TRAFFIC IMPACT STUDY
Santa Fe Crossing
Alachua, Florida

March 22, 2022

prepared for:

FDOT-D2 TRAFFIC OPERATIONS &
CITY OF ALACHUA PUBLIC WORKS
& PLANNING DEPARTMENTS

submitted on behalf of:

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EXECUTIVE SUMMARY

The results of the Traffic Impact Study conducted for the Santa Fe Crossing in Alachua, Florida provides the following conclusions. The actual *net new* trip assessment for the proposed new commercial complex is **3,396 daily trips, 276 a.m. peak hour trips** and **291 p.m. peak hour trips**. The traffic generated by these proposed projects will be dispersed on the area roadway network so that the maximum peak hour directional volume on any roadway segment of **SR 20 (US 441)** will be **195 trips**. The Santa Fe Crossing project is a new commercial complex on the southwest corner of SR 20 (US 441) at CR 235A. The site plan indicates one limited access driveway on SR 20 (US 441) and a full access driveway connecting to CR 235A along with a restricted right-in only driveway on CR 235A directly to the gas station component of the proposed development. Santa Fe Crossing will have an internal roadway network to connect the seven (7) component land uses within the development.

The project is located within the City of Alachua, Florida on SR 20 (US 441) under the jurisdiction of FDOT-D2. This study utilized historical traffic data from the FDOT traffic database, recently submitted City of Alachua traffic studies and on-site data collection. A traffic study methodology was discussed and approved by the FDOT-D2 Traffic Operations staff and the City of Alachua Planning Department. A critical component of the study is turn lane evaluations at the SR 20 (US 441)/CR 235A intersection and peak hour operational analysis.

The existing SR 20 (US 441) and CR 235A roadway segments are operating within the current level of service (LOS “D”) standards per the City’s Comprehensive Plan. They will continue to do so with the daily and peak hour impacts of the proposed commercial development.

Off-site transportation improvements are required for project approval by FDOT in the form of a median modification from full to directional left turn lanes at the project connection to SR 20 (US 441). A right turn lane is required on SR 20 (US 441) at the project entrance driveway. All turn lanes must be designed to meet FDOT roadway design standards. Turn lanes will also be provided on CR 235A at the southern entrance.

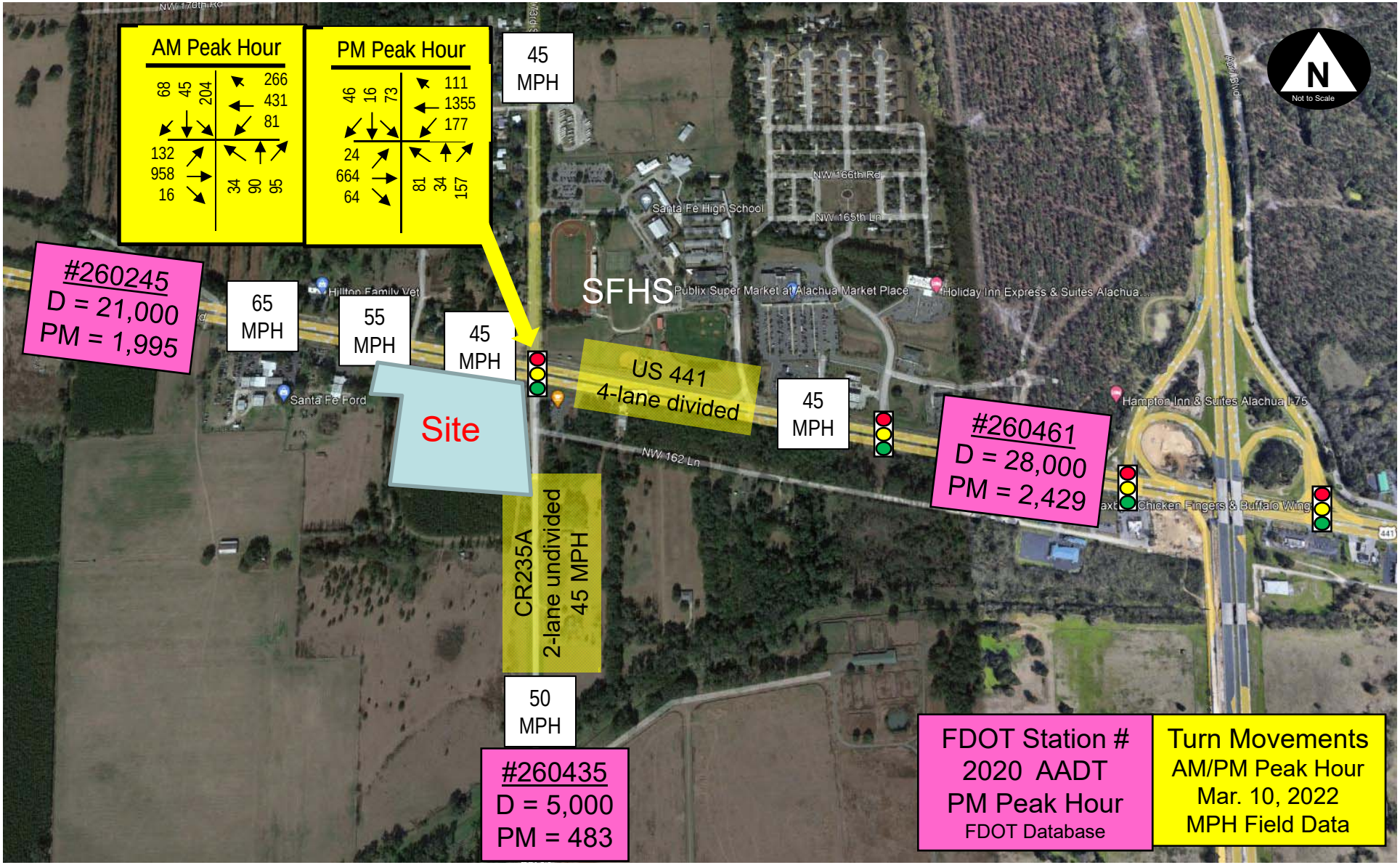
INTRODUCTION

MPH Transportation Planning, Inc. (MPH) is assisting J.Brown Professional Group (JBPro) project engineers with transportation impacts for the proposed Santa Fe Crossing commercial complex in Alachua, Florida. This project will be located on vacant parcels abutting SR 20 (US 441) west of CR 235A. A traffic study methodology was discussed with FDOT-D2 and the City of Alachua Planning Department to determine the acceptable trip generation, distribution and analysis procedures for this project. Both a.m. and p.m. peak hour trip impacts were analyzed for assessing SR 20 (US 441) roadway, intersection and driveway impacts.

Figure 1 - Project Location Map with Existing Traffic Data provides location information and 2021 traffic data from FDOT. This data was used along with peak period turn movement counts to establish directional traffic volumes for the project and used in turn lane analysis. Access to the project site will utilize a single restricted driveway on SR 20 (US441) and two entrances on CR 235A. An internal roadway system provides for on-site trip interaction between the multiple land use components as well as opportunities to choose ingress and egress options to/from the external roadway network.

This study contains an assessment of the proposed development utilizing trip generation rates from the Institute of Transportation Engineers (ITE) Trip Generation 11th Edition to determine daily and peak hour project traffic for the new land uses. Trip generation gross volumes will be reduced by both internal capture and external pass-by reductions. FDOT limits pass-by reductions to no more than 15% of the adjacent roadway traffic during the peak hours of operation. Project trip distributions are based on data collected for adjacent street traffic and locations of interacting land uses within the project's impact area. Utilizing this information, an assignment of a.m. and p.m. peak hour project trips onto the local area roadway network are made to the adjacent roadway segments.

