposed development will consist of 339 single family units. **Figure 1** depicts the site location and its 4.3-mile impact area. Site access will be served by a full access connection from Villa City Road.

Data utilized in this study consisted of a site plan provided by Project Engineers, traffic volume data and Level of Service standards obtained from the Lake County *Transportation Management System* (TMS) segment Report – 2014/15 Level of Service, and intersection turning movement counts by Traffic Planning and Design, Inc. staff.





Lakeside at Sunrise
 Project № 4779
 Figure 1

Site Location



EXISTING CONDITIONS ANALYSIS

The existing conditions analysis includes classified roadways within an impact area of 4.3 miles as required by Lake-Sumter MPO Traffic Impact Study (TIS) guidelines. This represents one-half of the total trip length established by Lake County in their Transportation Impact Fee Study Update and adopted by the Lake-Sumter MPO for single family residential developments. Additionally, the following intersections were included in the analysis:

- Villa City Road and SR 50
- SR 50 and Bluff Lake Road
- SR 50 and SR 19
- Villa City Road and Site Entrance

The analysis of the study roadways and intersections was accomplished for the P.M. peak hour traffic conditions.

Roadway Segment Analysis

The roadways were analyzed by comparing the existing traffic volume of each roadway segment with the corresponding adopted LOS/capacity value for the P.M. peak hour. The existing traffic volumes and the adopted capacities for the roadway segment were obtained from the County's TMS database. The existing P.M. peak hour roadway capacity analysis is summarized in **Table 1**. Relevant information on existing traffic volumes and roadway capacities is included in the County's TMS sheets in **Appendix A**.

As shown, the existing conditions analysis of P.M. peak hour traffic conditions reveals that the study roadway segments currently operate satisfactorily at or above their adopted Level of Service capacities.



**Table 1
Existing P.M. Peak Hour Roadway Capacity Analysis**

Roadway Segment	# of Lns	F/Class	LOS		Pk Hr/Pk Dir		V/C Ratio	LOS
			Std	Pk Hr Capacity	Direction	Volume		
SR 50								
CR 565/Bay Lake Rd to CR 33	2	Arterial 1	D	1,190	WB	443	0.37	C
CR 33 to Groveland Farms Rd	4	Arterial 1	D	2,000	WB	807	0.40	C
Groveland Farms Rd to 2-W pair	4	Arterial 1	D	2,000	WB	807	0.40	C
SR 50 one-way pair to SR 19	4	Arterial 1 Directional	D	2,400	EB	759	0.32	C
SR 19 to SR 50 one-way pair	4	Arterial 1 Directional	D	2,400	WB	1,009	0.42	C
SR 19 to SR 33 South	4	Arterial 1 Directional	D	2,400	EB	686	0.29	C
SR 33 South to SR 19	4	Arterial 1 Directional	D	2,400	WB	897	0.37	C
SR 33 South to CR 565 North	4	Arterial 1	D	2,000	WB	971	0.49	C
SR 19								
CR 478 to Lake Catherine Rd	2	Arterial 1	C	850	NB	475	0.56	C
Lake Catherine Rd to SR 50/33	2	Arterial 1	C	840	NB	358	0.43	B
SR 33								
SR 50/33 to Anderson Rd	2	Arterial 1	D	880	NB	299	0.34	C
Anderson Rd to CR 565B	2	Arterial 1	C	430	NB	218	0.51	B
Mascotte Empire Road								
SR 50 to Empire Church Rd	2	Collector	C	603	SB	56	0.09	C
CR 33								
Smith Rd to SR 50	2	Major Collector	D	1,190	NB	231	0.19	B
CR 565A								
SR 50 to CR 565B	2	Minor Collector	D	675	SB	185	0.27	C
Villa City Road (CR 565)								
US 27 to Lake Emma Rd	2	Minor Collector	D	612	SB	79	0.13	C
Lake Emma Rd to Kjellstrom Ln	2	Minor Collector	D	612	NB	33	0.05	C
Kjellstrom Ln to SR 50	2	Minor Collector	D	675	SB	202	0.30	C



Intersection Analysis

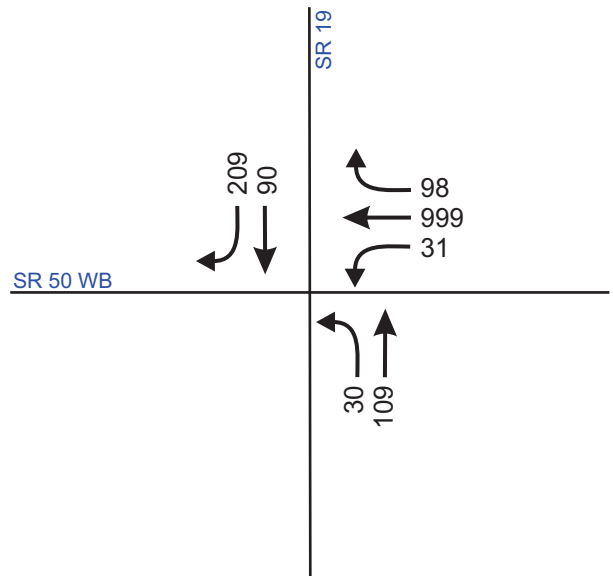
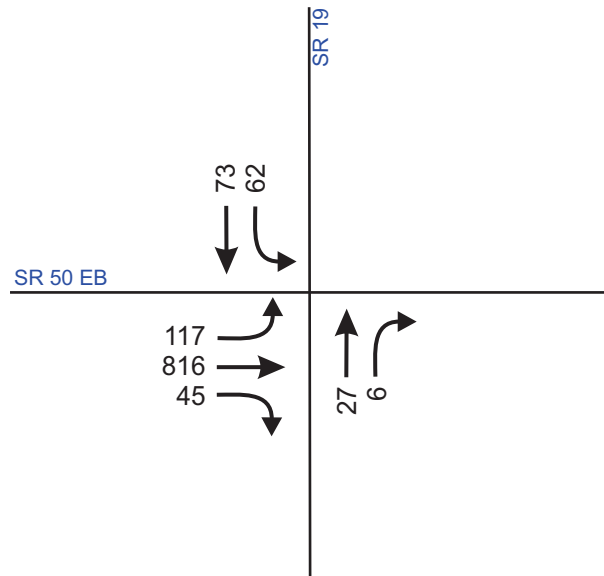
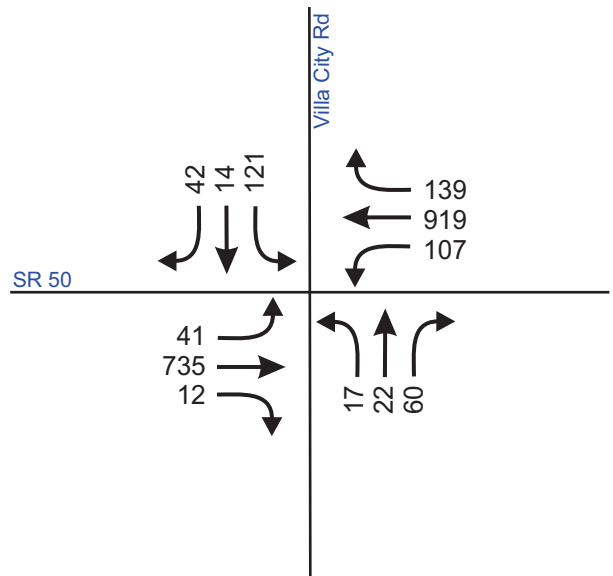
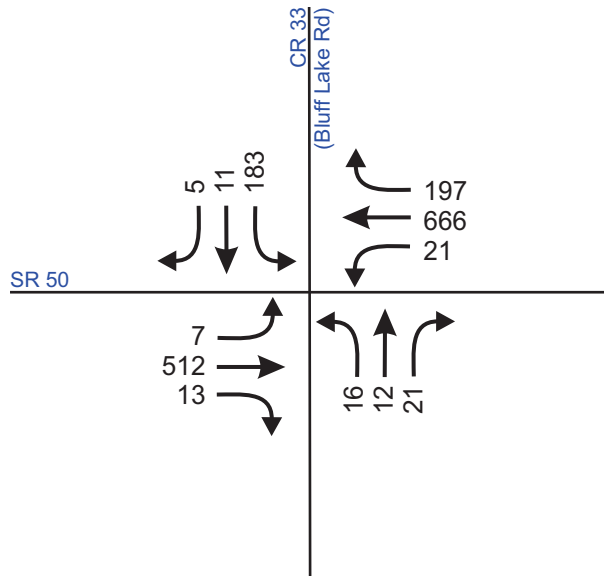
The study intersections were analyzed in accordance with the procedures of the *2010 Highway Capacity Manual (HCM)* and Highway Capacity Software HCS. In the analysis, existing P.M. peak hour traffic volumes, intersection geometry and traffic controls were used. The intersection volumes determined from 4 – 6 P.M. turning movement counts were seasonally adjusted and are depicted in **Figure 2**. Detailed traffic count and traffic control information is included in **Appendix B**.

The results of the intersection capacity analysis are summarized in **Table 2**. This table shows that the study intersections are currently operating at satisfactory Levels of Service. The HCS capacity analysis worksheets are included in **Appendix C**.

Table 2
Existing Intersection Capacity Analysis

Intersection	Control	EB		WB		NB		SB		Intersection	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Villa City Rd & SR 50	Signal	29.2	C	27.6	C	51.2	D	45.1	D	30.6	C
SR 50 EB & SR 19	Signal	16.4	B	-----	-----	27.8	C	27.2	C	18.0	B
SR 50 WB & SR 19	Signal	-----	-----	32.6	C	46.6	D	45.0	D	36.2	D
SR 50 & Bluff Lake Rd (CR 50)	Signal	23.3	C	18.5	B	32.1	C	33.9	C	22.3	C





PROPOSED DEVELOPMENT AND TRIP GENERATION

The proposed development is a 339-unit residential subdivision in the City of Groveland, Florida. A proposed site plan and its access configuration is shown in **Figure 3**. To determine the impact of this development on the area roadways, an analysis of its trip generation characteristics was made. This included the determination of the number of trips generated by the site and their distribution onto the surrounding roadways.

Trip Generation

The trip generation of the proposed development was calculated using rates obtained from the 9th Edition of the *Institute of Transportation Engineers (ITE) Trip Generation Manual*. This calculation is summarized in **Table 3**. The trip generation sheets are included in **Appendix D**.

Table 3
Trip Generation Summary

Land Use	LU Code	Quantity	Daily		P.M. Peak Hour			
			Rate*	Trips	Rate*	Enter	Exit	Total
SF Residential	210	339 DU	9.525	3,229	0.93	198	117	315

* Based upon ITE Equations.

The proposed development is estimated to generate 3,299 daily trips and 315 P.M. peak hour trips, 198 entering and 117 exiting.

Trip Distribution / Trip Assignment

The distribution of the project trips within the study area was determined with the use of the Central Florida Regional Planning Model (CFRPM). Prior to use this model, a minor modification was made to add a traffic analysis zone (TAZ) representing the proposed development. Subsequently the model was run with a select zone analysis to determine a distribution pattern as shown in **Figure 4**. The model distribution plot is included in **Appendix E**. Utilizing this distribution pattern, the development's daily and P.M. peak hour trips were assigned to the area roadways also shown in Figure 4.



TRACT TABLE

TRACT LAND USE	EASEMENT	OWNERSHIP	PHASE 1	PHASE 2	TOTAL
A COMMUNITY PARK		CITY OF GROVELAND	2.00 AC.	2.00 AC.	4.00 AC.
B PARK LAND		HOA	1.81 AC.	1.81 AC.	3.62 AC.
C LANDSCAPE		HOA	0.37 AC.	0.37 AC.	0.74 AC.
D PARK LAND		HOA	1.10 AC.	1.10 AC.	2.20 AC.
E RETENTION	3.50 AC.	HOA	4.20 AC.	4.20 AC.	8.40 AC.
F RETENTION	1.88 AC.	HOA	2.10 AC.	2.10 AC.	4.20 AC.
G RETENTION	1.90 AC.	HOA	2.30 AC.	2.30 AC.	4.60 AC.
H PARK LAND		HOA	0.42 AC.	0.42 AC.	0.84 AC.
I PARK LAND		HOA	0.48 AC.	0.48 AC.	0.96 AC.
J PARK FACILITY		HOA	0.58 AC.	0.58 AC.	1.16 AC.
K RETENTION	0.96 AC.	HOA	1.46 AC.	1.46 AC.	2.92 AC.
L LOT STATION		CITY OF GROVELAND	0.04 AC.	0.04 AC.	0.08 AC.
M PARK LAND/RETENTION	0.88 AC.	HOA	1.42 AC.	1.42 AC.	2.90 AC.

TRACT TABLE

TRACT LAND USE	EASEMENT	OWNERSHIP	PHASE 1	PHASE 2	TOTAL
N RETENTION	2.88 AC.	HOA	4.27 AC.	4.27 AC.	8.54 AC.
O PARK FACILITY		HOA	0.54 AC.	0.54 AC.	1.08 AC.
P LOT STATION		CITY OF GROVELAND	0.09 AC.	0.09 AC.	0.18 AC.
Q RETENTION	1.64 AC.	HOA	2.50 AC.	2.50 AC.	4.14 AC.
R RETENTION	1.78 AC.	HOA	2.54 AC.	2.54 AC.	4.32 AC.
S RETENTION	1.37 AC.	HOA	3.07 AC.	3.07 AC.	4.44 AC.
T CONSERVATION		HOA	48.95 AC.	135.00 AC.	183.95 AC.
U CONSERVATION		HOA	11.00 AC.	11.00 AC.	22.00 AC.
V RIGHT-OF-WAY DEDICATION		CITY OF GROVELAND	0.81 AC.	0.81 AC.	1.62 AC.
W RIGHT-OF-WAY DEDICATION		CITY OF GROVELAND	0.81 AC.	0.81 AC.	1.62 AC.
X DRAINAGE SWALE	0.53 AC.	HOA	0.71 AC.	0.71 AC.	1.42 AC.
Y DRAINAGE SWALE	0.35 AC.	HOA	0.54 AC.	0.54 AC.	1.08 AC.
Z NIGHBORHOOD PARK		CITY OF GROVELAND	2.00 AC.	2.00 AC.	4.00 AC.

SITE DATA

1. PARCEL ID #: 01-22-24-0001-0000-0300
2. EXISTING ZONING: PUD
3. TOTAL SITE AREA: 183.30 AC.
UPLAND AREA: 182.30 AC.
4. LAND USE DESIGNATION: NORTH RESIDENTIAL NIGHBORHOOD DEVELOPMENT
5. TOTAL NUMBER OF UNITS = 448 (PHASE 1 = 109 UNITS, PHASE 2 = 339 UNITS)
6. MINIMUM LOT SIZE REQUIRED: NO MINIMUM LOT SIZE REQUIRED.
MAXIMUM LOT COVERAGE: 17%
7. MAXIMUM ALLOWABLE BUILDING HEIGHT: 20'
-40 RESIDENTIAL STRUCTURES SHALL EXCEED 2-1/2 STOREYS.
8. PER THE FIRM MAP PANEL NO. 1206SC05052E, DATED DECEMBER 16, 2012, THE SITE IS LOCATED IN ZONE V. AREAS DETERMINED TO BE OUTSIDE THE 100 YEAR FLOOD FLOODPLAIN AND ZONE A. AREAS WITHIN THE 100 YEAR FLOOD HAZARD AREA.
9. PROJECTED SCHOOL AGE POPULATION: PHASE 1 = 3.0 X 109 LOTS X 0.20 = 66
PHASE 2 = 3.0 X 339 LOTS X 0.20 = 262
TOTAL = 282
10. PROJECTED AVERAGE DAILY TRAFFIC: PHASE 1 = 8.8 X 109 LOTS = 1059
PHASE 2 = 8.8 X 339 LOTS = 3323
TOTAL = 4382
11. TREK SURVEY: TREES, 24" DBH OF GREATER OBSERVED ON SITE ARE SHOWN ON THE TOPO SURVEY. TREES WITHIN PRESERVED WETLAND WILL NOT BE REMOVED.
12. RECREATION FACILITIES: AREAS SET ASIDE FOR ACTIVE/PASSIVE RECREATIONAL USE.
13. FIRMETER GRADE CHANGES: CHANGES ARE ANTICIPATED FOR THIS PROJECT. PROPOSED FLOOR ELEVATIONS WILL BE HIGHER THAN EXISTING FLOOR ELEVATIONS. GRADE, ACTUAL ELEVATIONS AND TRANSFER GRADING DETAILS WILL BE PROVIDED WITH THE CONSTRUCTION DRAWINGS FOR THE SUBDIVISION.
14. A CONSERVATION EASEMENT OVER ALL PRESERVED ANTIQUARIAN WETLANDS AREA IS DEDICATED TO THE CITY OF GROVELAND AND ST. JOHN'S RIVER WATER MANAGEMENT DISTRICT.
15. THE PROJECT SHALL BE CONSTRUCTED IN MULTIPLE PHASES.
16. POTABLE WATER TO BE PROVIDED BY CITY OF GROVELAND.
17. SANITARY SEWER WILL BE PROVIDED BY THE CITY OF GROVELAND.
18. THE CITY OF GROVELAND SHALL OWN AND MAINTAIN THE ROADWAYS.
19. WETLAND IMPACTS WILL BE MITIGATED AT FINAL ENGINEERING IN ACCORDANCE WITH S.U.R.F.W.M.D. CRITERIA.

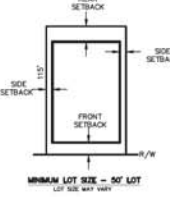
PHASE 1 AREA = 99.43 AC. (AS PLATTED)
PHASE 2 AREA = 240.87 AC.
TOTAL PROJECT AREA = 340.30 AC

REQUEST FOR MAINTENANCE

- 1) 0.017 5' SIDEWALK ON THE NORTH SIDE OF THE ROADWAY CROSSING TO THE "ISLAND" FOR THE PURPOSE OF MINIMIZING WETLAND IMPACTS.
- 2) 0.041 5' SIDEWALK ON THE WEST SIDE OF THE ROADWAY, NORTH OF LOT 311 FOR THE PURPOSE OF MAXIMIZING PRESERVED UPLAND BUFFER AREA.