Gross project trip volumes will be used in assessing driveway traffic operations. Net new trips are used in roadway segment level of service (LOS). Internal trip reductions are applicable to these land uses as interaction between the component land uses is common. Quick serve restaurants and gas stations have high pass-by trip appeal.



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Santa Fe Crossing – Alachua, FL

Project Location with Existing Traffic Data

Figure 1

EXISTING CONDITIONS

Roadway traffic volumes and peak hour directional traffic data were reviewed for these projects at locations indicated on ***Figure 1 – Project Location with Existing Traffic Data.*** Roadway segment daily volumes on SR 20 (US 441) are 28,000 vehicles east of CR 235A and 21,000 to the west. CR 235A has 5,000 daily trips recorded at the only FDOT count location south of SR 20 (US441). The immediate roadway network, as depicted in Figure 1, consists of SR 20 (US 441) to the north of the project parcels with CR235A bordering the east side of the project. There are no other intersecting roadways for this project.

SR 20 (US 441) is a 4-lane divided highway with a rural typical section and grass median. Posted speeds are 45 mph east of CR 235A increasing to 55 mph then 65 mph a ¼ mile west of CR 235A heading to High Springs. It has a full interchange with Interstate 75 approximately ¾ mile to the east of CR 235A. It has no sidewalks or bike lanes on either side of the highway except for the area directly in front of Santa Fe High School. There is no regularly scheduled transit service in the area. The nearest traffic signal control is at CR 235A directly adjacent to the project site.

CR 235A is a rural 2-lane undivided collector roadway in Alachua County. It has a 45 mph posted speed limit north of SR 20 (US 441) and 50 mph to the south. No bike lanes or sidewalks present. No transit service. High truck traffic present with three major distribution centers to the south.

Figure 1 also displays the critical a.m. and p.m. peak hour turn movement volumes at the us441/CR235A intersection. These volumes are used later with new project traffic to analyze turn lane requirements at intersection and project driveways. They also provide the base volumes for intersection operational analysis.

TRIP GENERATION

The Institute of Transportation Engineers (ITE) Trip Generation 11th Edition was used to calculate project trip estimates for the new land uses for Daily, AM & PM peak hours. Trip information is summarized in ***Table 1 –Trip Generation*** below.

The evaluating criteria is 1,000 square feet (ksf) for all land uses except the gas station which uses the number of fueling stations as the evaluating parameter. Internal capture of trips is applied to the gross trip generation volume. A reduction of 10% was applied to all land uses as a conservative estimate of the interaction between the complimentary commercial properties that comprise Santa Fe Crossing. It is common for people stopping at the bank or restaurant to fuel their vehicles or get a car wash. The same is true for guests or employees at the hotel. Hotel guests may frequent the nearby restaurants or fill their tanks before resuming their travels. The same can be said for employees of the bank or the small office.

Pass-by reductions are also applicable to several of the land use components of Santa Fe Crossing. The ITE Handbook provides guidance on applicable pass-by rates for fast food restaurants, gas stations and banks. These rates vary from 35% up to 76% for the gas station. Personally, I've been driving for over 50 years and have never made a primary trip to a gas station. Like most people I only stop for gas as an intermediary stop on my way to work, shopping or to a recreational event. The convenience store may have some primary trips from nearby residents when they need milk, bread or eggs quickly without necessitating a trip to the nearby Publix grocery store.

Total external project trips are used in intersection analysis, roadway level of service and driveway turn lane analyses. This data is used to develop external distribution of project trips onto the adjacent roadway network from the project site as discussed in the next section of this report. The only new connection to the state road system will be a restricted driveway on eastbound SR 20 (US 441). FDOT-D2 has evaluated the preliminary site plan and provided comments that include eliminating a second entrance on SR 20 (US 441) and median modification west of R 235A from a full median to a restricted left only.

TABLE 1: Trip Generation for Santa Fe Crossing Commercial Complex

Alachua County, Florida

	Land Use					Distribution		Trips		Int.Cap.	External Trips		Pass-by	Net New Trips	
Lot	Description	ITE	ITE Trip Rates	Unit*	Trips	In	Out	In	Out	Rate	In	Out	Rate	In	Out
A	Small Office	712	(T) = 14.39 (X)	3.200	46	50%	50%	23	23	10%	21	21		21	21
B	Bank w/DT	912	(T) = 100.35 (X)	3.500	351	50%	50%	176	176	10%	158	158	35%	103	103
C	FF Rest. w/DT	934	(T) = 467.48 (X)	2.780	1300	50%	50%	650	650	10%	585	585	55%	263	263
D	Retail - Variety Store	814	(T) = 63.66(X)	2.000	127	50%	50%	64	64	10%	57	57	34%	38	38
D	FF Rest. w/DT	934	(T) = 467.48 (X)	2.000	935	50%	50%	468	468	10%	421	421	55%	189	189
E	Carwash	948	(T) = 140.20 (X)	3.600	505	50%	50%	253	253	10%	227	227		227	227
F	Gas Station/Super Conv. S	945	(T) = 230.52 (X)	20	4610	50%	50%	2305	2305	10%	2075	2075	76%	498	498
G	Hotel	310	(T) = 7.99 (X)	100	799	50%	50%	400	400	10%	360	360		360	360
			Daily Trips		**8673**			**4337**	**4337**	-867	**3903**	**3903**		**1698**	**1698**
	AM Peak Hour														
	Small Office	712	(T) = 1.67 (X)	3.200	5	82%	18%	4	1	10%	4	1		4	1
	Bank w/DT	912	(T) = 9.95 (X)	3.500	35	58%	42%	20	15	10%	18	13	29%	13	9
	FF Rest. w/DT	934	(T) = 44.61 (X)	2.780	124	51%	49%	63	61	10%	57	55	50%	28	27
	Retail - Variety Store	814	(T) = 3.04 (X)	2.000	6	55%	45%	3	3	10%	3	2	34%	2	2
	FF Rest. w/DT	934	(T) = 44.61 (X)	2.000	80	51%	49%	41	39	10%	37	35	50%	18	18
	Carwash	948	(T) = 14.20 (X)	3.600	51	50%	50%	26	26	10%	23	23		23	23
	Gas Station/Super Conv. S	945	(T) = 16.06 (X)	20	321	50%	50%	161	161	10%	144	144	76%	35	35
	Hotel	310	Eq (T) = 0.50 (X) - 7.45	100	43	56%	44%	24	19	10%	22	17		22	17
			AM Peak Hour Trips		**665**			**342**	**323**	-67	**308**	**291**		**145**	**131**
	PM Peak Hour														
	Small Office	712	(T) = 2.16 (X)	3.200	7	32%	68%	2	5	10%	2	4		2	4
	Bank w/DT	912	(T) = 21.01 (X)	3.500	74	50%	50%	37	37	10%	33	33	35%	22	22
	FF Rest. w/DT	934	(T) = 33.03 (X)	2.780	92	52%	48%	48	44	10%	43	40	55%	19	18
	Retail - Variety Store	814	(T) = 6.70 (X)	2.000	13	52%	48%	7	6	10%	6	6	34%	4	4
	FF Rest. w/DT	934	(T) = 33.03 (X)	2.000	66	52%	48%	34	32	10%	31	29	55%	14	13
	Carwash	948	(T) = 14.20 (X)	3.600	51	50%	50%	26	26	10%	23	23		23	23
	Gas Station/Super Conv. S	945	(T) = 18.42 (X)	20	368	50%	50%	184	184	10%	166	166	75%	41	41
	Hotel	310	Eq (T) = 0.74 (X) - 27.89	100	46	51%	49%	23	23	10%	21	20		21	20
			PM Peak Hour Trips		**717**			**361**	**356**	-72	**325**	**320**		**146**	**145**

*Units: fueling stations for gas station, ksf = 1,000 square feet for fast food restuarants,retail,office; rooms for hotel.

Source: *ITE 11th Edition Trip Generation*

TRIP DISTRIBUTION

The distribution of project trips on the roadway is a manual assignment derived from the historical traffic data collected by FDOT on the adjacent roadways, peak hour turn movement counts collected on March 10, 2022 and review of existing locations of interacting land-uses. Trip generation numbers from Table 1 are factored by these nominal distribution criteria to develop trip impact estimates for the adjacent roadway segments to the project site. The results of these calculations are displayed in ***Table 2 – Project Trip Distribution*** below and in ***Figure 2–Project Traffic Impacts AM Peak Hour and Figure 3–Project Traffic Impacts PM Peak Hour***.

TABLE 2: Project Trip Distribution

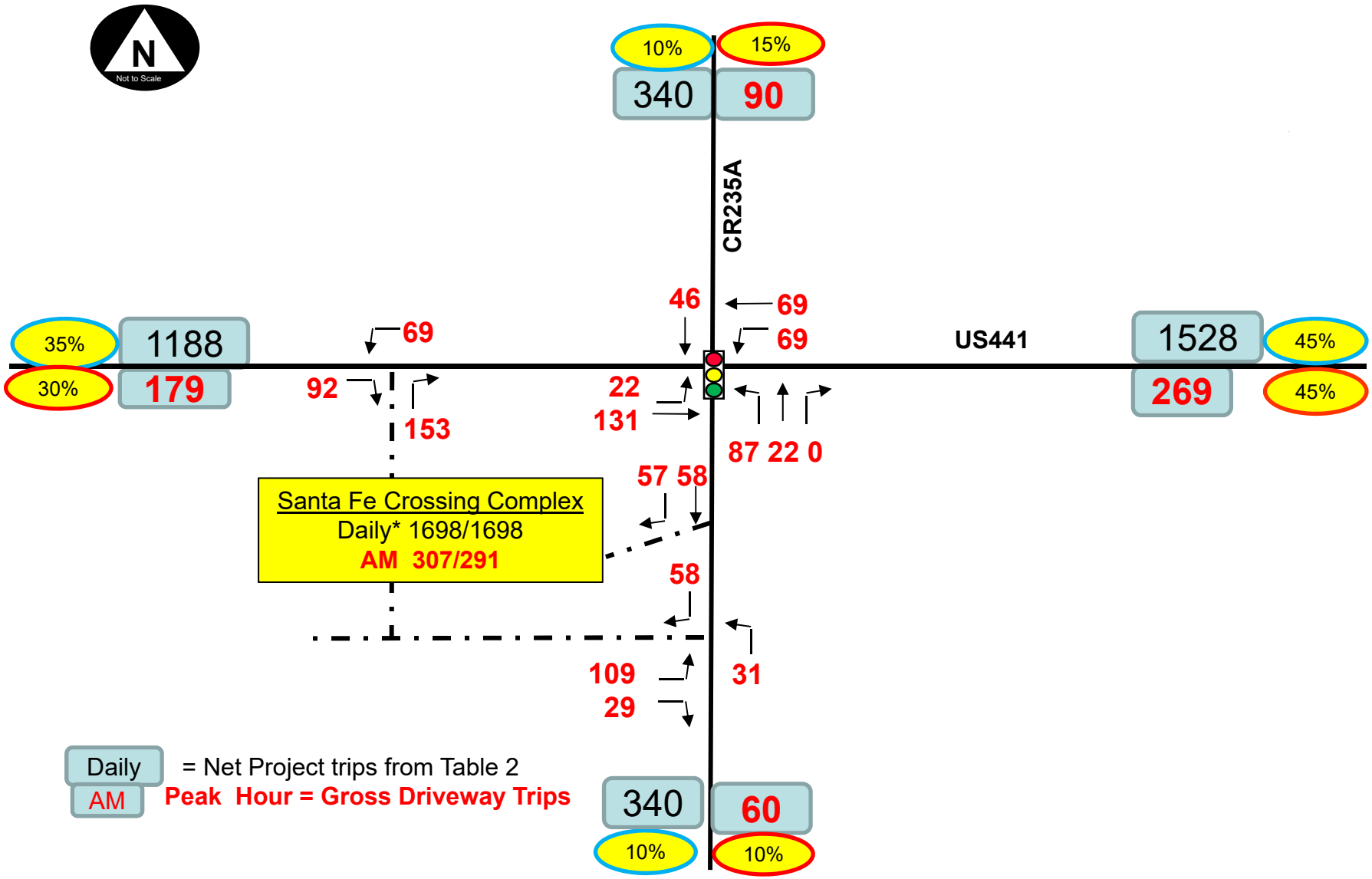
Daily Project Trip Assignment		**Enter**	**1698**	**Exit**	**1698**	**2-Way**
Roadway	**Segment**	**%**	**Trips**	**%**	**Trips**	**Total**
US 441	East of CR 235A	45%	764	45%	764	195
	West of CR 235A	35%	594	35%	594	1188
CR 235A	North of US 441	10%	170	10%	170	340
	South of US 441	10%	170	10%	170	340
	Total	100%	1698	100%	1698	2063
AM Peak Project Trip Assignment		**Enter**	**308**	**Exit**	**291**	**2-Way**
Roadway	**Segment**	**%**	**Trips**	**%**	**Trips**	**Total**
US 441	East of CR 235A	45%	138	45%	131	269
	West of CR 235A	30%	92	30%	87	179
CR 235A	North of US 441	15%	46	15%	44	90
	South of US 441	10%	31	10%	29	60
	Total	100%	307	100%	291	598
PM Peak Project Trip Assignment		**Enter**	**325**	**Exit**	**320**	**2-Way**
Roadway	**Segment**	**%**	**Trips**	**%**	**Trips**	**Total**
US 441	East of CR 235A	60%	195	60%	192	387
	West of CR 235A	25%	81	25%	80	161
CR 235A	North of US 441	5%	16	5%	16	32
	South of US 441	10%	33	10%	32	65
	Total	100%	325	100%	320	645

Notes:

Project Distributions are estimated from adjacent street traffic & interacting land uses
This complex is designed primarily to interact with existing traffic demand and local area development