LOT SETBACKS

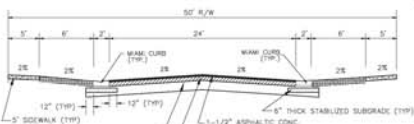
- FRONT 20 FT
- 15 FT IF DWELLING HAS COVERED FRONT PORCH
- REAR 10 FT
- 5 FT FOR POOL AND POOL DECK
- SIDE 5 FT
- 10 FT FOR CORNER LOTS STREET SIDE



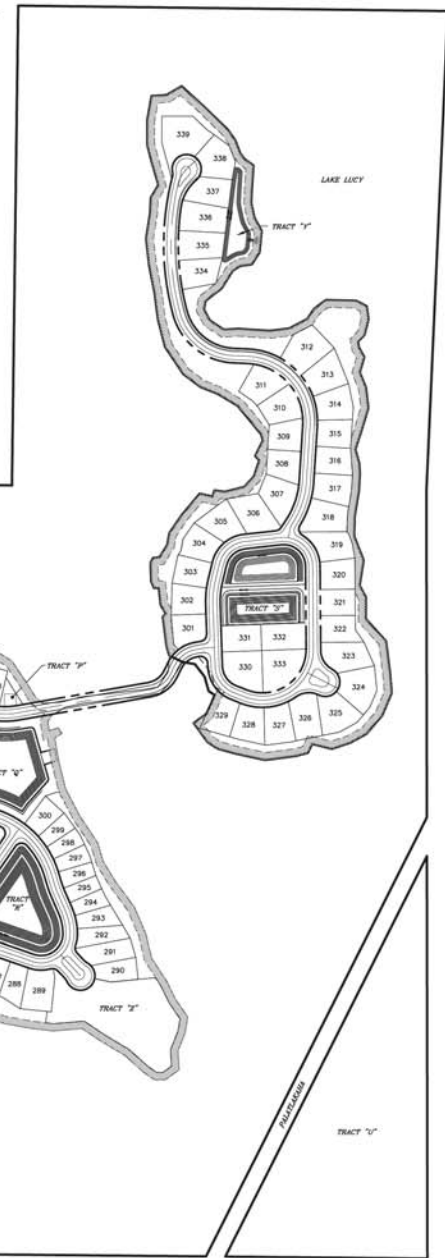
HATCH LEGEND

- PREVIOUSLY APPROVED AND PLATTED PER LAKESIDE PHASE 1 PLANS
- MINIMUM 25' AVERAGE 50' WETLAND BUFFER

10' R.O.W. DEDICATION TRACT 7A
5' SIDEWALK
10' R.O.W. DEDICATION TRACT 7B
10' R.O.W. DEDICATION TRACT 7C



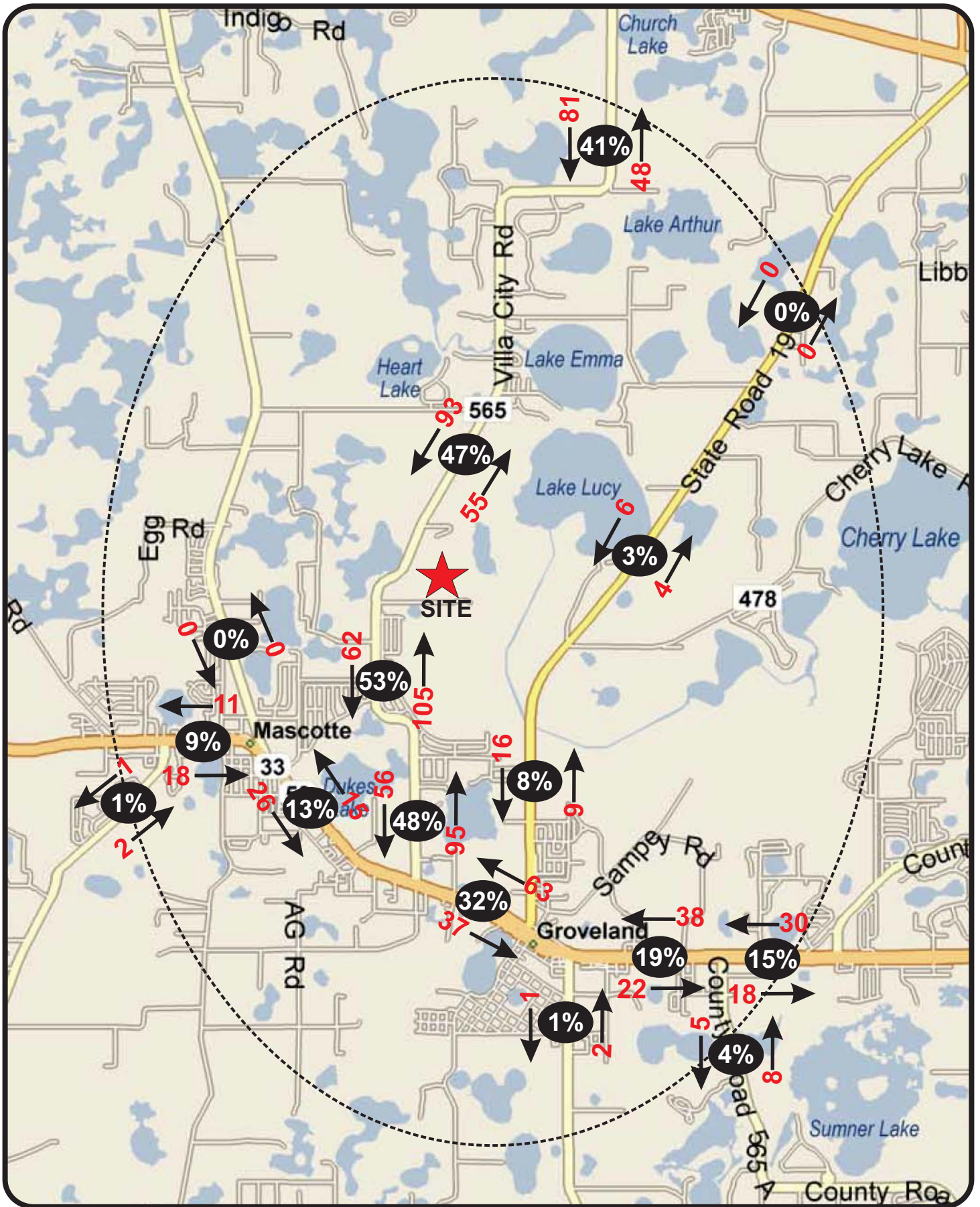
NOTE:
ONE-WAY STREET WILL HAVE A RIGHT-OF-WAY WIDTH OF 40' AND A PAVEMENT WIDTH OF 14'



The Reserve at Lake Ridge
Project No 4774
Figure 3

Site Plan





Lakeside at Sunrise
Project No 4779
Figure 4

**Project Distribution/
Assignment**



PROJECTED TRAFFIC CONDITIONS

Projected traffic conditions were assessed in order to evaluate the impact of the proposed development within its area of influence. The projected conditions were estimated by combining the P.M. peak hour project trips of each road segment with background traffic volumes. Background traffic volumes were determined by adding reserved trips obtained from the County's TMC for each roadway segment to the existing traffic volumes of the segments.

Roadway Segment Analysis

Table 4 is an analysis of the projected traffic conditions. This table lists the roadway segments along with their number of lanes, functional classification, existing/projected traffic volumes, capacities and resultant Levels of Service. The table reveals that the study roadway segments are projected to operate satisfactorily within their adopted LOS standards.

Intersection Analysis

The projected traffic volumes at the study intersections are depicted in **Figure 5**. The figure shows the existing P.M. peak hour volumes combined with reserved trips and project trips. The intersections were analyzed similar to the existing conditions analysis utilizing HCS software in accordance with the *2010 Highway Capacity Manual* (HCM). The results of this analysis as summarized in **Table 5** indicate satisfactory traffic operating conditions at the intersections under projected conditions. The HCS capacity analysis worksheets are included in **Appendix F**.

Turn Lane Analysis

The project entrance has been constructed with the Phase 1 development of the site. This includes a four-lane divided roadway for the entrance road and separate right and left turn lanes on Villa City Road (CR 565). In the analysis of the project entrance, Phase 1 trips were included in the project trips.



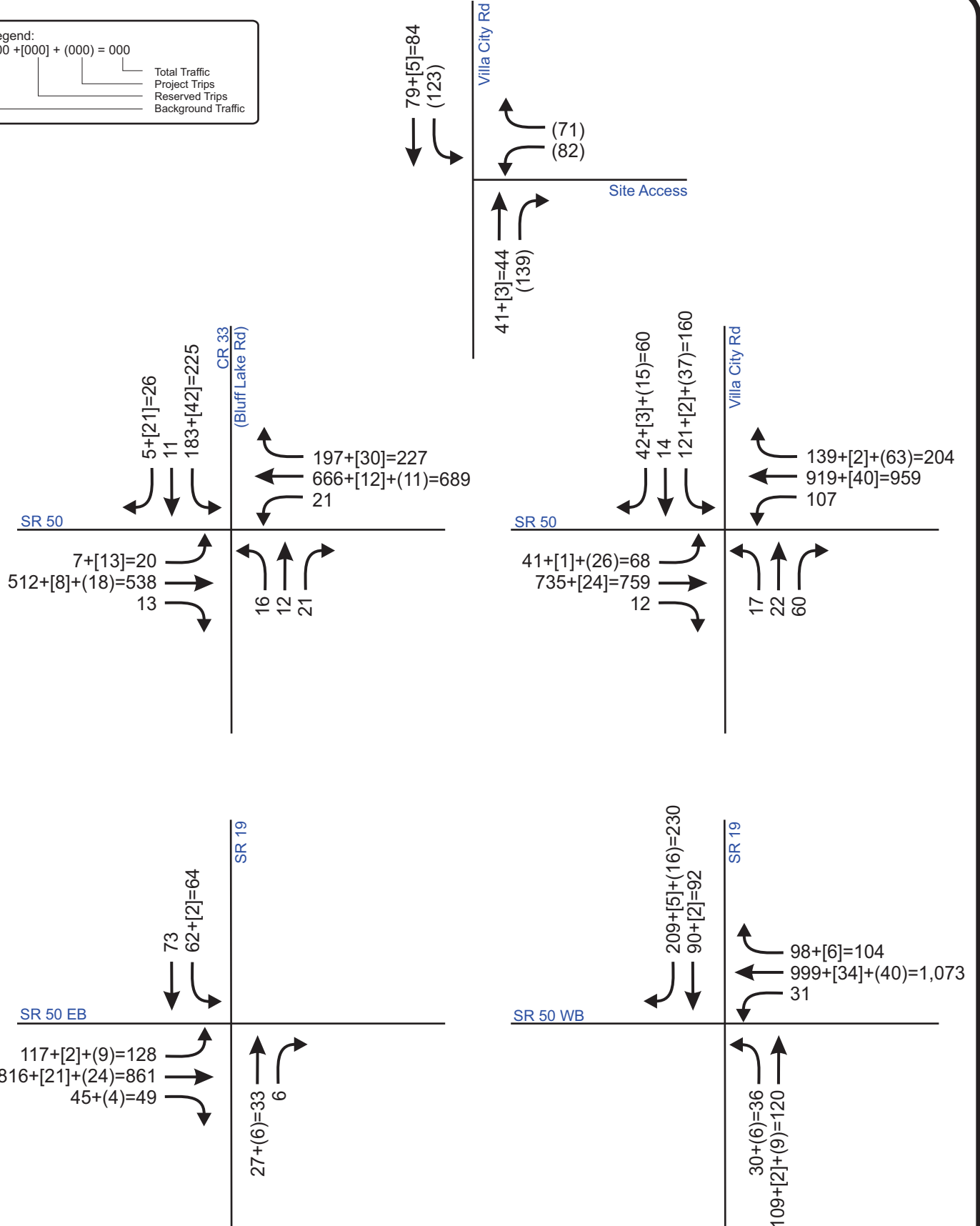
**Table 4
Projected P.M. Peak Hour Roadway Analysis**

Roadway Segment	# of Lns	F/Class	LOS		Peak Hour/Peak Direction					V/C Ratio	LOS
			Standard	Capacity	Direct.	Exist.	Reserved	Proj.*	Total		
SR 50											
CR 565/Bay Lake Rd to CR 33	2	Arterial 1	D	1,190	WB	443	12	11	466	0.39	C
CR 33 to Groveland Farms Rd	4	Arterial 1	D	2,000	WB	807	42	15	864	0.43	C
Groveland Farms Rd to 2-W pair	4	Arterial 1	D	2,000	WB	807	42	63	912	0.46	C
SR 50 one-way pair to SR 19	4	Arterial 1 Directional	D	2,400	EB	759	23	37	819	0.34	C
SR 19 to SR 50 one-way pair	4	Arterial 1 Directional	D	2,400	WB	1,009	42	63	1,114	0.46	C
SR 19 to SR 33 South	4	Arterial 1 Directional	D	2,400	EB	686	21	22	729	0.30	C
SR 33 South to SR 19	4	Arterial 1 Directional	D	2,400	WB	897	40	38	975	0.41	C
SR 33 South to CR 565 North	4	Arterial 1	D	2,000	WB	971	232	38	1,241	0.62	C
SR 19											
CR 478 to Lake Catherine Rd	2	Arterial 1	C	850	NB	475	8	4	487	0.52	C
Lake Catherine Rd to SR 50/33	2	Arterial 1	C	840	SB	358	7	9	374	0.45	C
SR 33											
SR 50/33 to Anderson Rd	2	Arterial 1	D	880	NB	299	3	2	304	0.35	C
Anderson Rd to CR 565B	2	Arterial 1	C	430	NB	218	3	2	225	0.52	B
Mascotte Empire Road											
SR 50 to Empire Church Rd	2	Collector	C	603	SB	40	0	1	41	0.07	C
CR 33											
Smith Rd to SR 50	2	Major Collector	D	1,190	SB	202	63	0	265	0.23	B
CR 565A											
SR 50 to CR 565B	2	Minor Collector	D	675	SB	185	126	5	316	0.47	C
Villa City Road (CR 565)											
US 27 to Lake Emma Rd	2	Minor Collector	D	612	SB	79	5	81	165	0.27	C
Lake Emma Rd to Kjellstrom Ln	2	Minor Collector	D	612	NB	33	0	105	138	0.23	C
Kjellstrom Ln to SR 50	2	Minor Collector	D	675	SB	202	5	95	302	0.48	C

* Highest trips on the segment



Legend:
 000 + [000] + (000) = 000
 Total Traffic
 Project Trips
 Reserved Trips
 Background Traffic



**Table 5
Projected Intersection Capacity Analysis**

Intersection	Control	EB		WB		NB		SB		Intersection	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Villa City Rd & SR 50	Signal	31.4	C	31.2	C	56.6	E	55.2	E	34.6	C
SR 50 EB & SR 19 EB	Signal	17.6	B	-----	-----	29.0	C	29.4	C	18.6	B
SR 50 WB & SR 19 WB	Signal	-----	-----	43.4	D	50.0	D	53.2	D	45.9	D
SR 50 & Bluff Lake Rd (CR 50)	Signal	24.5	C	20.2	C	34.8	2	34.9	C	24.0	C
Villa City Rd & Site Entrance	STOP	-----	-----	11.1	B	-----	-----	4.7	A	-----	-----



STUDY CONCLUSIONS

This traffic analysis was conducted in order to assess the traffic impact of a proposed residential subdivision in the City of Groveland, Florida. Located on Villa City Road to the north of Sunrise Ridge Boulevard, the proposed development will consist of 339 single family residential units. The analysis assessed the impacts on the roadway network of the additional traffic that would result from the proposed development within a 4.3 impact area. The findings of this analysis are as follows:

- The proposed development will generate 3,229 daily trips and 315 P.M. peak hour trips, 198 entering and 117 exiting.
- The analysis of existing conditions indicated that all roadways within the project's impact currently operate at satisfactory Levels of Service.
- The analysis of the study intersections revealed that with the study intersections currently operate satisfactorily.
- The analysis of projected traffic conditions revealed that the study roadways and intersections will continue to operate at satisfactory Levels of service with the completion of the proposed development.
- The site will be served by a full access connection from Villa City Road with separate right and left turn lanes.