Daily Project Trips represent the "Net New" Trip Impacts from Table 1

Peak Hour Project Trips represent the External Trip Impacts from Table 1



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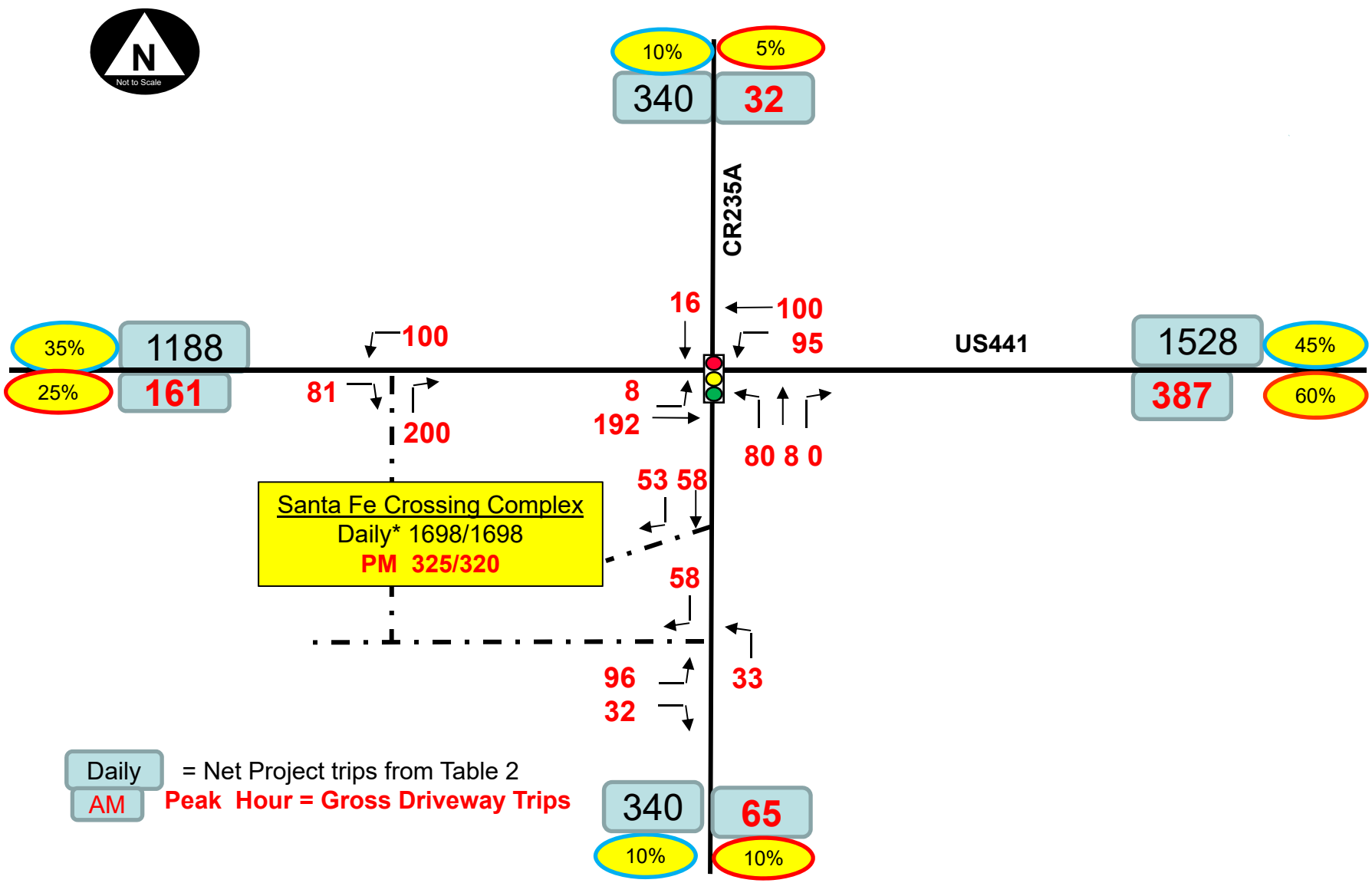
Santa Fe Crossing Commercial Complex – Alachua, FL

Project Location with Daily & AM Peak Traffic Data

Figure 2



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Santa Fe Crossing Commercial Complex – Alachua, FL

Project Location with Daily & PM Peak Traffic Data

Figure 3

ROADWAY LEVEL OF SERVICE (LOS) ANALYSIS

Data for Alachua roadway level of service (LOS) for the adjacent roadway segments was provided by the City of Alachua. Daily traffic used the latest FDOT counts where provided. Peak hour volumes used the directional traffic counts collected by MPH staff on March 10, 2022 at the US 441/SR235A intersection. ***Table 3: Roadway Level of Service*** provides the most recent available data for roadway segments adjacent to the project site.

TABLE 3: Roadway Level of Service

Roadway	Segment # & Description	Period	MSV	2021	Res'vd.	Project	V/C	LOS
US 441	107,5 SR 235 to I-75	Daily	39,800	24,204	2160	97.5	0.66	C
	4107, 6 I-75 to CR 235A	Daily	39,800	30,111	1927	195	0.81	D
	14, 7 CR235A to NW 188th St.	Daily	43,000	22,250	1565	1188	0.58	C
CR 235A	South of US 441	Daily	14,580	5,000		340	0.37	B
	North of US 441	Daily	14,580	5,000		340	0.37	B
US 441	107,5 SR 235 to I-75	PM Pk	3,510	2,299	170	194	0.76	D
	4107, 6 I-75 to CR 235A	PM Pk	3,510	2,861	154	387	0.97	D
	14, 7 CR235A to NW 188th St.	PM Pk	3,870	2,114	129	161	0.62	C
CR 235A	South of US 441	PM Pk	1,314	483		32	0.39	B
	North of US 441	PM Pk	1,314	483		65	0.42	B

Source: 2021 Annual Level Of Service Report from City of Alachua, LOS Std. = D
Project trips = net new highest segment Daily and PM peak 2-way volume
MSV = Maximum Service Volume (capacity) at desired level of service from Alachua Comp Plan
V/C = volume to capacity = (2021 + Res'vd + Project)/MSV
CR235A = 90% of State Road capacity for Transitioning Areas at LOS D

As indicated in the table above, reserved traffic volumes represent background growth for the 1-2 year estimated build out projected for this commercial development. Unlike residential developments that require long lead times from site plan approval for intensive infrastructure and utility installation. Commercial development occurs rapidly as most often clients are secured for each land use prior to finalizing the site plan. Residential developments take much longer to build out as they involve individual selection of model homes, independent financing, and a minimum of 6-9 months of construction. It takes several years before traffic from these developments reach their build out maximums. Gross 2-way p.m. peak hour project trips were utilized to represent a conservative analysis as they include pass-by trips already on the road. All roadway segments remain below the standard LOS “D” threshold associated with both roads. Reserved trips from planned growth beyond 2023 is not applicable to this analysis.

INTERSECTION ANALYSIS

FDOT requested that the SR 20 (US 441)/CR 235A intersection be analyzed for both the a.m. and p.m. peak periods. Both project driveways will also be analyzed for level of service and turn lane requirements.

An a.m. and p.m. peak period turn movement count was conducted at this intersection on Thursday, March 10, 2022. These volumes were used for a 2022 existing intersection analysis. They were then combined with a.m. & p.m. peak hour project traffic estimates and background growth (2%/yr.) trips for a future 2023 conditions analysis. Copies of all traffic data and detailed intersection analysis are included in the report appendix. The higher A.M. & P.M. peak hour directional volumes were extracted from those counts and displayed on ***Figure 1***. The peak hour project traffic estimates for the a.m. and p.m. peak hours are displayed on ***Figures 2 and 3***. They are summarized in ***Table 4 - Intersection Impacts*** below.

Table 4 - Intersection Impacts

Traffic Signal Controlled Intersections

Approach	***US 441***						***CR 235A***						
AM Peak	Eastbound			Westbound			Northbound			Southbound			
Movement	Lt	Thru	Rt	Lt	Thru	Rt	Lt	Thru	Rt	Lt	Thru	Rt	Totals
2022	132	958	16	81	431	266	34	90	95	204	45	68	2420
Background	3	19	0	2	9	5	1	2	2	4	1	1	49
Project	**22**	**131**		**69**	**69**		**87**	**22**	**0**		**46**		**446**
AM Total	157	1108	16	152	509	271	122	114	97	208	92	69	2915
PM Peak	Eastbound			Westbound			Northbound			Southbound			
2022	24	664	64	177	1355	111	81	34	157	73	16	46	2802
Background	0	13	1	4	27	2	2	1	3	1	0	1	55
Project	**8**	**192**	**0**	**95**	**100**	**0**	**80**	**8**	**0**	**0**	**16**	**0**	**499**
PM Total	32	869	65	276	1482	113	163	43	160	74	32	47	3356

Notes: 2022 traffic volumes from Figure 1, Background =2%/yr., Project traffic from Figures 2 & 3.

Background traffic growth at 2% annually for 1 year was added to the existing traffic. No final site plan approvals for the planned residential developments west of I-75 have been obtained. It will take several years before the first trips from occupied homes in those developments will hit the road. The 1,000 plus residential dwellings that make up the Tara projects east of I-75 will not be occupied for at least several years. It is unlikely that they will have any interaction with Santa Fe Crossing as there are several options for similar land use choices on their side of I-75.