APPENDICES

APPENDIX A

Lake County TMS Sheets

ROAD NAME	FROM	TO	NUMBER OF LANES	AREA TYPE	MAINTAINING AGENCY	JURISDICTION	FUNCTIONAL CLASSIFICATION	* FFC *	FDO/STD LOS CAPACITY	SIS	LOS CODE	PEAK HOUR DIRECTION CAPACITIES					2015/16 LEVEL OF SERVICE																												
												* LOS *	A	B	C	D	E	2015 AADT	* 2014 AADT *	* Growth AADT %	* Growth AADT %	PM PEAK HOUR %	PEAK HOUR DIRECTION	2015 EB/NB	* 2014 EB/NB *	* Growth EB/NB %	* Growth EB/NB %	RESERVED	TOTAL	V/C RATIO	LOS	2015 WBAB	* 2014 WBAB *	* Growth WBAB %	* Growth WBAB %	RESERVED	TOTAL	V/C RATIO	LOS						
ABRAMS ROAD	SR 44D	WAYCROSS AVENUE	2	U	COUNTY	CITY OF ELUSTIS	MINOR COLLECTOR	MINOR COLLECTOR	D	675	N	21C	2010-10%	0	333	675	720	6,052	5,982	2,009	53%	702	212	205	207	4	24	33%	0	217	0.41	C	337	178	159	89%	0	337	0.87	D					
ANDERSON HILL ROAD	LAKE SHORE DRIVE	US 27	2	U	COUNTY	UNINCORPORATED LAKE COUNTY	COLLECTOR	COLLECTOR	D	675	N	21C	2010-10%	0	333	675	720	1,576	1,474	167	11%	112	112	105	8	0	0	0	0	0	0	0	0	0	0	0	0	0							
ASHMANVA ROAD	CR 470 (CHERRY LAKE ROAD)	US 27	2	U	COUNTY	CITY OF MINNEOLA	MINOR COLLECTOR	MINOR COLLECTOR	D	675	N	21C	2010-10%	0	333	675	720	709	0	0	0	0%	RD/VD/V	59	39	24	0	24	RD/VD/V	0	24	0.04	C	24	0	0	0%	0	24	0.10	C				
ARNDT ROAD	SUNSET STREET	US 27	2	U	CITY OF ELUSTIS	CITY OF ELUSTIS	MINOR COLLECTOR	MINOR COLLECTOR	D	675	N	21C	2010-10%	0	333	675	720	5,349	4,909	908	17%	520	229	229	218	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
BARNSHAW AVENUE	W LADY LAKE BOULEVARD	SOUTH TERMINI	2	U	CITY OF ELUSTIS	TOWN OF LADY LAKE	MINOR COLLECTOR	MINOR COLLECTOR	D	675	N	21C	2010-10%	0	333	675	720	3,550	1,432	1,026	7%	142	84	152	84	20	12	-11%	0	220	0.34	C	250	212	47	22%	0	250	0.88	C					
AUSTIN MERRITT ROAD	YOUTH CAMP ROAD	CR 33	2	R	COUNTY	UNINCORPORATED LAKE COUNTY	MINOR COLLECTOR	MINOR COLLECTOR	D	603	N	3RC	2010-10%	0	603	666	666	1,808	1,131	1,123	-11%	82	59	31	67	-44	-66%	0	23	0.08	C	30	29	0	0%	0	30	0.10	C						
BAHNS AVENUE	KENETER STREET	CR 40	2	U	CITY OF ELUSTIS	CITY OF ELUSTIS	MINOR COLLECTOR	MINOR COLLECTOR	D	675	N	21C	2010-10%	0	333	675	720	2,452	2,353	653	27%	96	50	50	66	-14	-21%	0	50	0.08	C	115	117	-2%	0	0	115	0.08	C						
BATES AVENUE	CR 141 (DELANO ROAD)	ESTES ROAD	2	U	COUNTY	UNINCORPORATED LAKE COUNTY	MINOR COLLECTOR	MINOR COLLECTOR	D	675	N	21C	2010-10%	0	333	675	720	1,441	0	0	0%	136	107	136	107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
BAY ROAD	BAY ROAD / CR 15A	OLD US 44 / CR 500A	2	U	COUNTY	UNINCORPORATED LAKE COUNTY	COLLECTOR	COLLECTOR	D	675	N	21C	2010-10%	0	333	675	720	1,628	2,127	499	-23%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
BAY ROAD	CR 352 / LAKESHORE DRIVE	CR 50	2	U	COUNTY	UNINCORPORATED LAKE COUNTY	MINOR COLLECTOR	MINOR COLLECTOR	D	675	N	21C	2010-10%	0	333	675	720	1,430	0	0	0%	138	109	138	109	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
BLACKSTILL LAKE ROAD	FOSSGATE ROAD	CR 50	2	U	COUNTY	CITY OF CLEMONT	MINOR COLLECTOR	MINOR COLLECTOR	D	675	N	21C	2010-10%	0	333	675	720	3,106	2,36	740	3%	205	160	205	160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BRIGGS ROAD	CR 33	US 27	2	U	COUNTY	UNINCORPORATED LAKE COUNTY	MINOR COLLECTOR	MINOR COLLECTOR	D	612	N	21C	2010-10%	0	297	612	648	1,201	789	412	52%	115	67	67	19	48	253%	0	67	0.11	C	28	48	0	0%	0	28	0.08	C						
BRIIT ROAD	CR 44	HORSE RANCH ROAD	2	U	COUNTY	CITY OF MOUNT DORA	MINOR COLLECTOR	MINOR COLLECTOR	D	675	N	21C	2010-10%	0	333	675	720	3,882	3,633	1,878	51%	169	112	169	112	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BRIIT ROAD	WOLF BRANCH ROAD	CR 300A (OLD 44)	2	U	COUNTY	CITY OF TAVARES	MINOR COLLECTOR	MINOR COLLECTOR	D	675	N	21C	2010-10%	0	333	675	720	2,526	1,278	1,448	113%	168	84	168	84	73	11	15%	14	98	0.15	C	108	127	41	32%	17	105	0.27	C					
BRIT ROAD	LAKE DORA DRIVE	CR 500A (OLD 44)	2	U	COUNTY	CITY OF TAVARES	MINOR COLLECTOR	MINOR COLLECTOR	D	675	N	21C	2010-10%	0	333	675	720	1,747	1,268	479	38%	174	88	174	88	65	23	35%	0	88	0.13	C	86	74	12	16%	0	86	0.13	C					
BRIT ROAD	DAVID WALKER ROAD	US 41	2	U	COUNTY	CITY OF TAVARES	MINOR COLLECTOR	MINOR COLLECTOR	D	675	N	21C	2010-10%	0	333	675	720	2,527	1,470	1,097	74%	168	88	168	88	73	11	15%	14	98	0.15	C	108	127	41	32%	17	105	0.27	C					
BRIT ROAD	DAVID WALKER ROAD	US 41	2	U	COUNTY	CITY OF TAVARES	MINOR COLLECTOR	MINOR COLLECTOR	D	675	N	21C	2010-10%	0	333	675	720	2,527	1,470	1,097	74%	168	88	168	88	73	11	15%	14	98	0.15	C	108	127	41	32%	17	105	0.27	C					
BRIT ROAD	DAVID WALKER ROAD	US 41	2	U	COUNTY	CITY OF TAVARES	MINOR COLLECTOR	MINOR COLLECTOR	D	675	N	21C	2010-10%	0	333	675	720	2,527	1,470	1,097	74%	168	88	168	88	73	11	15%	14	98	0.15	C	108	127	41	32%	17	105	0.27	C					
BRIT ROAD	DAVID WALKER ROAD	US 41	2	U	COUNTY	CITY OF TAVARES	MINOR COLLECTOR	MINOR COLLECTOR	D	675	N	21C	2010-10%	0	333	675	720	2,527	1,470	1,097	74%	168	88	168	88	73	11	15%	14	98	0.15	C	108	127	41	32%	17	105	0.27	C					
BRIT ROAD	DAVID WALKER ROAD	US 41	2	U	COUNTY	CITY OF TAVARES	MINOR COLLECTOR	MINOR COLLECTOR	D	675	N	21C	2010-10%	0	333	675	720	2,527	1,470	1,097	74%	168	88	168	88	73	11	15%	14	98	0.15	C	108	127	41	32%	17	105	0.27	C					
BRIT ROAD	DAVID WALKER ROAD	US 41	2	U	COUNTY	CITY OF TAVARES	MINOR COLLECTOR	MINOR COLLECTOR	D	675	N	21C	2010-10%	0	333	675	720	2,527	1,470	1,097	74%	168	88	168	88	73	11	15%	14	98	0.15	C	108	127	41	32%	17	105	0.27	C					
BRIT ROAD	DAVID WALKER ROAD	US 41	2	U	COUNTY	CITY OF TAVARES	MINOR COLLECTOR	MINOR COLLECTOR	D	675	N	21C	2010-10%	0	333	675	720	2,527	1,470	1,097	74%	168	88	168	88	73	11	15%	14	98	0.15	C	108	127	41	32%	17	105	0.27	C					
BRIT ROAD	DAVID WALKER ROAD	US 41	2	U	COUNTY	CITY OF TAVARES	MINOR COLLECTOR	MINOR COLLECTOR	D	675	N	21C	2010-10%	0	333	675	720	2,527	1,470	1,097	74%	168	88	168	88	73	11	15%	14	98	0.15	C	108	127	41	32%	17	105	0.27	C					
BRIT ROAD	DAVID WALKER ROAD	US 41	2	U	COUNTY	CITY OF TAVARES	MINOR COLLECTOR	MINOR COLLECTOR	D	675	N	21C	2010-10%	0	333	675	720	2,527	1,470	1,097	74%	168	88	168	88	73	11	15%	14	98	0.15	C	108	127	41	32%	17	105	0.27	C					
BRIT ROAD	DAVID WALKER ROAD	US 41	2	U	COUNTY	CITY OF TAVARES	MINOR COLLECTOR	MINOR COLLECTOR	D	675	N	21C	2010-10%	0	333	675	720	2,527	1,470	1,097	74%	168	88	168	88	73	11	15%	14	98	0.15	C	108	127	41	32%	17	105	0.27	C					
BRIT ROAD	DAVID WALKER ROAD	US 41	2	U	COUNTY	CITY OF TAVARES	MINOR COLLECTOR	MINOR COLLECTOR	D	675	N	21C	2010-10%	0	333	675	720	2,527	1,470	1,097	74%	168	88	168	88	73	11	15%	14	98	0.15	C	108	127	41	32%	17	105	0.27	C					
BRIT ROAD	DAVID WALKER ROAD	US 41	2	U	COUNTY	CITY OF TAVARES	MINOR COLLECTOR	MINOR COLLECTOR	D	675	N	21C	2010-10%	0	333	675	720	2,527	1,470	1,097	74%	168	88	168	88	73	11	15%	14	98	0.15	C	108	127	41	32%	17	105	0.27	C					
BRIT ROAD	DAVID WALKER ROAD	US 41	2	U	COUNTY	CITY OF TAVARES	MINOR COLLECTOR	MINOR COLLECTOR	D	675	N	21C	2010-10%	0	333	675	720	2,527	1,470	1,097	74%	168	88	168	88	73	11	15%	14	98	0.15	C	108	127	41	32%	17	105	0.27	C					
BRIT ROAD	DAVID WALKER ROAD	US 41	2	U	COUNTY	CITY OF TAVARES	MINOR COLLECTOR	MINOR COLLECTOR	D	675	N	21C	2010-10%	0	333	675	720	2,527	1,470	1,097	74%	168	88	168	88	73	11	15%	14	98	0.15	C	108	127	41	32%	17	105	0.27	C					
BRIT ROAD	DAVID WALKER ROAD	US 41	2	U	COUNTY	CITY OF TAVARES	MINOR COLLECTOR	MINOR COLLECTOR	D	675	N	21C	2010-10%	0	333	675	720	2,527	1,470	1,097	74%	168	88	168	88	73	11	15%	14	98	0.15	C	108	127	41	32%	17	105	0.27	C					
BRIT ROAD	DAVID WALKER ROAD	US 41	2	U	COUNTY	CITY OF TAVARES	MINOR COLLECTOR	MINOR COLLECTOR	D	675	N	21C	2010-10%	0	333	675	720	2,527	1,470	1,097	74%	168	88	168	88	73	11	15%	14	98	0.15	C	108	127	41	32%	17	105	0.27	C					
BRIT ROAD	DAVID WALKER ROAD	US 41	2	U	COUNTY	CITY OF TAVARES	MINOR COLLECTOR	MINOR COLLECTOR	D	675	N	21C	2010-10%	0	333	675	720	2,527	1,470	1,097	74%	168	88	168	88	73	11	15%	14	98	0.15	C	108	127	41	32%	17	105	0.27	C					
BRIT ROAD	DAVID WALKER ROAD	US 41	2	U	COUNTY	CITY OF TAVARES	MINOR COLLECTOR	MINOR COLLECTOR	D	675	N	21C	2010-10%	0	333	675	720	2,527	1,470	1,097	74%	168	88	168	88	73	11	15%	14	98	0.15	C	108	127	41	32%	17	105	0.27	C					
BRIT ROAD	DAVID WALKER ROAD	US 41	2	U	COUNTY	CITY OF TAVARES	MINOR COLLECTOR	MINOR COLLECTOR	D	675	N	21C	2010-10%	0	333	675	720	2,527	1,470	1,097	74%	168	88	168	88	73	11	15%	14	98	0.15	C	108	127	41	32%	17	105	0.27	C					
BRIT ROAD	DAVID WALKER ROAD	US 41	2	U	COUNTY	CITY OF TAVARES	MINOR COLLECTOR	MINOR COLLECTOR	D	675	N	21C	2010-10%	0	333	675	720	2,527	1,470	1,097	74%	168	88	168	88	73	11	15%	14	98	0.15	C	108	127	41	32%	17	105	0.27	C					
BRIT ROAD	DAVID WALKER ROAD	US 41	2	U	COUNTY	CITY OF TAVARES	MINOR COLLECTOR	MINOR COLLECTOR	D	675	N	21C	2010-10%	0	333	675	720	2,527	1,470	1,097	74%	168	88	168	88	73	11	15%	14	98	0.15	C	108	127	41	32%	17	105	0.27	C					
BRIT ROAD	DAVID WALKER ROAD	US 41	2	U	COUNTY	CITY OF TAVARES	MINOR COLLECTOR	MINOR COLLECTOR	D	675	N	21C	2010-10%	0	333	675	720	2,527	1,470	1,097	74%	168	88	168	88	73</																			

															PEAK HOUR DIRECTION CAPACITIES												2015/16 LEVEL OF SERVICE														
ROAD NAME		FROM	TO	NUMBER OF LANES	AREA TYPE	MAINTAINING AGENCY	JURISDICTION	FUNCTIONAL CLASSIFICATION	* FFC *	FED/STD LOS CAPACITY	LOS CAPACITY	SIST	LOS CODE	* LOS *	A	B	C	D	E	2015 ADIT	* 2014 ADIT *	% Growth ADIT *	% Growth ADIT **	PM PEAK HOUR	PEAK HOUR PEAK DIRECTION	2015 EB/N	* 2014 EB/N	% Growth EB/N *	% Growth EB/N **	RESERVED	TOTAL	V/C RATIO	LOS	2015 WB/N	* 2014 WB/N	% Growth WB/N *	% Growth WB/N **	RESERVED	TOTAL	V/C RATIO	LOS
C.R. 561A	CR 561A	CR 561A	TRIPLE E ROAD	2	U	COUNTY	UNINCORPORATED LAKE COUNTY	MINOR COLLECTOR	MINOR COLLECTOR	D	675	N	20C	0	0	333	675	720	1,470	1,378	192	14%	149	149	78	71	38	13	22%	160	231	0.34	C	78	72	6	8%	97	175	0.26	C