Stop Sign Controlled Intersections

Approach	***US 441***						***Project Driveway***						
AM Peak	Eastbound			Westbound			Northbound			Southbound			
Movement	Lt	Thru	Rt	Lt	Thru	Rt	Lt	Thru	Rt	Lt	Thru	Rt	Totals
2022		1106	0	0	533				0				1639
Background		22	0	0	11				0				33
Project		**0**	**92**	**69**	**0**				**153**				**314**
AM Total	0	1128	92	69	544	0	0	0	153	0	0	0	1986
PM Peak	Eastbound			Westbound			Northbound			Southbound			
2022		752	0	0	1482				0				2234
Background		15	0	0	30				0				45
Project			**81**	**100**					**200**				**381**
PM Total	0	767	81	100	1512	0	0	0	200	0	0	0	2660

Notes: 2022 traffic volumes from Figure 1, Background =2%/yr., Project traffic from Figures 2 & 3.

Approach	***Project Driveway***						***CR 235A***						
AM Peak	Eastbound			Westbound			Northbound			Southbound			
Movement	Lt	Thru	Rt	Lt	Thru	Rt	Lt	Thru	Rt	Lt	Thru	Rt	Totals
2022	0		0				0	219			122	0	341
Background								4			2		6
Project	**109**		**29**				**31**					**58**	**227**
AM Total	109	0	29	0	0	0	31	223	0	0	124	58	574
PM Peak	Eastbound			Westbound			Northbound			Southbound			
2022	0		0				0	272			257	0	529
Background								5			5		10
Project	**96**		**32**				**33**					**58**	**219**
PM Total	96	0	32	0	0	0	33	277	0	0	262	58	758

Notes: 2022 traffic volumes from Figure 1, Background =2%/yr., Project traffic from Figures 2 & 3.

Highway Capacity Software (HCS) developed by the UF McTrans Center for FDOT is used to analyze intersection operations. Signal timings provided by Gainesville Traffic Operations were 130 seconds in the AM and 160 seconds in the PM. Results of the HCS signalized and stop controlled intersection analysis are summarized in ***Table 5 – Intersection Level of Service (LOS)***. Results indicate that there is sufficient capacity to absorb project impacts without degrading level of service below acceptable standards.

Table 5 - Intersection Level of Service (LOS)

Traffic		Signal	US 441				CR 235A					
Signal		Cycle	EB		WB		NB		SB		Intersection	
Control		Times	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
2022	AM	130	D	43.2	B	15.8	D	48.9	D	35.8	C	34.1
2022	PM	160	D	42.2	C	34.7	D	38.3	E	56.4	D	37.9
2023	AM	130	D	46.0	B	17.7	D	54.2	D	36.5	D	36.8
2023	PM	160	D	47.2	D	39.1	D	4.7	E	57.6	D	42.4

Delay expressed in AVERAGE seconds per vehicle. 2022 = existing traffic, 2023 = existing + background + project

The traffic signal controlled intersection operates within level of service standards with the 2023 traffic estimates (2022 existing plus 2% annual growth + project). Detailed copies of the Highway Capacity Software printouts for all scenarios are included in the report appendix.

Table 5 - Intersection Level of Service (LOS) continued

Stop		US 441				Project Drive			
Sign		EB - Right		WB - Left		NB -Right		SB	
Control		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
2023	AM	A	0	B	13.2	C	18.6		
+ project	PM	A	0	B	10.8	B	14.9		

Delay expressed in AVERAGE seconds per vehicle.

Stop		CR 235A				Project Drive			
Sign		NB - Left		SB - Right		EB		WB	
Control		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
2018	AM	A	7.7	A	0.0	B	13.4		
+ project	PM	A	8.1	A	0.0	C	16.8		

Delay expressed in AVERAGE seconds per vehicle.

The project driveway connections to both roads were analyzed using the traffic volumes displayed in ***Table 4*** above. These volumes are so low that all approaches operate well above LOS standards.

Turn Lane Analysis

FDOT-D2 Traffic Operations requested turn lane analysis at the SR 20 (US 441)/CR 235A intersection and all project driveways. There are existing left turn lanes at all four approaches and right turn lanes on three of the four at this intersection. Field observations revealed that any stopped queue is eliminated at every approach except the westbound left on SR 20 (US 441) when several semi-trucks are in the stopped queue. They take so long to move through their gears from a stopped condition that they limit the number of vehicles safely moving through the intersection. All other approaches adequately accommodated all turn movement demand during the peak periods. FDOT also requested that a right turn lane be considered at the driveway connection to SR 20 (US 441) due to the high posted speeds 65 mph just west of the proposed driveway location. Right turn traffic usually slows to 9-10 mph when making a right turn into a driveway. This speed differential, 65 to 10 mph creates a safety concern on the state highway.

Right Turn Lane Analysis

FDOT criteria for evaluating turn lanes is established in the NCHRP Report 457: Evaluating Intersection Improvements and the FDOT Driveway Information Guide. Right turn lanes are required on 2-lane undivided roadways with a posted speed greater than 45 mph when the right turn volume is between 35-55 vehicles in the peak hour. There are **58** right turn vehicles on CR 235A southbound in the p.m. hour. Right turns are required on 4-lane roads when the right turn volume exceeds 80 vehicles. The right turn volumes on US 441 are **92** in the a.m. and **81** in the p.m. The NCHRP Report 457: Evaluating Intersection Improvements analysis process has more detailed calculations to determine if a right turn lane is warranted. ***Figure 4: Right Turn Lane Analysis*** provides the input data, graphic presentation of the variables and the resultant recommendations for right turn lanes at both project driveways.

The right turn lane should be constructed per FDOT Design Standards for a 50 mph 2-lane rural roadway on CR 235A. The overall length should be 290 feet inclusive of a 50 ft. taper. The design standards for the 55 mph US 441 right turn lane should be 350 feet inclusive of a 50 ft. taper. Right turn lanes are normally free flow and do not require storage queues unless they are impacted by railroad crossings or gated entrances.

Left Turn Lane Analysis

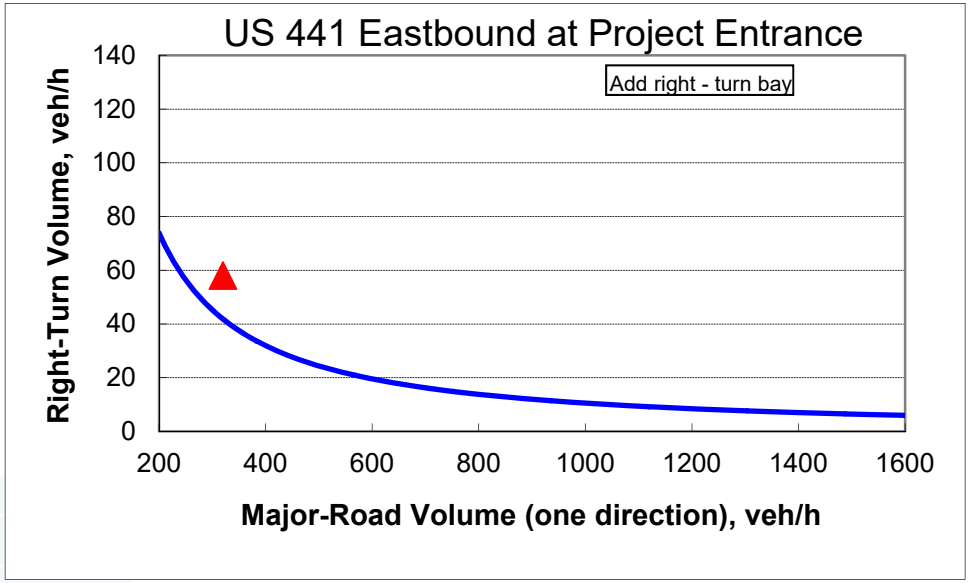
The highest left turn volume on US 441 would be **100** vehicles in the p.m. peak hour westbound**.** Input and Output from the left turn lane analysis utilizing the NCHRP Report 457 criteria for the project driveway is provided in ***Figure 5: Left Turn Lane Analysis.*** The left turn lane should be 400 feet in total length comprised of 350 feet of total deceleration (inclusive of a 50 ft. taper) and 50 feet of storage added for any vehicle queue. FDOT-D2 has already commented on the project site plan and requires the existing full median opening on US 441 be converted to a directional median opening with two opposing left turn lanes. Both left turn lanes should be 400 feet.