ROAD NAME	FROM	TO	NUMBER OF LANES	AREA TYPE	MAINTAINING AGENCY	JURISDICTION	FUNCTIONAL CLASSIFICATION	* FFC *	* FDOT *	LOS STANDARD	LOS CAPACITY	SIS†	LOS CODE	* LOS *	PEAK HOUR DIRECTION CAPACITIES										2015/16 LEVEL OF SERVICE																	
															A	B	C	D	E	2015 AADT	* 2014 AADT *	* Growth AADT %	* Growth AADT %	PM PEAK HOUR PEAK DIRECTION	2015 EB/NB	* 2014 EB/NB *	* Growth EB/NB %	* Growth EB/NB %	RESERVED	TOTAL	V/C RATIO	LOS	2015 WBAB	* 2014 WBAB *	* Growth WBAB %	* Growth WBAB %	RESERVED	TOTAL	V/C RATIO	LOS		
SR 19	CR 45	CR 42	2	R	STATE	UNINCORPORATED LAKE COUNTY	ARTERIAL	C	430	N	200				0	240	430	740	1,490	4,254	4,254	0	0	306	192	192	192	0	0	192	0.45	B	114	114	0	0	114	0.27	B			
SR 19	CR 45	BANKER ROAD	2	U	STATE	UNINCORPORATED LAKE COUNTY	ARTERIAL	C	850	N	210				0	850	850	1,490	11,563	11,563	0	0	960	564	564	564	0	0	564	0.64	B	376	376	0	0	376	0.43	B				
SR 19	CR 45	BANKER ROAD	2	U	STATE	CITY OF UMATILLA	ARTERIAL	D	880	N	202				0	880	880	880	11,563	11,563	0	0	940	564	564	564	0	0	564	0.74	D	376	376	0	0	376	0.43	B				
SR 19	CR 450 (UMATILLA BOULEVARD)	CR 450 (UMATILLA BOULEVARD)	2	U	STATE	CITY OF UMATILLA	ARTERIAL	D	780	N	210				0	780	780	880	11,563	11,563	0	0	940	564	564	564	0	0	564	0.74	D	376	376	0	0	376	0.43	B				
SR 19	CR 450 (UMATILLA STREET)	CR 450A	4	U	STATE	CITY OF UMATILLA	ARTERIAL	D	2,000	N	411				0	1,910	2,000	2,000	22,673	22,673	0	0	1,964	1,173	1,173	1,173	0	0	1,173	1.04	B	791	791	0	0	791	0.40	B				
SR 19	CR 450	CR 19A	4	U	STATE	EUSTIS/UMATILLA	ARTERIAL	D	2,000	N	411				0	1,910	2,000	2,000	16,905	16,905	0	0	1,456	841	841	841	0	0	841	0.44	C	615	615	0	0	615	0.47	C				
SR 19	CR 45	CR 19A	4	U	STATE	CITY OF EUSTIS	ARTERIAL	D	2,000	N	411				0	1,910	2,000	2,000	16,905	16,905	0	0	1,456	841	841	841	0	0	841	0.44	C	615	615	0	0	615	0.47	C				
SR 19 (N)	ORANGE AVENUE	CR 452	4	U	STATE	CITY OF EUSTIS	ARTERIAL / DIRECTIONAL	D	2,400	N	411D				0	2,292	2,400	2,400	13,251	13,251	0	0	1,352	1,352	1,352	1,352	0	0	1,352	0.57	C	21	1,331	0.37	C	1,375	1,375	0	0	1,375	0.57	C
SR 19 (N)	ORANGE AVENUE	CR 452	4	U	STATE	CITY OF EUSTIS	ARTERIAL / DIRECTIONAL	D	2,400	N	411D				0	2,292	2,400	2,400	13,251	13,251	0	0	1,352	1,352	1,352	1,352	0	0	1,352	0.57	C	21	1,331	0.37	C	1,375	1,375	0	0	1,375	0.57	C
SR 19 (N)	ORANGE AVENUE	CR 452	4	U	STATE	CITY OF EUSTIS	ARTERIAL / DIRECTIONAL	D	2,400	N	411D				0	2,292	2,400	2,400	13,251	13,251	0	0	1,352	1,352	1,352	1,352	0	0	1,352	0.57	C	21	1,331	0.37	C	1,375	1,375	0	0	1,375	0.57	C
SR 19 (S)	ORANGE AVENUE	CR 452	4	U	STATE	CITY OF EUSTIS	ARTERIAL / DIRECTIONAL	D	2,400	N	411D				0	2,292	2,400	2,400	13,251	13,251	0	0	1,352	1,352	1,352	1,352	0	0	1,352	0.57	C	21	1,331	0.37	C	1,375	1,375	0	0	1,375	0.57	C
SR 19	STEVENS AVE	GOLF LINKS AVENUE	4	U	STATE	CITY OF EUSTIS	ARTERIAL	D	1,600	N	411				0	730	1,600	1,700	12,911	12,911	0	0	1,604	1,185	1,185	1,185	0	0	1,185	0.74	B	799	799	0	0	799	0.40	D				
SR 19	US 441	GOLF LINKS AVENUE	4	U	STATE	CITY OF EUSTIS	ARTERIAL	D	2,000	N	411				0	1,910	2,000	2,000	19,273	19,273	0	0	1,535	968	968	968	0	0	968	0.69	C	567	567	0	0	567	0.33	C				
SR 19 (DUNCAN DRIVE)	US 441	CR 500A LAKE SHORE BOULEVARD	4	U	STATE	CITY OF TAVARES	ARTERIAL	D	1,600	N	412				0	730	1,600	1,700	12,891	12,891	0	0	1,604	560	560	560	0	0	560	0.84	B	463	463	0	0	463	0.33	C				
SR 19	CR 450 (MAIN STREET)	CR 450 (MAIN STREET)	4	U	STATE	CITY OF TAVARES	ARTERIAL	D	1,600	N	412				0	730	1,600	1,700	12,891	12,891	0	0	1,604	560	560	560	0	0	560	0.84	B	463	463	0	0	463	0.33	C				
SR 19	CR 501	CR 500A LAKE SHORE BOULEVARD	4	U	STATE	CITY OF TAVARES	ARTERIAL	D	1,600	N	412				0	730	1,600	1,700	12,891	12,891	0	0	1,604	560	560	560	0	0	560	0.84	B	463	463	0	0	463	0.33	C				
SR 19	CR 501	CR 450 (MAIN STREET)	4	U	STATE	CITY OF TAVARES	ARTERIAL	D	1,600	N	412				0	730	1,600	1,700	12,891	12,891	0	0	1,604	560	560	560	0	0	560	0.84	B	463	463	0	0	463	0.33	C				
SR 19	CR 561	LAKE HARRIS NORTH END	2	U	STATE	CITY OF TAVARES	ARTERIAL	D	1,190	N	210				0	420	840	1,190	16,680	16,680	0	0	2,102	1,075	1,075	1,075	0	0	1,075	1.07	E	1,027	1,027	0	0	291	1,246	1.07	E			
SR 19	CR 48	LAKE HARRIS NORTH END	2	U	STATE	CITY OF TAVARES	ARTERIAL	D	880	N	210				0	450	880	1,200	16,680	16,680	0	0	930	417	417	417	0	0	417	0.81	C	477	477	0	0	181	608	0.81	C			
SR 19	CR 48	CENTRAL AVENUE	2	F	STATE	HOWLY-IN-THE-HILLS	ARTERIAL	C	710	N	211				0	710	800	800	7,432	7,432	0	0	960	315	315	315	0	0	315	0.54	C	275	275	0	0	229	497	0.70	C			
SR 19	CR 48	CENTRAL AVENUE	2	F	STATE	HOWLY-IN-THE-HILLS	ARTERIAL	C	850	N	210				0	850	850	1,200	16,680	16,680	0	0	930	417	417	417	0	0	417	0.65	C	275	275	0	0	240	535	0.63	C			
SR 19	US 27 SR 25	US 27 SR 25	2	F	STATE	CITY OF GROVELAND	ARTERIAL	C	850	N	210				0	450	850	1,200	16,680	16,680	0	0	930	417	417	417	0	0	417	0.65	C	340	340	0	0	296	584	0.65	C			
SR 19	US 27 SR 25	US 27 SR 25	2	F	STATE	CITY OF GROVELAND	ARTERIAL	C	850	N	210				0	450	850	1,200	16,680	16,680	0	0	930	417	417	417	0	0	417	0.65	C	340	340	0	0	296	584	0.65	C			
SR 19	CR 418	LAKE CATHERINE ROAD	2	U	STATE	CITY OF GROVELAND	ARTERIAL	D	880	N	210				0	450	880	1,200	16,680	16,680	0	0	930	417	417	417	0	0	417	0.65	C	311	311	0	0	74	324	0.38	B			
SR 19	SR 50 SR 33	SR 50 SR 33	2	U	STATE	CITY OF GROVELAND	ARTERIAL	D	840	N	210				0	450	840	1,190	16,680	16,680	0	0	942	358	358	358	0	0	358	0.84	B	481	481	0	0	333	648	0.84	B			
SR 33	ANDERSON ROAD	ANDERSON ROAD	2	R	STATE	CITY OF GROVELAND	ARTERIAL	D	880	N	211				0	830	880	880	8,283	8,283	0	0	579	299	299	299	0	0	299	0.43	C	280	280	0	0	3	283	0.32	C			
SR 33	ANDERSON ROAD	CR 501	2	R	STATE	CITY OF GROVELAND	ARTERIAL	D	430	N	210				0	240	430	740	14,990	14,990	0	0	434	218	218	218	0	0	218	0.51	B	216	216	0	0	219	551	0.51	B			
SR 33	CR 561	CR 501	2	R	STATE	UNINCORPORATED LAKE COUNTY	ARTERIAL	D	430	N	210				0	430	430	1,490	5,071	5,071	0	0	492	176	176	176	0	0	176	0.39	C	113	113	0	0	113	0.26	B				
SR 33	CR 561	CR 561	2	R	STATE	UNINCORPORATED LAKE COUNTY	MINOR ARTERIAL	D	430	N	210				0	430	430	1,490	5,071	5,071	0	0	492	176	176	176	0	0	176	0.39	C	113	113	0	0	113	0.26	B				
SR 33	CR 561	CR 561	2	R	STATE	UNINCORPORATED LAKE COUNTY	MINOR ARTERIAL	D	430	N	210				0	430	430	1,490	5,071	5,071	0	0	492	176	176	176	0	0	176	0.39	C	113	113	0	0	113	0.26	B				
SR 33	CR 474	POLA COUNTY LINE	2	R	STATE	UNINCORPORATED LAKE COUNTY	MINOR ARTERIAL	D	430	N	210				0	240	430	740	14,990	14,990	0	0	434	218	218	218	0	0	218	0.51	B	216	216	0	0	219	551	0.51	B			
SR 33	CR 474	POLA COUNTY LINE	2	R	STATE	UNINCORPORATED LAKE COUNTY	MINOR ARTERIAL	D	430	N	210				0	240	430	740	14,990	14,990	0	0	434	218	218	218	0	0	218	0.51	B	216	216	0	0	219	551	0.51	B			
SR 33	CR 474	POLA COUNTY LINE	2	R	STATE	UNINCORPORATED LAKE COUNTY	MINOR ARTERIAL	D	430	N	210				0	240	430	740	14,990	14,990	0	0	434	218	218	218	0	0	218	0.51	B	216	216	0	0	219	551	0.51	B			
SR 40	CR 414	MARION COUNTY LINE	2	R	STATE	UNINCORPORATED LAKE COUNTY	MINOR ARTERIAL	D	430	N	210				0	240	430	740	14,990	14,990	0	0	434	218	218	218	0	0	218	0.51	B	216	216	0	0	219	551	0.51	B			
SR 40	CR 45A	RIVER ROAD	2	R	STATE	UNINCORPORATED LAKE COUNTY	ARTERIAL	C	430	Y	210				0	240	430	740	14,990	14,990	0	0	434	218	218	218	0	0	218	0.51	B	216	216	0	0	219	551	0.51	B			
SR 44	CR 443	VOLUNIA COUNTY LINE	2	R	STATE	UNINCORPORATED LAKE COUNTY	ARTERIAL	D	430	N	210				0	240	430	740	14,990	14,990	0	0	434	218	218	218	0	0	218	0.51	B	216	216	0	0	219	551	0.51	B			
SR 44	CR 443	VOLUNIA COUNTY LINE	2	R	STATE	UNINCORPORATED LAKE COUNTY	ARTERIAL	D	430	N	210																															

APPENDIX B

Existing Intersection Traffic Counts

15 MINUTE TURNING MOVEMENT COUNTS

(Cars and Trucks)

DATE: June 1, 2016 (Wednesday)

CITY: Mascotte

LATITUDE: 0

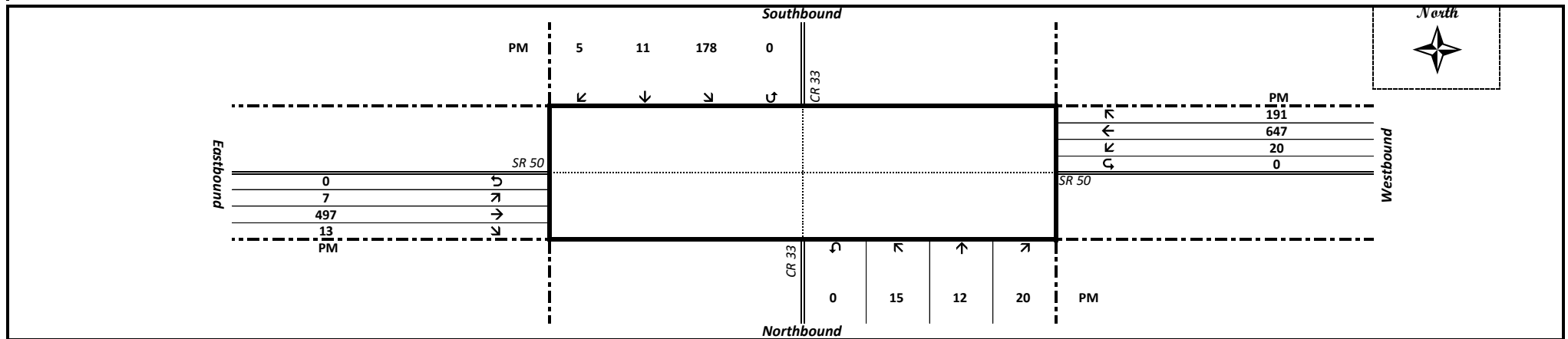
LOCATION: CR 33 & SR 50

COUNTY: Lake Co

LONGITUDE: 0

TIME BEGIN	CR 33					CR 33					N/S TOTAL	SR 50					SR 50					E/W TOTAL	GRAND TOTAL
	NORTHBOUND					SOUTHBOUND						EASTBOUND					WESTBOUND						
	L	T	R	U-turn	TOTAL	L	T	R	U-turn	TOTAL		L	T	R	U-turn	TOTAL	L	T	R	U-turn	TOTAL		
04:00 PM	2	2	2	0	6	35	3	1	0	39	45	1	81	3	0	85	2	154	38	0	194	279	324
04:15 PM	2	3	3	0	8	40	2	3	0	45	53	2	100	1	0	103	6	160	33	0	199	302	355
04:30 PM	2	4	3	0	9	36	3	2	0	41	50	0	99	2	0	101	2	140	53	0	195	296	346
04:45 PM	2	1	6	0	9	33	4	0	0	37	46	0	95	2	0	97	6	151	52	0	209	306	352
TOTAL	8	10	14	0	32	144	12	6	0	162	194	3	375	8	0	386	16	605	176	0	797	1,183	1,377
05:00 PM	4	2	6	0	12	42	1	0	0	43	55	3	114	5	0	122	3	166	48	0	217	339	394
05:15 PM	2	3	7	0	12	46	2	0	0	48	60	1	136	6	0	143	8	158	57	0	223	366	426
05:30 PM	2	5	5	0	12	44	6	2	0	52	64	0	137	2	0	139	5	180	46	0	231	370	434
05:45 PM	7	2	2	0	11	46	2	3	0	51	62	3	110	0	0	113	4	143	40	0	187	300	362
TOTAL	15	12	20	0	47	178	11	5	0	194	241	7	497	13	0	517	20	647	191	0	858	1,375	1,616

PM Peak																					Peak Hour Factor: 0.931		
05:00 PM to 06:00 PM	15	12	20	0	47	178	11	5	0	194	241	7	497	13	0	517	20	647	191	0	858	1,375	1,616



15 MINUTE TURNING MOVEMENT COUNTS

(Trucks Only)

DATE: June 1, 2016 (Wednesday)

CITY: Mascotte

LATITUDE: 0

LOCATION: CR 33 & SR 50

COUNTY: Lake Co

LONGITUDE: 0

CR 33

CR 33

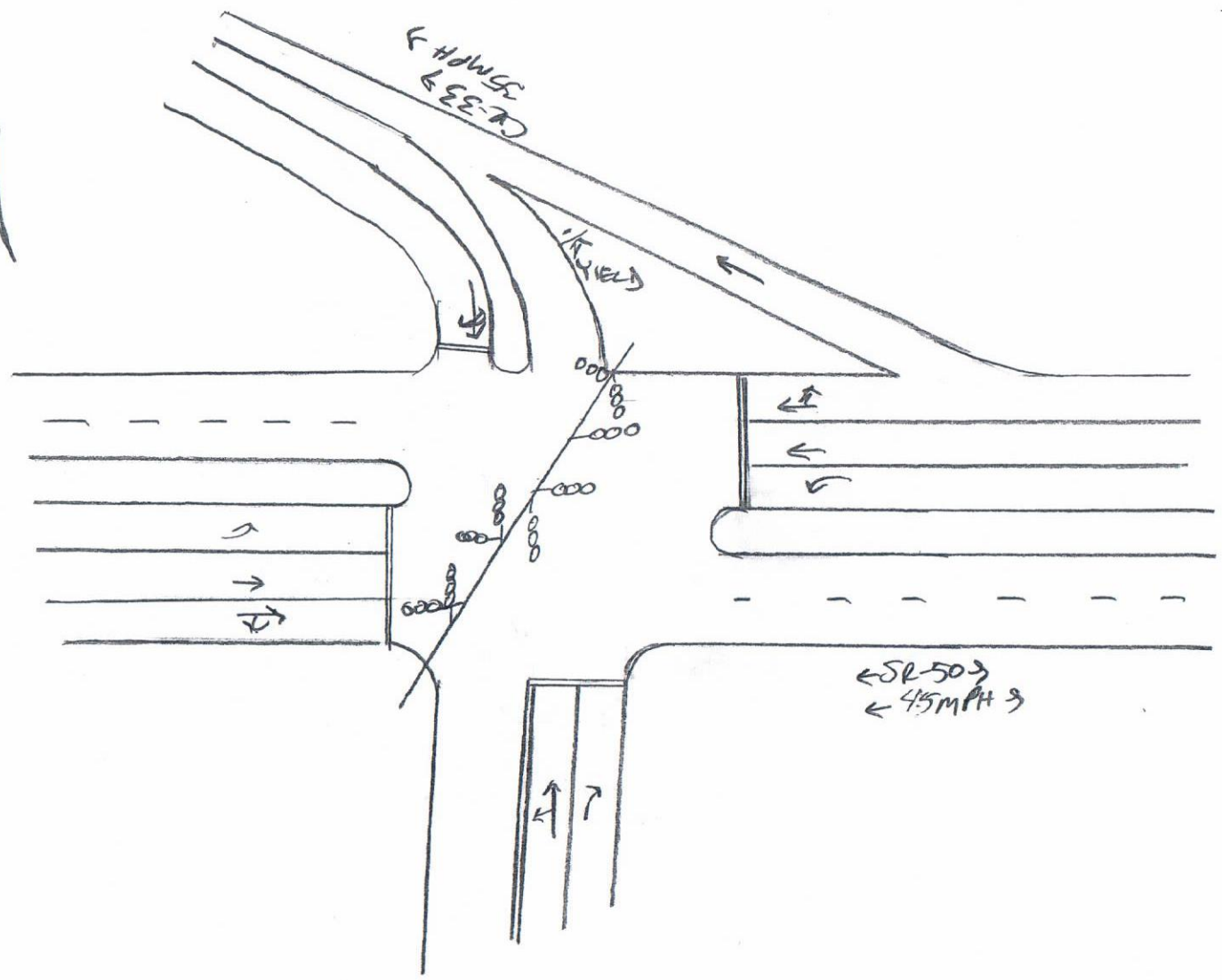
SR 50

SR 50

TIME BEGIN	NORTHBOUND					SOUTHBOUND					N/S TOTAL	EASTBOUND					WESTBOUND					E/W TOTAL	GRAND TOTAL
	L	T	R	U-turn	TOTAL	L	T	R	U-turn	TOTAL		L	T	R	U-turn	TOTAL	L	T	R	U-turn	TOTAL		
04:00 PM	0	0	0	0	0	5	0	0	0	5	5	0	9	0	0	9	0	10	1	0	11	20	25
04:15 PM	0	0	0	0	0	2	0	1	0	3	3	0	5	0	0	5	0	3	3	0	6	11	14
04:30 PM	0	0	0	0	0	1	0	1	0	2	2	0	6	0	0	6	0	7	4	0	11	17	19
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	7	3	0	10	13	13
TOTAL	0	0	0	0	0	8	0	2	0	10	10	0	23	0	0	23	0	27	11	0	38	61	71

05:00 PM	0	0	0	0	0	3	0	0	0	3	3	0	9	0	0	9	0	14	1	0	15	24	27
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	5	1	0	6	0	8	1	0	9	15	15
05:30 PM	0	0	0	0	0	1	0	0	0	1	1	0	7	0	0	7	0	5	4	0	9	16	17
05:45 PM	0	0	0	0	0	1	0	1	0	2	2	0	5	0	0	5	0	5	1	0	6	11	13
TOTAL	0	0	0	0	0	5	0	1	0	6	6	0	26	1	0	27	0	32	7	0	39	66	72

PM Peak																								
05:00 PM to 06:00 PM		L	T	R	U-turn	TOTAL	L	T	R	U-turn	TOTAL	N/S TOTAL	L	T	R	U-turn	TOTAL	L	T	R	U-turn	TOTAL	E/W TOTAL	GRAND TOTAL
		0	0	0	0	0	5	0	1	0	6	6	0	26	1	0	27	0	32	7	0	39	66	72