A left turn lane analysis was also conducted for the southern project driveway on CR 235. The higher p.m. peak hour volumes were used in the analysis. Results indicate a northbound left turn lane is not required at the project driveway. Input and output variables are provided on Figure 5. Lastly, the HCS intersection analysis for the 2023 project buildout indicate that the northbound left turn lane is inadequate. The Back of Queue (BOQ) report for 2023 indicates the 95% BOQ value is at 1.7. Meaning the northbound left turn lane must be lengthened from its current 165 feet to 340 feet (290 feet total deceleration length plus 50 ft. of storage).

US 441 Eastbound at Project Entrance

Roadway Geometry: 4 Lane Divided Highway	Value
Major Road Posted Speed, MPH	55
Major Road Volume (one-way):	1220
Right turn Volume, Vehicles/hour	**92**

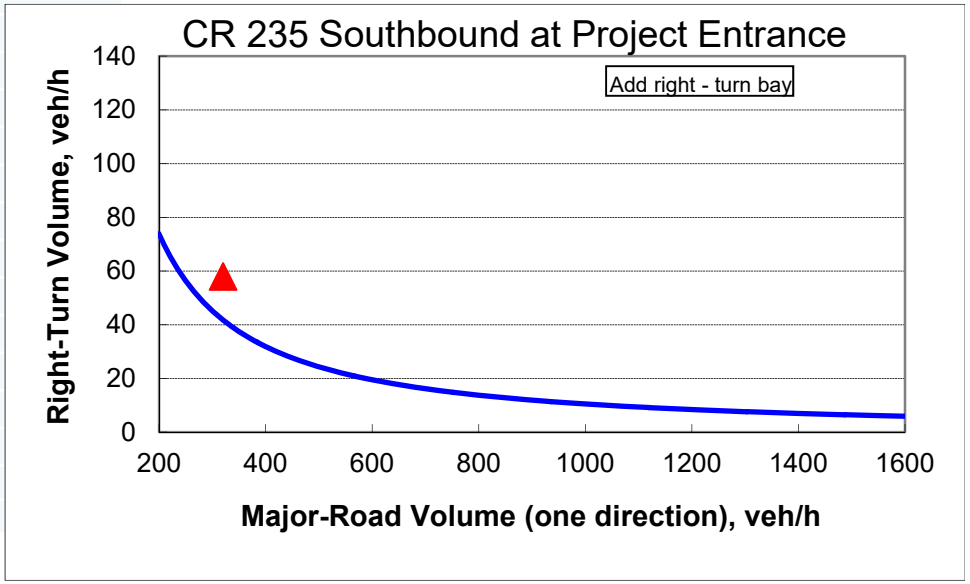
Output Variable	Value
Limiting right-turn volume, veh/h:	13
Guidance for determining the need for a major-road right-turn bay for a 4-lane roadway:	Add right-turn bay.



CR 235 Southbound at Project Entrance

Roadway Geometry: 2 Lane Un-Divided Highway	Value
Major Road Posted Speed, MPH	50
Major Road Volume (one-way):	320
Right turn Volume, Vehicles/hour	**58**

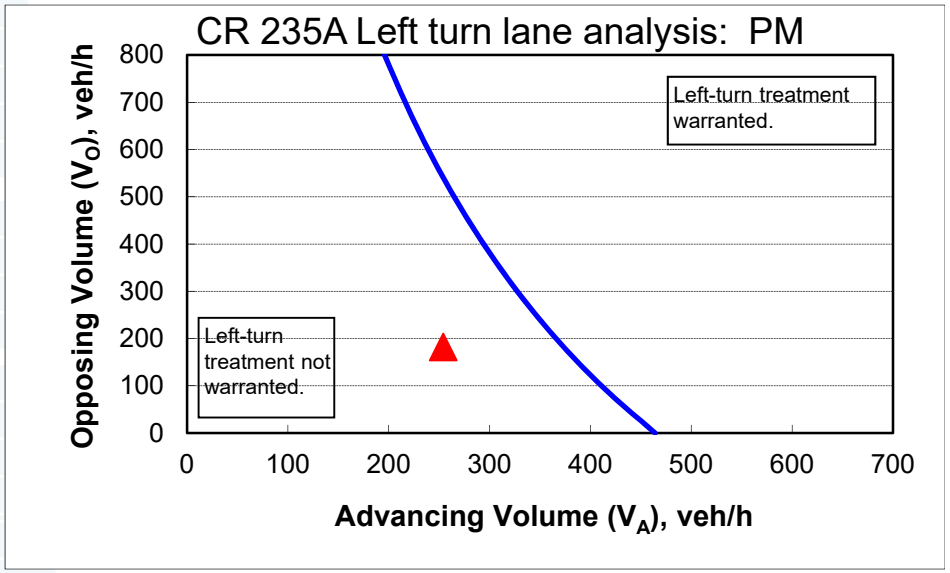
Output Variable	Value
Limiting right-turn volume, veh/h:	42
Guidance for determining the need for a major-road right-turn bay for a 4-lane roadway:	Add right-turn bay.



Input Variable	Value
85th percentile speed, mph:	50
Percent of left-turns in advancing volume (V_A), %:	11%
Advancing volume (V_A), veh/h:	310
Opposing volume (V_O), veh/h:	320

Output Variable	Value
Limiting advancing volume (V_A), veh/h:	333
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	

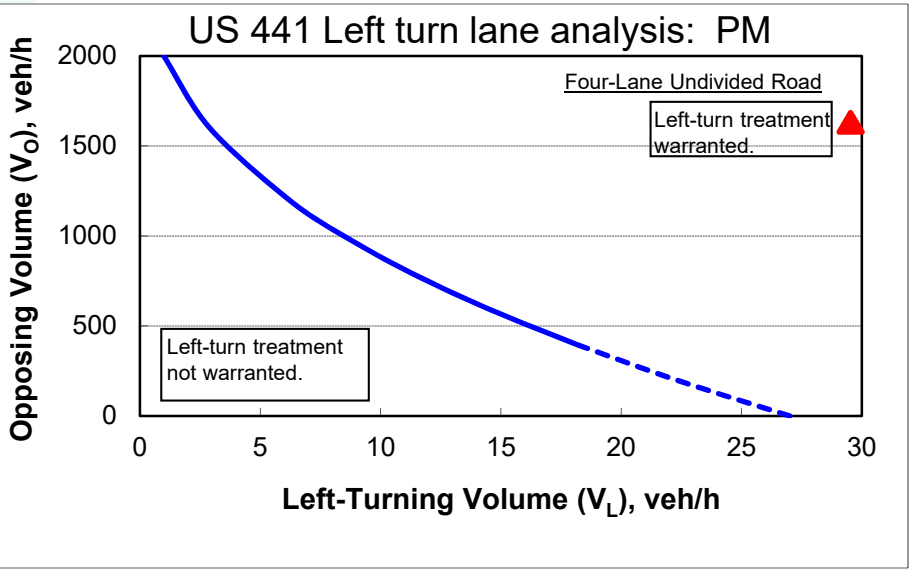
Calibration Constants	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9



Input Variable	Value
85th percentile speed, mph:	55
Left-turns in advancing volume (V_L), veh/hr	100
Advancing volume (V_A), veh/h:	1612
Opposing volume (V_O), veh/h:	848

Output Variable	Value
Limiting advancing volume (V_A), veh/h:	373
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment warranted.	