15 MINUTE TURNING MOVEMENT COUNTS

(Cars and Trucks)

DATE: June 1, 2016 (Wednesday)

CITY: Groveland

LATITUDE: 0

LOCATION: Mt Pleasant Rd/Villa City Rd & SR 50

COUNTY: Lake Co

LONGITUDE: 0

Mt Pleasant Rd

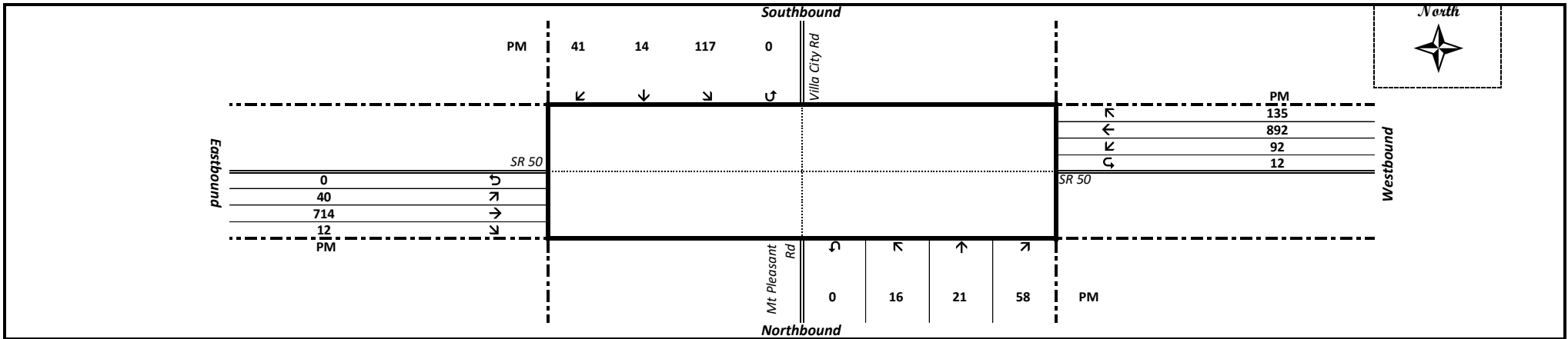
Villa City Rd

SR 50

SR 50

TIME BEGIN	NORTHBOUND					SOUTHBOUND					N/S TOTAL	EASTBOUND					WESTBOUND					E/W TOTAL	GRAND TOTAL
	L	T	R	U-turn	TOTAL	L	T	R	U-turn	TOTAL		L	T	R	U-turn	TOTAL	L	T	R	U-turn	TOTAL		
04:00 PM	2	1	9	0	12	23	3	3	0	29	41	6	141	4	0	151	12	218	21	1	252	403	444
04:15 PM	3	2	14	0	19	15	3	15	0	33	52	4	157	3	0	164	16	232	32	3	283	447	499
04:30 PM	2	2	7	0	11	28	0	10	0	38	49	6	184	0	0	190	25	208	24	0	257	447	496
04:45 PM	2	1	14	0	17	26	2	9	0	37	54	10	137	4	0	151	30	205	20	2	257	408	462
TOTAL	9	6	44	0	59	92	8	37	0	137	196	26	619	11	0	656	83	863	97	6	1,049	1,705	1,901
05:00 PM	5	1	15	0	21	28	3	9	0	40	61	8	172	8	0	188	22	220	32	2	276	464	525
05:15 PM	6	4	17	0	27	32	2	15	0	49	76	12	211	0	0	223	24	235	39	4	302	525	601
05:30 PM	2	7	10	0	19	27	4	8	0	39	58	12	172	2	0	186	31	239	29	2	301	487	545
05:45 PM	3	9	16	0	28	30	5	9	0	44	72	8	159	2	0	169	15	198	35	4	252	421	493
TOTAL	16	21	58	0	95	117	14	41	0	172	267	40	714	12	0	766	92	892	135	12	1,131	1,897	2,164

PM Peak																					Peak Hour Factor:	
05:00 PM to 06:00 PM																					0.900	
16	21	58	0	95	117	14	41	0	172	267	40	714	12	0	766	92	892	135	12	1,131	1,897	2,164



15 MINUTE TURNING MOVEMENT COUNTS

(Trucks Only)

DATE: June 1, 2016 (Wednesday)

CITY: Groveland

LATITUDE: 0

LOCATION: Mt Pleasant Rd/Villa City Rd & SR 50

COUNTY: Lake Co

LONGITUDE: 0

Mt Pleasant Rd

Villa City Rd

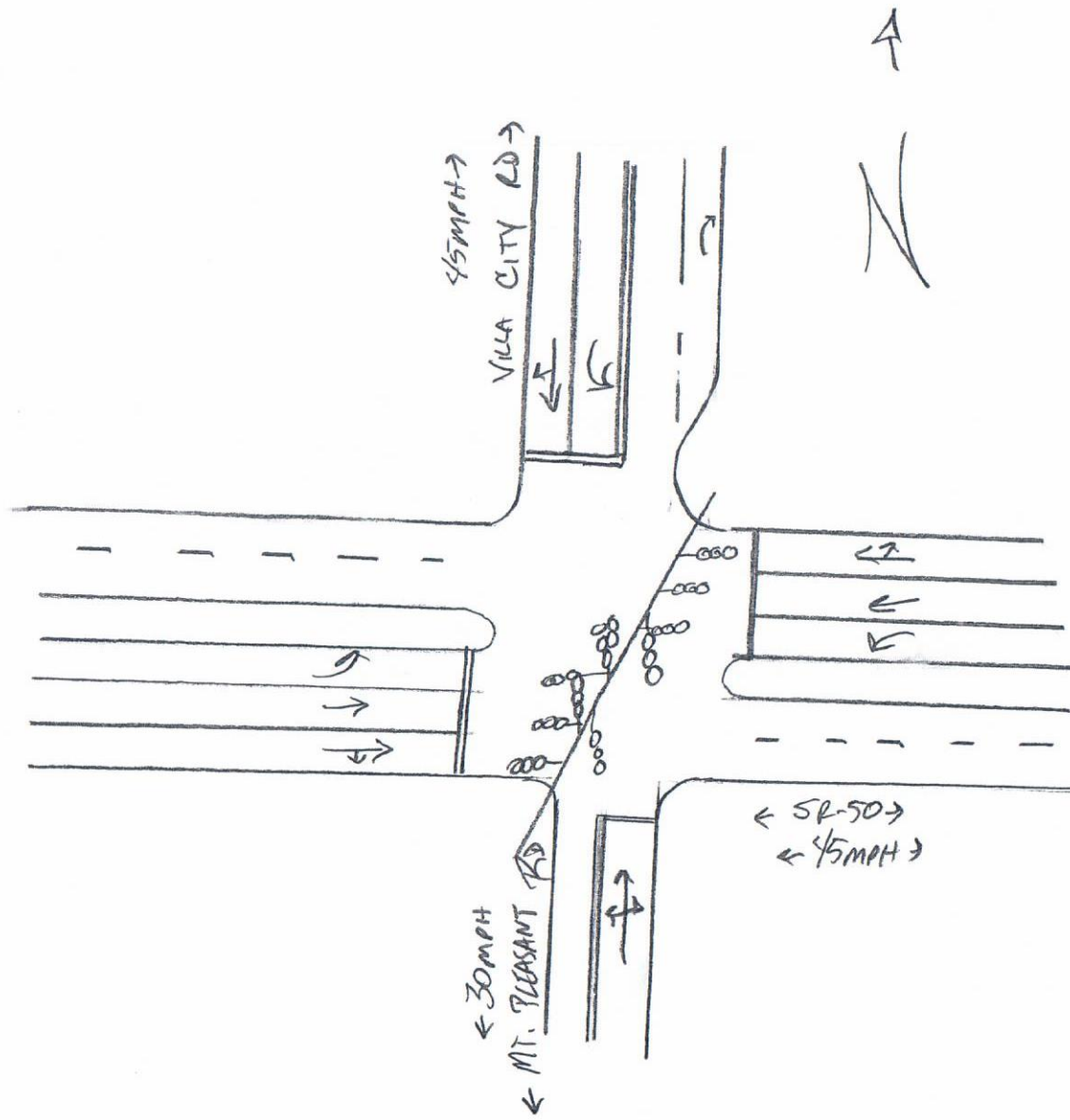
SR 50

SR 50

TIME BEGIN	NORTHBOUND					SOUTHBOUND					N/S TOTAL	EASTBOUND					WESTBOUND					E/W TOTAL	GRAND TOTAL
	L	T	R	U-turn	TOTAL	L	T	R	U-turn	TOTAL		L	T	R	U-turn	TOTAL	L	T	R	U-turn	TOTAL		
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	13	0	10	0	0	10	23	23
04:15 PM	0	0	0	0	0	1	0	0	0	1	1	0	5	0	0	5	0	7	0	0	7	12	13
04:30 PM	0	0	0	0	0	0	0	1	0	1	1	0	8	0	0	8	0	9	0	0	9	17	18
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	8	1	0	9	12	12
TOTAL	0	0	0	0	0	1	0	1	0	2	2	0	29	0	0	29	0	34	1	0	35	64	66
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	8	0	0	9	0	14	0	0	14	23	23
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	0	10	0	0	10	15	15
05:30 PM	0	0	1	0	1	0	0	0	0	0	1	0	7	0	0	7	0	7	1	0	8	15	16
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	0	6	0	0	6	11	11
TOTAL	0	0	1	0	1	0	0	0	0	0	1	1	25	0	0	26	0	37	1	0	38	64	65

PM Peak

05:00 PM to 06:00 PM	0	0	1	0	1	0	0	0	0	0	1	1	25	0	0	26	0	37	1	0	38	64	65
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15 MINUTE TURNING MOVEMENT COUNTS

(Cars and Trucks)

DATE: June 1, 2016 (Wednesday)

CITY: Groveland

LATITUDE: 0

LOCATION: SR 19 & SR 50 EB

COUNTY: Lake Co

LONGITUDE: 0

SR 19

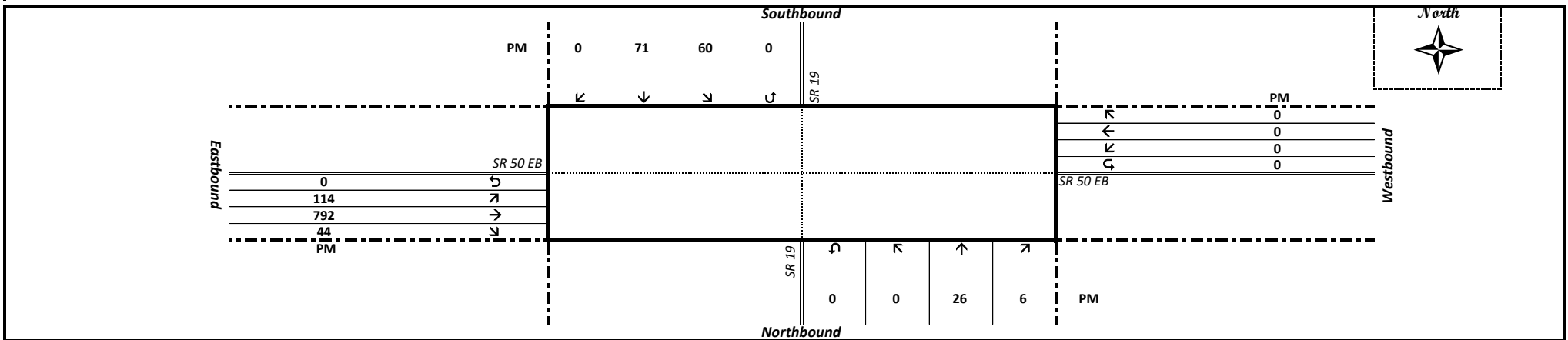
SR 19

SR 50 EB

SR 50 EB

TIME BEGIN	NORTHBOUND					SOUTHBOUND					N/S TOTAL	EASTBOUND					WESTBOUND					E/W TOTAL	GRAND TOTAL
	L	T	R	U-turn	TOTAL	L	T	R	U-turn	TOTAL		L	T	R	U-turn	TOTAL	L	T	R	U-turn	TOTAL		
04:00 PM	0	12	1	0	13	18	7	0	0	25	38	36	153	8	0	197	0	0	0	0	0	197	235
04:15 PM	0	5	1	0	6	17	10	0	0	27	33	23	175	4	0	202	0	0	0	0	0	202	235
04:30 PM	0	9	1	0	10	22	5	0	0	27	37	41	194	6	0	241	0	0	0	0	0	241	278
04:45 PM	0	12	1	0	13	20	7	0	0	27	40	24	154	7	0	185	0	0	0	0	0	185	225
TOTAL	0	38	4	0	42	77	29	0	0	106	148	124	676	25	0	825	0	0	0	0	0	825	973
05:00 PM	0	9	1	0	10	12	6	0	0	18	28	30	196	11	0	237	0	0	0	0	0	237	265
05:15 PM	0	9	1	0	10	18	13	0	0	31	41	34	228	11	0	273	0	0	0	0	0	273	314
05:30 PM	0	4	3	0	7	12	18	0	0	30	37	20	185	9	0	214	0	0	0	0	0	214	251
05:45 PM	0	4	1	0	5	18	34	0	0	52	57	30	183	13	0	226	0	0	0	0	0	226	283
TOTAL	0	26	6	0	32	60	71	0	0	131	163	114	792	44	0	950	0	0	0	0	0	950	1,113

PM Peak																					Peak Hour Factor: 0.886		
05:00 PM to 06:00 PM	0	26	6	0	32	60	71	0	0	131	163	114	792	44	0	950	0	0	0	0	0	950	1,113



15 MINUTE TURNING MOVEMENT COUNTS

(Trucks Only)

DATE: June 1, 2016 (Wednesday)

CITY: Groveland

LATITUDE: 0

LOCATION: SR 19 & SR 50 EB

COUNTY: Lake Co

LONGITUDE: 0

SR 19

SR 19

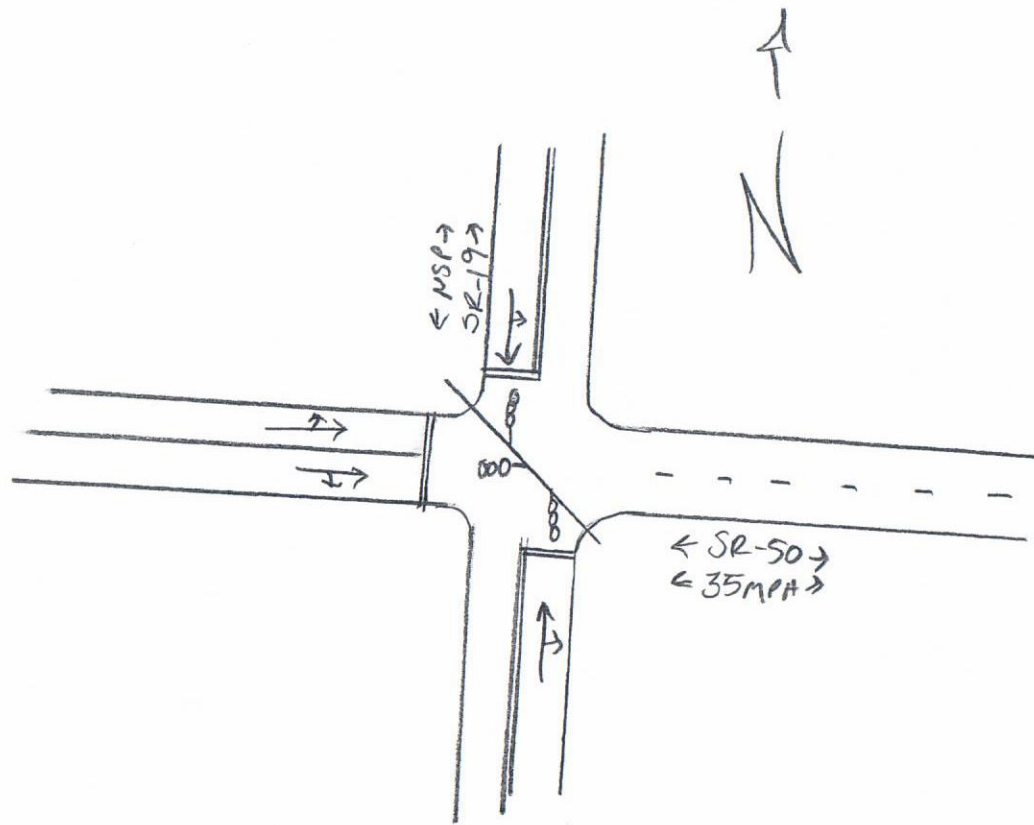
SR 50 EB

SR 50 EB

TIME BEGIN	NORTHBOUND					SOUTHBOUND					N/S TOTAL	EASTBOUND					WESTBOUND					E/W TOTAL	GRAND TOTAL
	L	T	R	U-turn	TOTAL	L	T	R	U-turn	TOTAL		L	T	R	U-turn	TOTAL	L	T	R	U-turn	TOTAL		
04:00 PM	0	0	0	0	0	4	0	0	0	4	4	5	10	0	0	15	0	0	0	0	0	15	19
04:15 PM	0	0	0	0	0	1	0	0	0	1	1	2	3	0	0	5	0	0	0	0	0	5	6
04:30 PM	0	0	0	0	0	1	0	0	0	1	1	4	6	0	0	10	0	0	0	0	0	10	11
04:45 PM	0	0	0	0	0	3	0	0	0	3	3	1	1	0	0	2	0	0	0	0	0	2	5
TOTAL	0	0	0	0	0	9	0	0	0	9	9	12	20	0	0	32	0	0	0	0	0	32	41
05:00 PM	0	0	0	0	0	1	0	0	0	1	1	4	6	0	0	10	0	0	0	0	0	10	11
05:15 PM	0	0	0	0	0	2	0	0	0	2	2	3	2	0	0	5	0	0	0	0	0	5	7
05:30 PM	0	0	0	0	0	4	1	0	0	5	5	3	7	0	0	10	0	0	0	0	0	10	15
05:45 PM	0	0	0	0	0	1	0	0	0	1	1	2	2	0	0	4	0	0	0	0	0	4	5
TOTAL	0	0	0	0	0	8	1	0	0	9	9	12	17	0	0	29	0	0	0	0	0	29	38