Calibration Constants	Value
Average time for making left-turn, s:	4.0
Critical headway, s:	6.0
Average time for left-turn vehicle to clear the advancing lane, s:	2.9



MPH

Santa Fe Crossing Commercial Complex – Alachua, FL

Left Turn Lane Analysis

CONCLUSIONS and RECOMMENDATIONS

Based on the data and analysis provided in the previous sections of this report the following conclusions on traffic operations and recommendations are provided below.

Conclusions:

1. The proposed Santa Fe Crossing commercial complex will consist of several varied land uses to include: a small office, a bank with drive thru, 2 fast food restaurants, a small retail store, carwash, hotel and a gas station with a convenience store. Project buildout is planned to be completed in late 2023.
2. The proposed combined traffic impacts associated with the buildout scenario for Santa Fe Crossing on SR 20 (US 441) within the City of Alachua, FL is estimated at 3,396 new daily trip impacts. The Peak Hour external trips will be 599 in the a.m. and 645 in the p.m. peak periods.
3. All segments of SR 20 (US 441) currently meet LOS standards (LOS “D”) and will remain below this threshold with the addition of project trips.
4. The proposed project driveway on SR 20 (US 441) will be aligned with an existing full median. FDOT requires that this median opening be converted to a directional left median for both eastbound and westbound approaches.
5. The southern project driveway on CR 235A requires a southbound right turn lane.
6. The existing northbound left turn lane on CR 235A approaching SR 20 (US 441) needs to be extended to a total length of 340 feet.
7. Right and left turn lanes will be designed to meet FDOT Design Standards for all approaches.

Recommendations:

1. Approve the project driveway connections with the required turn lanes to meet FDOT Design Standards.
2. Modify the existing median opening on SR 20 (US 441) as required by FDOT-D2 Traffic Operations from a full opening to a directional left for both approaches.

APPENDICES: Correspondence and Documentation

Appendix A: Correspondence

Tom Cavin <tom.cavin@dot.state.fl.us> 2/16/2022 7:33 AM

RE: Santa Fe Crossing traffic study methodology memo

To mphemmen <mphemmen@comcast.net> Copy kwinburn <kwinburn@cityofalachua.org> • Adam Hall <ad_hall@cityofalachua.org> • Adam Doyle <adam.doyle@dot.state.fl.us> • llalwani <llalwani@alachuacounty.us> • Chris Potts PE <chris.potts@jbprogroup.com> • Keith@v3capgroup.com <keith@v3capgroup.com> • Justin Tabor <jtabor@cityofalachua.org> • Robert Emmons <robert.emmons@dot.state.fl.us>

Mike,

I have no additional comments to add.

Tom Cavin, P.E.
Jacksonville Studies Engineer
Florida Department of Transportation
2198 Edison Avenue, MS2815
Tom.cavin@dot.state.fl.us
904-360-5641

From: Justin Tabor <jtabor@cityofalachua.org>
Sent: Tuesday, February 15, 2022 8:44 AM
To: mphemmen <mphemmen@comcast.net>
Cc: kwinburn <kwinburn@cityofalachua.org>; Adam Hall <ad_hall@cityofalachua.org>; Cavin, Tom <Tom.Cavin@dot.state.fl.us>; Doyle, Adam <Adam.Doyle@dot.state.fl.us>; llalwani <llalwani@alachuacounty.us>; Chris Potts PE <chris.potts@jbprogroup.com>; Keith@v3capgroup.com
Subject: Re: Santa Fe Crossing traffic study methodology memo

Mike,

Please see the following comments from the City of Alachua Planning Department:

- Proposed Growth Rate: What is the project build-out year? Depending upon the year, the traffic impact analysis should consider all of or a portion of the following projects (project locations may be referenced here):
    - NW 188th St/US 441 (275 dwellings & up to 152,460 square feet commercial);
    - Briarwood Phases 2 and 3 (145 dwellings);
    - Tara Forest East (340 dwellings);
    - Tara Baywood (211 townhouses);
    - Tara Forest West (540 dwellings).
- Traffic Counts: Please clarify the following statement: "Current and historical traffic volumes are well below the roadways assigned capacity." Current traffic counts and reserved capacities, particularly for FDOT segment 4107 (US 441 from I-75 to 235A), are at 85.90% of PM Peak Hour capacity and other nearby segments are above 50%.

Roadway Segment (FDOT Segment #, CoA Comp Plan #)		Segment Description	AADT/Peak Hour	Comp Plan MSV^^	Existing Traffic*^	Reserved Trips	Available Capacity**	Percentage of Capacity Utilized
State Roads				Min LOS Std: D				
U.S. Hwy 441	(107, 5)	From SR 235 to I-75	AADT	39,000	24,204	2,160	12,636	67.60%
			Peak Hour	3,510	2,299	170	1,041	70.34%

U.S. Hwy 441	(4107, 6)	From I-75 to CR 235A	AADT	39,000	30,111	1,927	6,962	82.15%
			Peak Hour	3,510	2,861	154	495	85.90%
U.S. Hwy 441	(14, 7)	From CR 235A to NW 188th Street	AADT	43,000	22,250	1,565	19,185	55.38%
			Peak Hour	3,870	2,114	129	1,627	57.96%

- Analysis of US 441/I-75 on and off ramps should be included. Trip counts are available from the traffic study performed for the Tara Forest West project.
- What is the source of pass by rates? Pass by rates for some land uses are not included within ITE Trip Generation Handbook, 3rd Edition, and for those which are included, the pass by rates utilized are typically higher than those provided in ITE Trip Generation Handbook, 3rd Edition.

If you have any questions, please feel free to contact me.

Sincerely,

Justin Tabor, AICP
Principal Planner
City of Alachua
15100 NW 142nd Terrace | PO Box 9
Alachua, Florida 32616
386.418.6100 x 1602 | fax: 386.418.6130
jtabor@cityofalachua.com

City Hall Hours of Operation
Monday - Thursday, 7:30 AM - 6:00 PM

From: "mphemmen" <mphemmen@comcast.net>
To: "Tom Cavin" <tom.cavin@dot.state.fl.us>, "Adam Doyle" <adam.doyle@dot.state.fl.us>, "Justin Tabor" <jtabor@cityofalachua.org>, "llalwani" <llalwani@alachuacounty.us>, "Chris Potts PE" <chris.potts@jbprogroup.com>
Cc: Keith@v3capgroup.com
Sent: Sunday, February 13, 2022 11:55:51 AM
Subject: Santa Fe Crossing traffic study methodology memo

Gentlemen,

Please find the attached traffic study methodology memo as discussed. MPH would appreciate any comments or additional requirements as quickly as possible. MPH would appreciate your email approval to field collect turn movement counts at the US 441/CR 235A intersection prior to the end of this month. Please provide the signal timings for the subject intersection to be used in the HCS existing analysis scenario.

Best Regards,

Mike Hemmen, AICP
MPH Transportation Planning, Inc.
1725 Riverbirch Hollow
Tallahassee, FL 32308
850.510.6461
mphemmen@comcast.net

MPH Transportation Planning Inc.
1725 Riverbirch Hollow
Tallahassee, FL 32308

Telephone (850) 510-6461
mphemmen@comcast.net

MPH

February 13, 2022

Methodology Memo: Traffic Impact Analysis (TIA) for Santa Fe Crossing Commercial Complex

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Project Description:
MPH is providing transportation support services to JBrown Professional Group (JBProGroup) for the proposed Santa Fe Crossing commercial complex on SR 20 (US 441) at CR 235A in Alachua, Florida. The following information provides the basic data required for an assessment of the daily & peak hour trip impacts required to address traffic operations concerns for the proposed development.