PM Peak

05:00 PM to 06:00 PM	0	0	0	0	0	8	1	0	0	9	9	12	17	0	0	29	0	0	0	0	0	29	38
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15 MINUTE TURNING MOVEMENT COUNTS

(Cars and Trucks)

DATE: June 1, 2016 (Wednesday)

CITY: Groveland

LATITUDE: 0

LOCATION: SR 19 & SR 50 WB

COUNTY: Lake Co

LONGITUDE: 0

SR 19

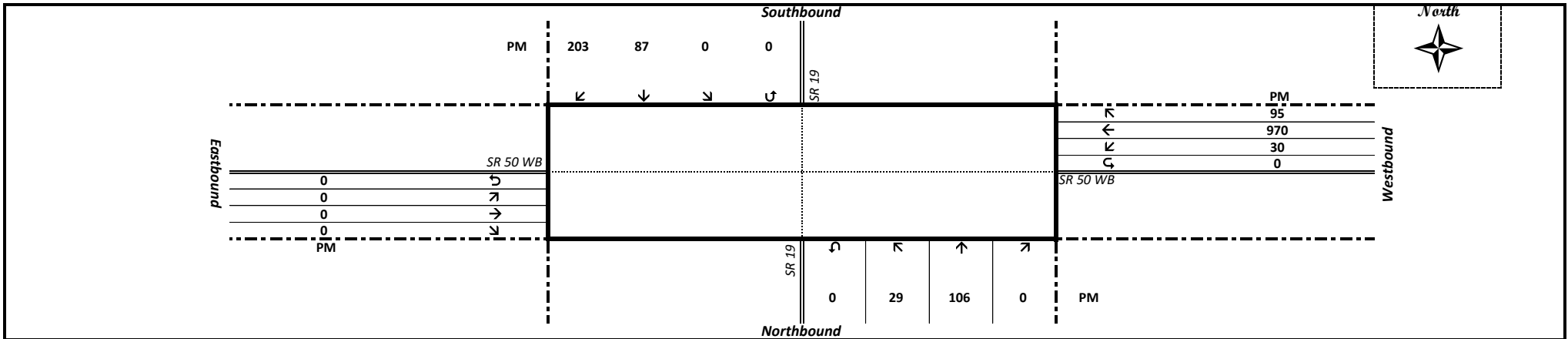
SR 19

SR 50 WB

SR 50 WB

TIME BEGIN	NORTHBOUND					SOUTHBOUND					N/S TOTAL	EASTBOUND					WESTBOUND					E/W TOTAL	GRAND TOTAL
	L	T	R	U-turn	TOTAL	L	T	R	U-turn	TOTAL		L	T	R	U-turn	TOTAL	L	T	R	U-turn	TOTAL		
04:00 PM	8	36	0	0	44	0	18	62	0	80	124	0	0	0	0	0	6	216	35	0	257	257	381
04:15 PM	4	24	0	0	28	0	27	57	0	84	112	0	0	0	0	0	4	235	21	0	260	260	372
04:30 PM	4	45	0	0	49	0	20	45	0	65	114	0	0	0	0	0	7	196	18	0	221	221	335
04:45 PM	9	23	0	0	32	0	25	58	0	83	115	0	0	0	0	0	10	237	28	0	275	275	390
TOTAL	25	128	0	0	153	0	90	222	0	312	465	0	0	0	0	0	27	884	102	0	1,013	1,013	1,478
05:00 PM	9	28	0	0	37	0	13	45	0	58	95	0	0	0	0	0	1	231	22	0	254	254	349
05:15 PM	8	30	0	0	38	0	26	45	0	71	109	0	0	0	0	0	8	263	25	0	296	296	405
05:30 PM	3	25	0	0	28	0	23	55	0	78	106	0	0	0	0	0	11	239	20	0	270	270	376
05:45 PM	4	27	0	0	31	0	30	38	0	68	99	0	0	0	0	0	21	226	26	0	273	273	372
TOTAL	24	110	0	0	134	0	92	183	0	275	409	0	0	0	0	0	41	959	93	0	1,093	1,093	1,502

PM Peak																					Peak Hour Factor: 0.938		
04:45 PM to 05:45 PM	29	106	0	0	135	0	87	203	0	290	425	0	0	0	0	0	30	970	95	0	1,095	1,095	1,520



15 MINUTE TURNING MOVEMENT COUNTS

(Trucks Only)

DATE: June 1, 2016 (Wednesday)

CITY: Groveland

LATITUDE: 0

LOCATION: SR 19 & SR 50 WB

COUNTY: Lake Co

LONGITUDE: 0

SR 19

SR 19

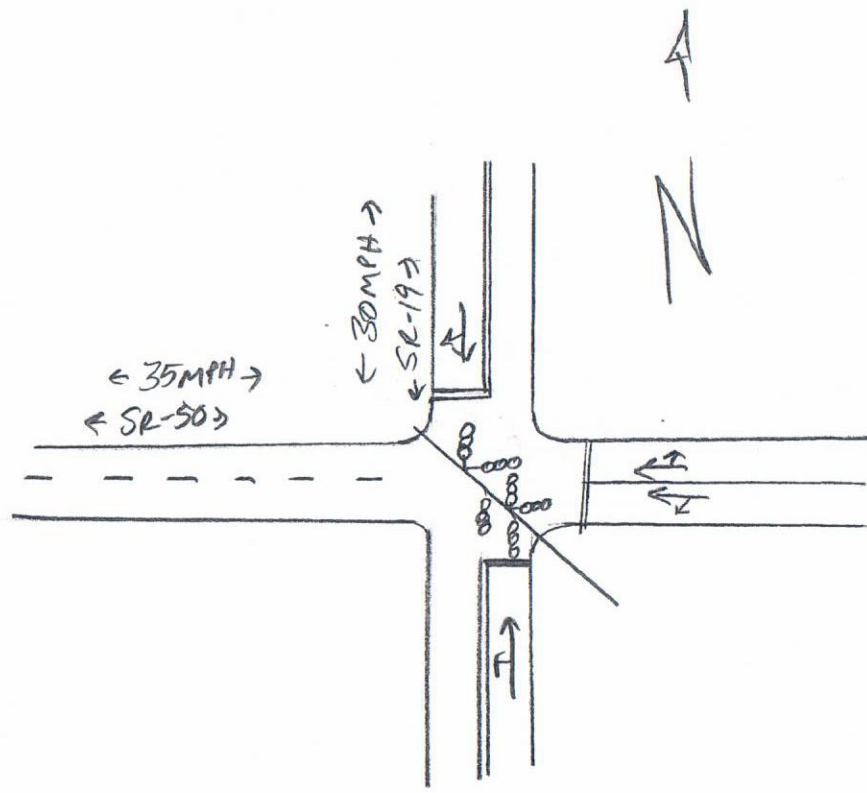
SR 50 WB

SR 50 WB

TIME BEGIN	NORTHBOUND					SOUTHBOUND					N/S TOTAL	EASTBOUND					WESTBOUND					E/W TOTAL	GRAND TOTAL
	L	T	R	U-turn	TOTAL	L	T	R	U-turn	TOTAL		L	T	R	U-turn	TOTAL	L	T	R	U-turn	TOTAL		
04:00 PM	0	5	0	0	5	0	4	2	0	6	11	0	0	0	0	0	0	8	8	0	16	16	27
04:15 PM	0	1	0	0	1	0	1	1	0	2	3	0	0	0	0	0	0	5	2	0	7	7	10
04:30 PM	0	4	0	0	4	0	2	1	0	3	7	0	0	0	0	0	0	7	3	0	10	10	17
04:45 PM	0	1	0	0	1	0	2	4	0	6	7	0	0	0	0	0	0	10	2	0	12	12	19
TOTAL	0	11	0	0	11	0	9	8	0	17	28	0	0	0	0	0	0	30	15	0	45	45	73
05:00 PM	0	4	0	0	4	0	1	2	0	3	7	0	0	0	0	0	0	8	5	0	13	13	20
05:15 PM	0	3	0	0	3	0	2	4	0	6	9	0	0	0	0	0	0	7	5	0	12	12	21
05:30 PM	0	2	0	0	2	0	4	2	0	6	8	0	0	0	0	0	0	8	4	0	12	12	20
05:45 PM	0	3	0	0	3	0	1	3	0	4	7	0	0	0	0	0	0	4	4	0	8	8	15
TOTAL	0	12	0	0	12	0	8	11	0	19	31	0	0	0	0	0	0	27	18	0	45	45	76

PM Peak

04:45 PM to 05:45 PM	0	10	0	0	10	0	9	12	0	21	31	0	0	0	0	0	0	33	16	0	49	49	80
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2014 Peak Season Factor Category Report - Report Type: ALL
 Category: 1100 LAKE COUNTYWIDE

Week	Dates	SF	MOCF: 0.95 PSCF
1	01/01/2014 - 01/04/2014	0.99	1.04
2	01/05/2014 - 01/11/2014	1.01	1.06
3	01/12/2014 - 01/18/2014	1.03	1.08
4	01/19/2014 - 01/25/2014	1.01	1.06
5	01/26/2014 - 02/01/2014	1.00	1.05
* 6	02/02/2014 - 02/08/2014	0.98	1.03
* 7	02/09/2014 - 02/15/2014	0.96	1.01
* 8	02/16/2014 - 02/22/2014	0.94	0.99
* 9	02/23/2014 - 03/01/2014	0.94	0.99
*10	03/02/2014 - 03/08/2014	0.93	0.98
*11	03/09/2014 - 03/15/2014	0.93	0.98
*12	03/16/2014 - 03/22/2014	0.93	0.98
*13	03/23/2014 - 03/29/2014	0.93	0.98
*14	03/30/2014 - 04/05/2014	0.94	0.99
*15	04/06/2014 - 04/12/2014	0.95	1.00
*16	04/13/2014 - 04/19/2014	0.95	1.00
*17	04/20/2014 - 04/26/2014	0.96	1.01
*18	04/27/2014 - 05/03/2014	0.98	1.03
19	05/04/2014 - 05/10/2014	0.99	1.04
20	05/11/2014 - 05/17/2014	1.00	1.05
21	05/18/2014 - 05/24/2014	1.01	1.06
22	05/25/2014 - 05/31/2014	1.02	1.07
23	06/01/2014 - 06/07/2014	1.03	1.08
24	06/08/2014 - 06/14/2014	1.04	1.09
25	06/15/2014 - 06/21/2014	1.05	1.11
26	06/22/2014 - 06/28/2014	1.06	1.12
27	06/29/2014 - 07/05/2014	1.07	1.13
28	07/06/2014 - 07/12/2014	1.08	1.14
29	07/13/2014 - 07/19/2014	1.09	1.15
30	07/20/2014 - 07/26/2014	1.08	1.14
31	07/27/2014 - 08/02/2014	1.07	1.13
32	08/03/2014 - 08/09/2014	1.06	1.12
33	08/10/2014 - 08/16/2014	1.06	1.12
34	08/17/2014 - 08/23/2014	1.05	1.11
35	08/24/2014 - 08/30/2014	1.05	1.11
36	08/31/2014 - 09/06/2014	1.04	1.09
37	09/07/2014 - 09/13/2014	1.04	1.09
38	09/14/2014 - 09/20/2014	1.04	1.09
39	09/21/2014 - 09/27/2014	1.02	1.07
40	09/28/2014 - 10/04/2014	1.01	1.06
41	10/05/2014 - 10/11/2014	0.99	1.04
42	10/12/2014 - 10/18/2014	0.98	1.03
43	10/19/2014 - 10/25/2014	0.98	1.03
44	10/26/2014 - 11/01/2014	0.99	1.04
45	11/02/2014 - 11/08/2014	0.99	1.04
46	11/09/2014 - 11/15/2014	1.00	1.05
47	11/16/2014 - 11/22/2014	1.00	1.05
48	11/23/2014 - 11/29/2014	1.00	1.05
49	11/30/2014 - 12/06/2014	1.00	1.05
50	12/07/2014 - 12/13/2014	0.99	1.04
51	12/14/2014 - 12/20/2014	0.99	1.04
52	12/21/2014 - 12/27/2014	1.01	1.06
53	12/28/2014 - 12/31/2014	1.03	1.08

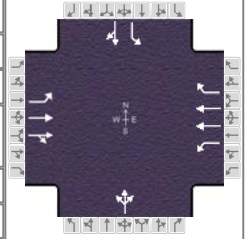
* Peak Season

APPENDIX C

Existing HCS Capacity Analysis Sheets

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	TPD, Inc.			Duration, h	0.25
Analyst	MJA	Analysis Date	Jun 6, 2016	Area Type	Other
Jurisdiction	City of Groveland / Lake County	Time Period	P.M. Peak Hour	PHF	0.90
Urban Street	SR 50 EB	Analysis Year	2016	Analysis Period	1 > 17:00
Intersection	Villa City Rd	File Name	4779 - SR 50 Villa City Rd - Existing.xus		
Project Description	P.M. Peak Hour - Existing				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	41	735	12	107	919	139	17	22	60	121	14	42

Signal Information														
Cycle, s	92.1	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	Yes	Simult. Gap E/W	On	Green	3.4	4.3	30.8	7.6	9.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	5.4	0.0	5.7	5.4	5.4	0.0				
				Red	3.0	0.0	3.9	4.1	4.1	0.0				

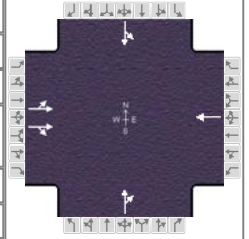
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2		4		8
Case Number	2.0	4.0	2.0	3.0		12.0		10.0
Phase Duration, s	11.8	40.4	16.1	44.7		17.1		18.5
Change Period, (Y+R _c), s	8.4	9.6	8.4	9.6		9.5		9.5
Max Allow Headway (MAH), s	4.0	4.0	4.0	4.0		4.1		4.2
Queue Clearance Time (g _s), s	4.4	20.1	7.9	25.7		7.9		8.7
Green Extension Time (g _e), s	0.1	10.0	0.2	9.4		0.2		0.3
Phase Call Probability	0.69	1.00	0.95	1.00		0.94		0.99
Max Out Probability	0.00	0.14	0.06	0.21		0.07		0.24

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	46	416	414	119	1021	154		110		134	62	
Adjusted Saturation Flow Rate (s), veh/h/ln	1757	1827	1816	1810	1739	1594		1683		1810	1674	
Queue Service Time (g _s), s	2.4	18.1	18.1	5.9	23.7	6.1		5.9		6.7	3.2	
Cycle Queue Clearance Time (g _c), s	2.4	18.1	18.1	5.9	23.7	6.1		5.9		6.7	3.2	
Green Ratio (g/C)	0.58	0.33	0.33	0.63	0.38	0.38		0.08		0.10	0.10	
Capacity (c), veh/h	66	612	608	152	1326	608		139		176	163	
Volume-to-Capacity Ratio (X)	0.693	0.680	0.681	0.784	0.770	0.254		0.793		0.764	0.382	
Back of Queue (Q), ft/ln (95 th percentile)	55.7	308.6	297.7	133	362.7	96.1		125.2		150.4	61.8	
Back of Queue (Q), veh/ln (95 th percentile)	2.2	12.0	11.9	5.2	14.1	3.8		4.9		5.9	2.5	
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	
Uniform Delay (d ₁), s/veh	43.8	26.4	26.4	41.4	25.0	19.5		41.5		40.5	39.0	
Incremental Delay (d ₂), s/veh	12.3	1.3	1.3	8.5	1.3	0.2		9.7		6.7	1.5	
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	56.1	27.7	27.7	49.9	26.2	19.7		51.2		47.3	40.5	
Level of Service (LOS)	E	C	C	D	C	B		D		D	D	
Approach Delay, s/veh / LOS	29.2	C		27.6	C		51.2	D		45.1	D	
Intersection Delay, s/veh / LOS	30.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.1	B	2.3	B	3.0	C	2.9	C
Bicycle LOS Score / LOS	1.2	A	1.6	A	0.7	A	0.8	A

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	TPD, Inc.			Duration, h	0.25
Analyst	MJA	Analysis Date	Jun 6, 2016	Area Type	Other
Jurisdiction	City of Groveland / Lake County	Time Period	P.M. Peak Hour	PHF	0.89
Urban Street	SR 50 EB	Analysis Year	2016	Analysis Period	1 > 17:00
Intersection	SR 19	File Name	4779 - SR 50 EB & SR 19 - Existing.xus		
Project Description	P.M. Peak Hour - Existing				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	117	816	45		0			27	6	62	73	

Signal Information												
Cycle, s	59.2	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	24.8	3.7	7.3	0.0	0.0	0.0				
		Yellow	5.4	5.4	5.4	0.0	0.0	0.0				
		Red	2.4	2.4	2.4	0.0	0.0	0.0				

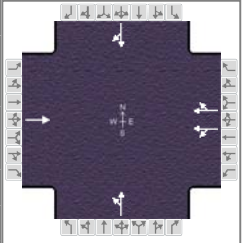
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		6		2		4		8
Case Number		8.0		8.0		12.0		12.0
Phase Duration, s		32.6		32.6		11.5		15.1
Change Period, (Y+R _c), s		7.8		7.8		7.8		7.8
Max Allow Headway (MAH), s		4.5		0.0		3.6		3.6
Queue Clearance Time (g _s), s		18.5				3.1		6.7
Green Extension Time (g _e), s		6.3		0.0		0.1		0.4
Phase Call Probability		1.00				0.46		0.92
Max Out Probability		0.03				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	1	6	16		2			4	14	3	8		
Adjusted Flow Rate (v), veh/h	570		529		0			37		3	152		
Adjusted Saturation Flow Rate (s), veh/h/ln	1752		1666		1900			1840		1839			
Queue Service Time (g _s), s	13.1		16.0		0.0			1.1		4.7			
Cycle Queue Clearance Time (g _c), s	16.5		16.0		0.0			1.1		4.7			
Green Ratio (g/C)	0.42		0.42		0.42			0.06		0.12			
Capacity (c), veh/h	809		698		796			114		228			
Volume-to-Capacity Ratio (X)	0.704		0.758		0.000			0.325		0.665			
Back of Queue (Q), ft/ln (95 th percentile)	241.1		230.7		0			23.1		92.7			
Back of Queue (Q), veh/ln (95 th percentile)	9.6		9.2		0.0			0.9		3.7			
Queue Storage Ratio (RQ) (95 th percentile)	0.00		0.00		0.00			0.00		0.00			
Uniform Delay (d ₁), s/veh	14.7		14.7		0.0			26.6		24.8			
Incremental Delay (d ₂), s/veh	1.4		2.1		0.0			1.2		2.5			
Initial Queue Delay (d ₃), s/veh	0.0		0.0		0.0			0.0		0.0			
Control Delay (d), s/veh	16.1		16.7		0.0			27.8		27.2			
Level of Service (LOS)	B		B					C		C			
Approach Delay, s/veh / LOS	16.4		B		0.0			27.8		C		27.2	
Intersection Delay, s/veh / LOS	18.0						B						

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.1	B	2.1	B	2.6	B	2.3	B
Bicycle LOS Score / LOS	1.4	A	0.5	A	0.5	A	0.7	A

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	TPD, Inc.			Duration, h	0.25
Analyst	MJA	Analysis Date	Jun 6, 2016	Area Type	Other
Jurisdiction	City of Groveland / Lake County	Time Period	P.M. Peak Hour	PHF	0.94
Urban Street	SR 50 WB	Analysis Year	2016	Analysis Period	1 > 16:45
Intersection	SR 19	File Name	4779 - SR 50 WB & SR 19 - Existing.xus		
Project Description	P.M. Peak Hour - Existing				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h		0		31	999	98	30	109			90	209

Signal Information												
Cycle, s	89.3	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	35.6	9.7	20.5	0.0	0.0	0.0				
		Yellow	5.4	5.4	5.4	0.0	0.0	0.0				
		Red	2.4	2.4	2.4	0.0	0.0	0.0				

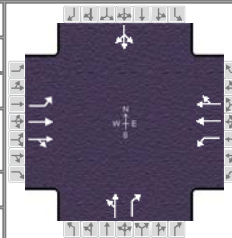
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		6		2		4		8
Case Number		8.0		8.0		12.0		12.0
Phase Duration, s		43.4		43.4		17.5		28.3
Change Period, (Y+R _c), s		7.8		7.8		7.8		7.8
Max Allow Headway (MAH), s		0.0		5.1		4.6		4.8
Queue Clearance Time (g _s), s				30.6		9.3		19.4
Green Extension Time (g _e), s		0.0		5.0		0.6		1.2
Phase Call Probability				1.00		0.97		1.00
Max Out Probability				0.69		0.00		0.09

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		6		5	2	12	7	4			8	18
Adjusted Flow Rate (v), veh/h		0		636		564		148			318	
Adjusted Saturation Flow Rate (s), veh/h/ln		1900		1827		1625		1757			1577	
Queue Service Time (g _s), s		0.0		14.0		28.6		7.3			17.4	
Cycle Queue Clearance Time (g _c), s		0.0		28.6		28.6		7.3			17.4	
Green Ratio (g/C)		0.40		0.40		0.40		0.11			0.23	
Capacity (c), veh/h		758		772		648		191			363	
Volume-to-Capacity Ratio (X)		0.000		0.824		0.870		0.774			0.876	
Back of Queue (Q), ft/ln (95 th percentile)		0		468.6		439.5		158.4			304.7	
Back of Queue (Q), veh/ln (95 th percentile)		0.0		18.7		17.6		6.3			12.2	
Queue Storage Ratio (RQ) (95 th percentile)		0.00		0.00		0.00		0.00			0.00	
Uniform Delay (d ₁), s/veh		0.0		24.7		24.7		38.7			33.2	
Incremental Delay (d ₂), s/veh		0.0		6.5		9.5		7.8			11.8	
Initial Queue Delay (d ₃), s/veh		0.0		0.0		0.0		0.0			0.0	
Control Delay (d), s/veh		0.0		31.1		34.2		46.6			45.0	
Level of Service (LOS)				C		C		D			D	
Approach Delay, s/veh / LOS	0.0			32.6		C	46.6		D	45.0		D
Intersection Delay, s/veh / LOS	36.2						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.1	B	2.1	B	2.3	B	2.6	B
Bicycle LOS Score / LOS	0.5	A	1.5	A	0.7	A	1.0	A

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	TPD, Inc.			Duration, h	0.25
Analyst	MJA	Analysis Date	Jun 6, 2016	Area Type	Other
Jurisdiction	City of Groveland / Lake County	Time Period	P.M. Peak Hour	PHF	0.93
Urban Street	SR 50 EB	Analysis Year	2016	Analysis Period	1 > 17:00
Intersection	CR 33 (Bluff Lake Rd)	File Name	4779 - SR 50 & CR 33 - Existing.xus		
Project Description	P.M. Peak Hour - Existing				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	7	512	13	21	666	197	16	12	21	183	11	5

Signal Information												
Cycle, s	72.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	Yes	Simult. Gap E/W	On	Green	1.8	20.2	5.2	12.1	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.4	5.9	5.4	5.4	0.0	0.0		
				Red	2.9	2.9	2.9	2.9	0.0	0.0		

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		4		8
Case Number		6.3	1.0	4.0		11.0		12.0
Phase Duration, s		29.0	9.1	38.1		13.5		20.4
Change Period, (Y+R _c), s		8.8	7.3	8.8		8.3		9.5
Max Allow Headway (MAH), s		4.5	3.5	4.5		3.7		3.6
Queue Clearance Time (g _s), s		11.6	2.6	17.5		3.1		10.5
Green Extension Time (g _e), s		8.5	0.0	8.2		0.1		0.5
Phase Call Probability		1.00	0.36	1.00		0.65		0.99
Max Out Probability		0.08	0.00	0.13		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	8	283	281	23	483	445		30	23		214	
Adjusted Saturation Flow Rate (s), veh/h/ln	612	1810	1793	1810	1810	1667		1847	1610		1756	
Queue Service Time (g _s), s	0.7	9.6	9.6	0.6	15.5	15.5		1.1	0.9		8.5	
Cycle Queue Clearance Time (g _c), s	7.1	9.6	9.6	0.6	15.5	15.5		1.1	0.9		8.5	
Green Ratio (g/C)	0.28	0.28	0.28	0.33	0.41	0.41		0.07	0.07		0.15	
Capacity (c), veh/h	217	508	503	272	737	679		134	117		265	
Volume-to-Capacity Ratio (X)	0.035	0.558	0.559	0.083	0.656	0.656		0.225	0.193		0.808	
Back of Queue (Q), ft/ln (95 th percentile)	4.5	177.8	169.8	10.3	249.8	225.7		22.3	16.7		166.6	
Back of Queue (Q), veh/ln (95 th percentile)	0.2	6.8	6.8	0.4	9.6	9.0		0.9	0.7		6.7	
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	23.8	22.1	22.1	17.2	17.3	17.3		31.5	31.4		29.6	
Incremental Delay (d ₂), s/veh	0.1	1.2	1.2	0.1	1.2	1.3		0.6	0.6		4.4	
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	
Control Delay (d), s/veh	23.9	23.3	23.3	17.3	18.5	18.6		32.1	32.0		33.9	
Level of Service (LOS)	C	C	C	B	B	B		C	C		C	
Approach Delay, s/veh / LOS	23.3	C		18.5	B		32.1	C		33.9	C	
Intersection Delay, s/veh / LOS	22.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.1	B	2.8	C	2.9	C
Bicycle LOS Score / LOS	1.0	A	1.3	A	0.6	A	0.8	A

APPENDIX D

ITE Trip Generation Sheets

Single-Family Detached Housing (210)

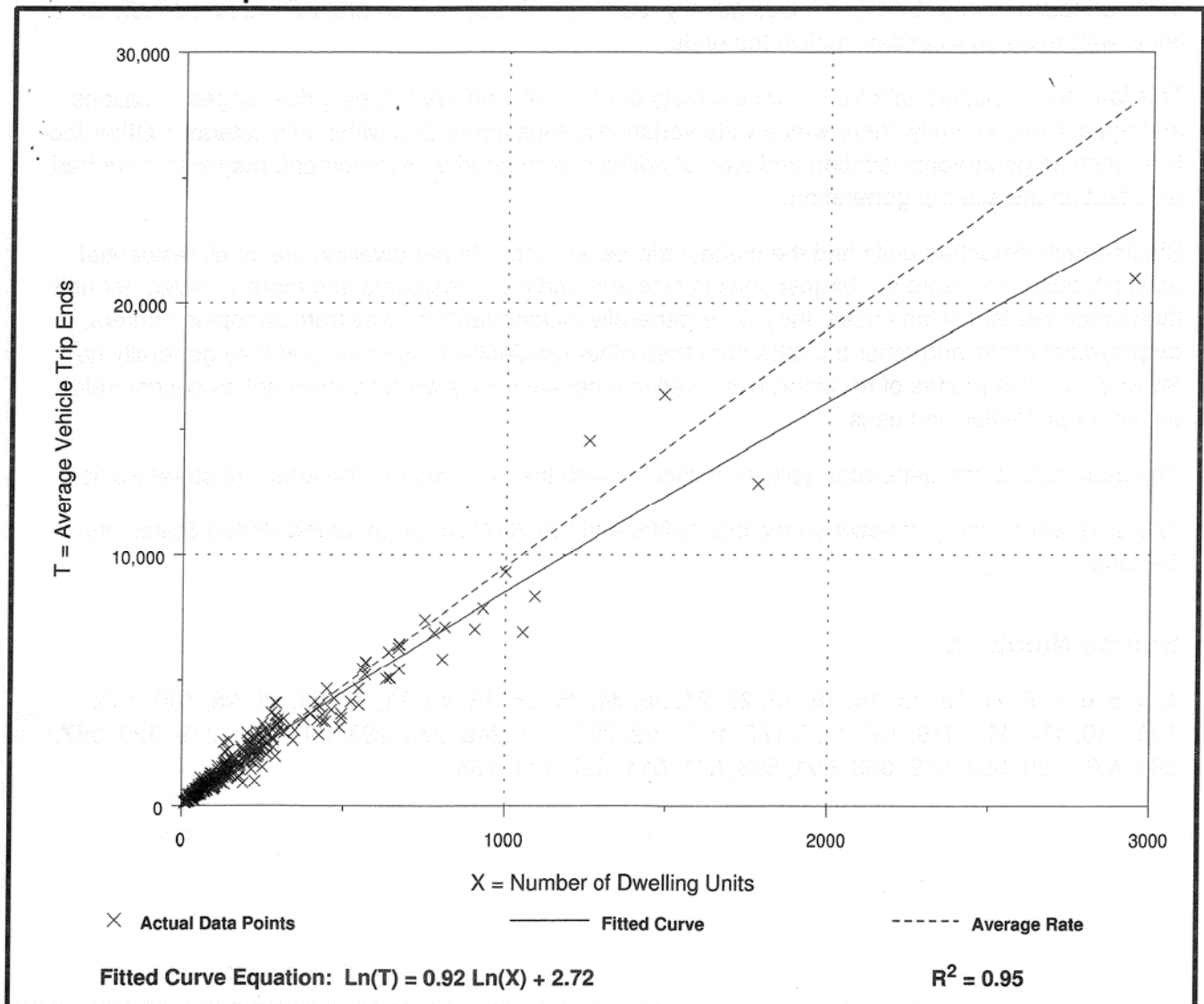
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Number of Studies: 355
Avg. Number of Dwelling Units: 198
Directional Distribution: 50% entering, 50% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.52	4.31 - 21.85	3.70

Data Plot and Equation



Single-Family Detached Housing (210)

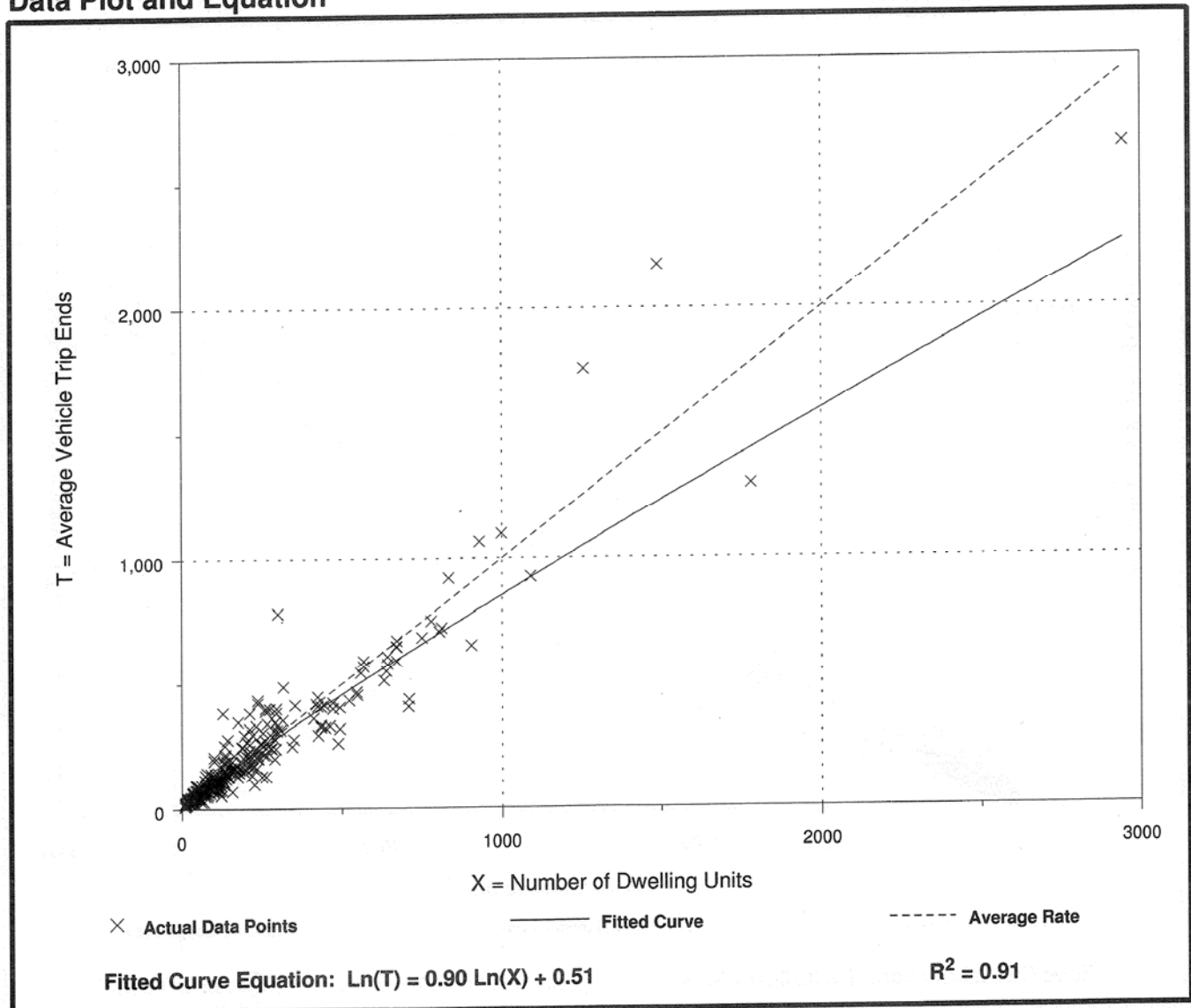
Average Vehicle Trip Ends vs: Dwelling Units
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 4 and 6 p.m.

Number of Studies: 321
 Avg. Number of Dwelling Units: 207
 Directional Distribution: 63% entering, 37% exiting

Trip Generation per Dwelling Unit

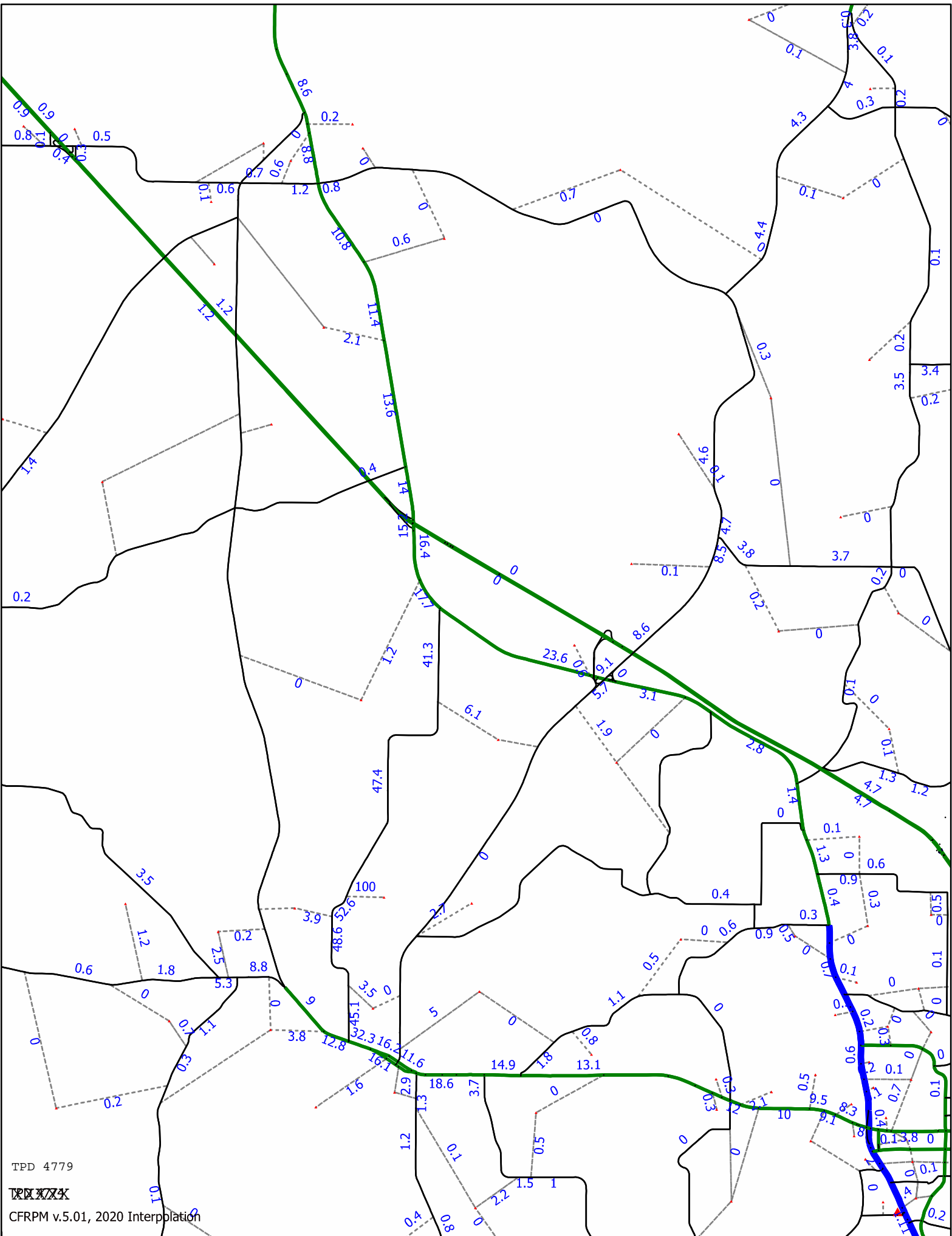
Average Rate	Range of Rates	Standard Deviation
1.00	0.42 - 2.98	1.05

Data Plot and Equation

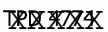


APPENDIX E

Model Distribution Plot



TPD 4779



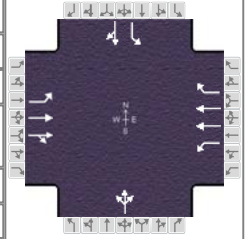
CFRPM v.5.01, 2020 Interpolation

APPENDIX F

Projected HSC Capacity Analysis Worksheets

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	TPD, Inc.			Duration, h	0.25
Analyst	MJA	Analysis Date	Jun 6, 2016	Area Type	Other
Jurisdiction	City of Groveland / Lake County	Time Period	P.M. Peak Hour	PHF	0.90
Urban Street	SR 50 EB	Analysis Year	2018	Analysis Period	1 > 17:00
Intersection	Villa City Rd	File Name	4779 - SR 50 Villa City Rd - Projected.xus		
Project Description	P.M. Peak Hour - Projected				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	68	759	12	107	959	204	17	22	60	160	14	60

Signal Information													
Cycle, s	102.6	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	Yes	Simult. Gap E/W	On	Green	5.7	2.8	36.6	8.4	12.1	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	5.4	0.0	5.7	5.4	5.4	0.0			
				Red	3.0	0.0	3.9	4.1	4.1	0.0			

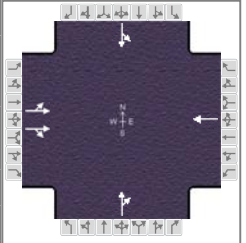
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2		4		8
Case Number	2.0	4.0	2.0	3.0		12.0		10.0
Phase Duration, s	14.1	46.2	16.9	49.0		17.9		21.6
Change Period, (Y+R _c), s	8.4	9.6	8.4	9.6		9.5		9.5
Max Allow Headway (MAH), s	4.0	4.0	4.0	4.0		4.1		4.2
Queue Clearance Time (g _s), s	6.4	22.3	8.6	29.9		8.6		11.9
Green Extension Time (g _e), s	0.1	10.8	0.1	9.5		0.1		0.3
Phase Call Probability	0.88	1.00	0.97	1.00		0.96		1.00
Max Out Probability	0.01	0.22	0.11	0.35		0.13		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	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	76	430	427	119	1066	227		110		178	82	
Adjusted Saturation Flow Rate (s), veh/h/ln	1757	1827	1817	1810	1739	1594		1683		1810	1658	
Queue Service Time (g _s), s	4.4	20.3	20.3	6.6	27.9	10.5		6.6		9.9	4.7	
Cycle Queue Clearance Time (g _c), s	4.4	20.3	20.3	6.6	27.9	10.5		6.6		9.9	4.7	
Green Ratio (g/C)	0.06	0.36	0.36	0.08	0.38	0.38		0.08		0.12	0.12	
Capacity (c), veh/h	98	652	649	150	1336	612		137		214	196	
Volume-to-Capacity Ratio (X)	0.773	0.659	0.659	0.795	0.798	0.370		0.802		0.830	0.419	
Back of Queue (Q), ft/ln (95 th percentile)	100	342.6	330.5	149.9	429.3	169.2		140.5		234.5	90	
Back of Queue (Q), veh/ln (95 th percentile)	3.9	13.3	13.2	5.9	16.6	6.8		5.5		9.2	3.6	
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	47.8	27.7	27.7	46.2	28.1	22.7		46.3		44.2	42.0	
Incremental Delay (d ₂), s/veh	12.1	1.1	1.1	9.2	2.2	0.4		10.3		16.4	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	
Control Delay (d), s/veh	59.9	28.9	28.9	55.4	30.2	23.1		56.6		60.7	43.4	
Level of Service (LOS)	E	C	C	E	C	C		E		E	D	
Approach Delay, s/veh / LOS	31.4	C		31.2	C		56.6	E	55.2	E		
Intersection Delay, s/veh / LOS	34.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.1	B	2.3	B	3.0	C	2.9	C
Bicycle LOS Score / LOS	1.3	A	1.7	A	0.7	A	0.9	A

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	TPD, Inc.			Duration, h	0.25		
Analyst	MJA	Analysis Date	Jun 6, 2016	Area Type	Other		
Jurisdiction	City of Groveland / Lake County	Time Period	P.M. Peak Hour	PHF	0.89		
Urban Street	SR 50 EB	Analysis Year	2018	Analysis Period	1 > 17:00		
Intersection	SR 19	File Name	4779 - SR 50 EB & SR 19 - Projected.xus				
Project Description	P.M. Peak Hour - Projected						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	128	861	49		0			33	6		64	73

Signal Information													
Cycle, s	62.4	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	Yes	Simult. Gap E/W	On	Green	27.3	4.3	7.5	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	5.4	5.4	5.4	0.0	0.0	0.0			
				Red	2.4	2.4	2.4	0.0	0.0	0.0			

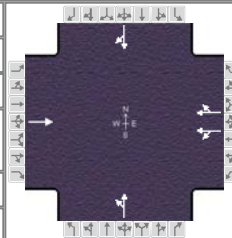
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		6		2		4		8
Case Number		8.0		8.0		12.0		12.0
Phase Duration, s		35.1		35.1		12.1		15.3
Change Period, (Y+R _c), s		7.8		7.8		7.8		7.8
Max Allow Headway (MAH), s		4.5		0.0		3.6		3.6
Queue Clearance Time (g _s), s		20.5				3.4		7.0
Green Extension Time (g _e), s		6.8		0.0		0.1		0.4
Phase Call Probability		1.00				0.53		0.93
Max Out Probability		0.05				0.00		0.00

Movement Group Results	EB			WB			NB			SB			
	L	T	R	L	T	R	L	T	R	L	T	R	
Assigned Movement	1	6	16		2			4	14	3	8		
Adjusted Flow Rate (v), veh/h	604		563		0			44			154		
Adjusted Saturation Flow Rate (s), veh/h/ln	1745		1666		1900			1849			1838		
Queue Service Time (g _s), s	15.5		17.9		0.0			1.4			5.0		
Cycle Queue Clearance Time (g _c), s	18.5		17.9		0.0			1.4			5.0		
Green Ratio (g/C)	0.44		0.44		0.44			0.07			0.12		
Capacity (c), veh/h	835		729		831			127			219		
Volume-to-Capacity Ratio (X)	0.723		0.772		0.000			0.346			0.701		
Back of Queue (Q), ft/ln (95 th percentile)	265.1		253.4		0			28.7			101.8		
Back of Queue (Q), veh/ln (95 th percentile)	10.6		10.1		0.0			1.1			4.1		
Queue Storage Ratio (RQ) (95 th percentile)	0.00		0.00		0.00			0.00			0.00		
Uniform Delay (d ₁), s/veh	15.0		14.9		0.0			27.8			26.4		
Incremental Delay (d ₂), s/veh	1.5		2.1		0.0			1.2			3.0		
Initial Queue Delay (d ₃), s/veh	0.0		0.0		0.0			0.0			0.0		
Control Delay (d), s/veh	16.4		17.1		0.0			29.0			29.4		
Level of Service (LOS)	B		B					C			C		
Approach Delay, s/veh / LOS	16.7		B		0.0			29.0		C	29.4		C
Intersection Delay, s/veh / LOS	18.6						B						

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.1	B	2.1	B	2.6	B	2.3	B
Bicycle LOS Score / LOS	1.4	A	0.5	A	0.6	A	0.7	A

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	TPD, Inc.			Duration, h	0.25
Analyst	MJA	Analysis Date	Jun 6, 2016	Area Type	Other
Jurisdiction	City of Groveland / Lake County	Time Period	P.M. Peak Hour	PHF	0.94
Urban Street	SR 50 WB	Analysis Year	2018	Analysis Period	1 > 16:45
Intersection	SR 19	File Name	4779 - SR 50 WB & SR 19 - Projected.xus		
Project Description	P.M. Peak Hour - Projected				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h		0		31	1073	104	36	120			92	230

Signal Information												
Cycle, s	97.6	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	39.0	11.6	23.6	0.0	0.0	0.0				
		Yellow	5.4	5.4	5.4	0.0	0.0	0.0				
		Red	2.4	2.4	2.4	0.0	0.0	0.0				

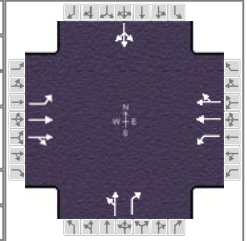
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		6		2		4		8
Case Number		8.0		8.0		12.0		12.0
Phase Duration, s		46.8		46.8		19.4		31.4
Change Period, (Y+R _c), s		7.8		7.8		7.8		7.8
Max Allow Headway (MAH), s		0.0		5.1		4.6		4.8
Queue Clearance Time (g _s), s				36.7		11.0		22.6
Green Extension Time (g _e), s		0.0		2.2		0.7		1.0
Phase Call Probability				1.00		0.99		1.00
Max Out Probability				1.00		0.00		0.36

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		6		5	2	12	7	4			8	18
Adjusted Flow Rate (v), veh/h		0		680		605		166			343	
Adjusted Saturation Flow Rate (s), veh/h/ln		1900		1828		1625		1755			1573	
Queue Service Time (g _s), s		0.0		19.4		34.7		9.0			20.6	
Cycle Queue Clearance Time (g _c), s		0.0		34.7		34.7		9.0			20.6	
Green Ratio (g/C)		0.40		0.40		0.40		0.12			0.24	
Capacity (c), veh/h		759		769		649		208			381	
Volume-to-Capacity Ratio (X)		0.000		0.885		0.931		0.797			0.899	
Back of Queue (Q), ft/ln (95 th percentile)		0		588.1		570.5		193.4			366.2	
Back of Queue (Q), veh/ln (95 th percentile)		0.0		23.5		22.8		7.7			14.6	
Queue Storage Ratio (RQ) (95 th percentile)		0.00		0.00		0.00		0.00			0.00	
Uniform Delay (d ₁), s/veh		0.0		27.9		28.0		41.9			35.8	
Incremental Delay (d ₂), s/veh		0.0		11.9		19.5		8.1			17.4	
Initial Queue Delay (d ₃), s/veh		0.0		0.0		0.0		0.0			0.0	
Control Delay (d), s/veh		0.0		39.8		47.5		50.0			53.2	
Level of Service (LOS)				D		D		D			D	
Approach Delay, s/veh / LOS	0.0			43.4		D	50.0		D	53.2		D
Intersection Delay, s/veh / LOS	45.9						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.1	B	2.1	B	2.3	B	2.6	B
Bicycle LOS Score / LOS	0.5	A	1.5	A	0.8	A	1.1	A

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	TPD, Inc.			Duration, h	0.25
Analyst	MJA	Analysis Date	Jun 6, 2016	Area Type	Other
Jurisdiction	City of Groveland / Lake County	Time Period	P.M. Peak Hour	PHF	0.93
Urban Street	SR 50 EB	Analysis Year	2018	Analysis Period	1 > 17:00
Intersection	CR 33 (Bluff Lake Rd)	File Name	4779 - SR 50 & CR 33 - Projected.xus		
Project Description	P.M. Peak Hour - Projected				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	20	538	13	21	689	227	16	12	21	225	11	26

Signal Information														
Cycle, s	77.7	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	Yes	Simult. Gap E/W	On	Green	1.9	22.8	5.4	14.8	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.4	5.9	5.4	5.4	0.0	0.0				
				Red	2.9	2.9	2.9	2.9	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		4		8
Case Number		6.3	1.0	4.0		11.0		12.0
Phase Duration, s		31.6	9.2	40.8		13.7		23.1
Change Period, (Y+R _c), s		8.8	7.3	8.8		8.3		8.3
Max Allow Headway (MAH), s		4.5	3.5	4.5		3.7		3.6
Queue Clearance Time (g _s), s		13.4	2.6	20.2		3.2		14.2
Green Extension Time (g _e), s		9.4	0.0	8.8		0.1		0.7
Phase Call Probability		1.00	0.39	1.00		0.68		1.00
Max Out Probability		0.13	0.00	0.21		0.00		0.00

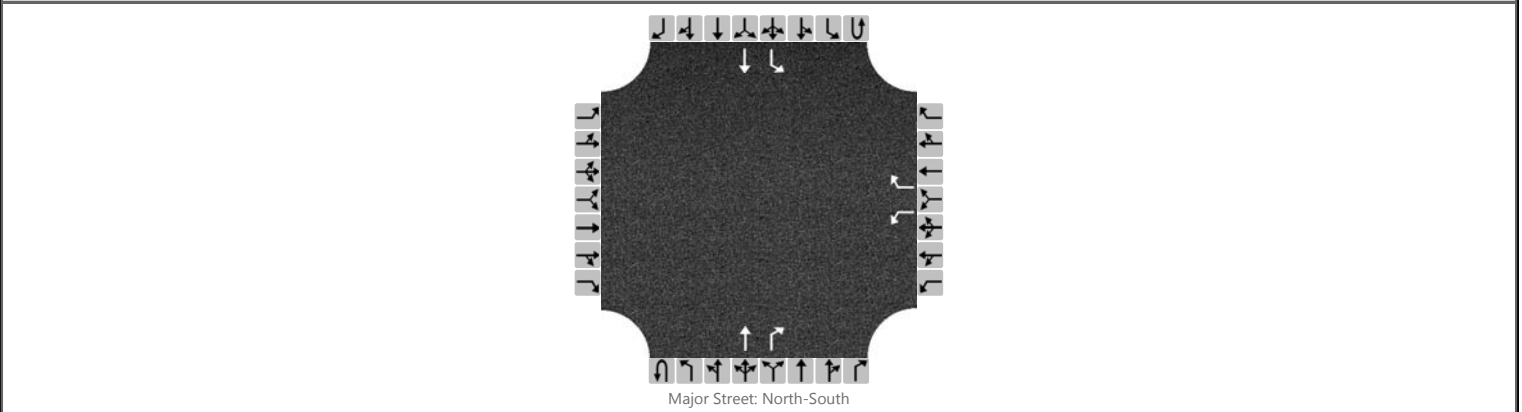
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	22	297	295	23	514	471		30	23		282	
Adjusted Saturation Flow Rate (s), veh/h/ln	580	1810	1794	1810	1810	1655		1847	1610		1739	
Queue Service Time (g _s), s	2.5	10.8	10.8	0.6	18.2	18.2		1.2	1.0		12.2	
Cycle Queue Clearance Time (g _c), s	11.4	10.8	10.8	0.6	18.2	18.2		1.2	1.0		12.2	
Green Ratio (g/C)	0.29	0.29	0.29	0.34	0.41	0.41		0.07	0.07		0.19	
Capacity (c), veh/h	196	530	526	267	745	682		130	113		332	
Volume-to-Capacity Ratio (X)	0.110	0.561	0.561	0.085	0.690	0.690		0.232	0.200		0.847	
Back of Queue (Q), ft/ln (95 th percentile)	14.9	200.9	192.5	11.2	290.1	260.4		24.5	18.3		224.8	
Back of Queue (Q), veh/ln (95 th percentile)	0.6	7.7	7.7	0.4	11.2	10.4		1.0	0.7		9.0	
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	
Uniform Delay (d ₁), s/veh	27.2	23.2	23.3	18.0	18.8	18.8		34.2	34.1		30.3	
Incremental Delay (d ₂), s/veh	0.3	1.1	1.1	0.1	1.4	1.5		0.7	0.6		4.5	
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	27.5	24.4	24.4	18.1	20.2	20.3		34.8	34.7		34.9	
Level of Service (LOS)	C	C	C	B	C	C		C	C		C	
Approach Delay, s/veh / LOS	24.5	C		20.2	C		34.8	C		34.9	C	
Intersection Delay, s/veh / LOS	24.0						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.1	B	2.8	C	2.9	C
Bicycle LOS Score / LOS	1.0	A	1.3	A	0.6	A	1.0	A

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	MJA	Intersection	Villa City Rd & Site Acces
Agency/Co.	TPD, Inc.	Jurisdiction	Lake County / Groveland
Date Performed	6/6/2016	East/West Street	Site Access
Analysis Year	2018	North/South Street	Villa City Rd
Time Analyzed	PM Peak Hour - Projected	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	4779 - Lakeside at Sunrise		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	0	1	0	0	1	1	0	1	1	0
Configuration						L		R			T	R		L	T	
Volume (veh/h)						82		71			44	139		123	84	
Percent Heavy Vehicles						3		3						3		
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)						89		77						134		
Capacity						539		1017						1366		
v/c Ratio						0.17		0.08						0.10		
95% Queue Length						0.6		0.2						0.3		
Control Delay (s/veh)						13.0		8.8						7.9		
Level of Service (LOS)						B		A						A		
Approach Delay (s/veh)					11.1								4.7			
Approach LOS					B											