Level of TIA:
The proposed commercial development is estimated to generate approximately 8,673 daily trips with more than half of those being pass-by trips from existing traffic. The p.m. peak hour demand will be 717 trips with only 291 of those as net new trips on the adjacent roadways. Project access will utilize the new driveways on SR 20 (US 441) and CR 235A. A pre-application meeting with FDOT-D2 staff was held where the department specified traffic study requirements. FDOT-D2 has requested a full Traffic Impact Analysis (TIA) inclusive of turn lane analysis and required signage for the State Road System be provided to assess potential intersection improvements at SR 20 (US 441)/CR235A. FDOT requires that the existing full median opening on SR 20 (US 441) be modified to a directional left opening, denied a secondary right turn access into the project nearer the traffic signal controlled intersection with CR 235A, and HCS intersection analysis for both the a.m. and p.m. peak hours. .

Site Location Map:
The attached Figure 1 shows the physical location of the proposed project.

Study Area:
A pre-app meeting for this project was discussed with FDOT-D2. FDOT staff requested a right turn lane be provided on SR 20 (US 441) at the proposed project entrance due to the 55 mph posted speed and safety concerns with turning vehicles at very low speeds.

Site Plan:
The attached Figure 1 shows the proposed site plan and driveway access on the south side of SR 20 (US 441) and the driveway connections to CR 235A. There is an internal roadway network on site that provides connectivity to all of the retail, hotel and office components. This internal connectivity provides for some internal capture of complimentary land uses as hotel guests will avail themselves of restaurant and gas station facilities as well as the interactions between restaurant, carwash and service station patrons.

ITE 11th Edition Trip Generation:
Project trip generation data was extracted from the ITE 11th Edition Trip Generation manual. Land Use (LU) Codes for the various components are provided in the attached Table 1: Trip Generation. Internal capture has been estimated at 10% with the mix of complimentary land uses. Pass-by rates from the ITE 11th Edition have been applied to the bank, restaurant, and service station land uses.

Table 1: Trip Generation is attached.

Trip Distribution:
Trip distribution will utilize data collection from the intersection turn movement counts and the location of complimentary land uses. The existing Santa Fe High School across the street and several new residential developments approved on CR 235A north and south of SR 20 (US 441) will factor into the trip assignment. The major employment centers in Gainesville to the east draw significant traffic demand to/from the city of High Springs to the west. There is also increased traffic on CR 235A with the several warehouse and distribution centers to the south that access I-75 approximately ¾-mile to the east.

Critical project issues:
The TIA study will provide analysis for both right and left turn lanes approaching the project driveways as well as peak hour intersection analysis at the adjacent signalized intersection. Turn lanes will be designed consistent with FDOT Design Standards for a rural highway with a 55 mph posted speed.

Proposed Growth Rate:
FDOT has approved using historical traffic data from the FDOT traffic database. No increase in adjacent street traffic is anticipated within the next 6-12 months (2022) beyond the approved residential developments on CR 235A. A 2% annual growth rate will be added for the year during the project's construction phase. The other major projects underway with confirmed trip reservations within the immediate area are the Alachua West subdivision immediately south of the project on CR 235A and the Briarwood subdivision on CR 235A north of SR 20 (US 441).

Traffic Counts:
The latest FDOT counts available from the FDOT Traffic Online database will be utilized along with any the City of Alachua or Alachua County may have from recent traffic study submittals. MPH will collect peak period turn movement volumes at the SR 20 (US 441)/CR 235A intersection. This project is in a transitioning area of Alachua about 2 miles northwest of the City Center that is experiencing both residential and commercial rapid development. Current and historical traffic volumes are well below the roadways assigned capacity.

Signalized or major study area intersections to be analyzed:
Data collection and analysis of the existing SR 20 (US 441)/CR 235A intersection will be included in this report.

If further consultation or modification to any of the items above is required, please call me at (850) 510-6461 anytime during normal business hours to discuss.

Sincerely,

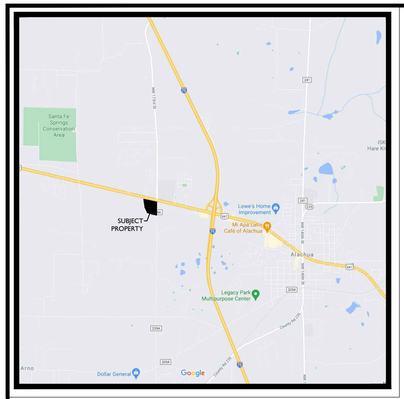
Mike Hemmen

Mike Hemmen, AICP – President
Certificate # 012190
MPH Transportation Planning, Inc.

Copies distributed electronically to:

Tom Cavin, P.E.	FDOT-D2 Traffic Operations (Jacksonville)	tom.cavin@dot.state.fl.us
Adam Doyle, P.E.	FDOT-D2 Traffic Operations (Gainesville)	adam.doyle@dot.state.fl.us
Justin Tabor	Alachua Planning Director	jtabor@cityofalachua.org
Lalit Lalwani, P.E.	Alachua County Public Works	llalwani@alachuacounty.us
Chris Potts, P.E.	JBProGroup – Project Engineer	chris.potts@jbpro.com

Attachments: Figure 1: Site Location Map
Table 1: Trip Generation



VICINITY MAP

SCALE: 1" = 5000'

DEVELOPER/APPLICANT:

ALACHUA 441/235, LLC
496 S. HUNT CLUB BLVD.
APOPKA, FL 32703

SITE AREA:

TAX PARCELS

PARCEL 03042-050-008	±9.57 ACRES
PARCEL 03044-003-000	±4.74 ACRES
TOTAL AREA	±14.31 ACRES

PROPOSED DEVELOPMENT LOT AREA:

LOT #	AREA (SQ. FT.)	AREA (AC.)
A	20,392	0.468
B	42,175	0.968
C	42,847	0.984
D	40,136	0.921
E	55,406	1.272
F	105,177	2.415
G	98,515	2.262
H	65,410	1.502

PARKING SCHEDULE

PARKING REQUIRED

PARKING REQUIREMENTS VARY BY USE; BELOW ARE A FEW OF THE MOST COMMON AND LIKELY USES APPLICABLE TO THIS DEVELOPMENT

RESTAURANTS	1 SPACE PER100 SQ FT FLOOR AREA
RESTAURANT W/ DRIVE-THRU	1 SPACE PER 150 SQ FT FLOOR AREA
GASOLINE SALES	1 SPACE PER 350 SQ FT FLOOR AREA
GROCERY STORE	1 SPACE PER 250 SQ FT FLOOR AREA
FINANCIAL/BANK	1 SPACE PER 200 SQ FT FLOOR AREA
CARWASH	1 SPACE PER EMPLOYEE
SELF SERVICE STORAGE	5 SPACES, ALL USES
HOTEL/MOTEL	1 SPACE PER SLEEPING ROOM PLUS 2 SPACES FOR THE OWNER/MANAGER, PLUS REQUIRED FOR ASSOCIATED BAR/RESTAURANT
RETAIL SALES	1 SPACE PER 305 SQ FT FLOOR AREA (FIRST 30,000 SQ FT)
OFFICES	1 SPACE PER 330 SQ FT FLOOR AREA

PARKING PROVIDED

REGULAR SPACES (9'x18')	= 291

ZERO COMPACT SPACES PROPOSED AT THIS TIME.

GENERAL DESIGN & REFERENCE NOTES:

1. PROPERTY BOUNDARY DERIVED FROM HISTORIC BOUNDARY SURVEY INFORMATION PROVIDED; AVAILABLE AERIAL, TAX PARCEL, AND TOPOGRAPHIC INFORMATION UTILIZED FOR DEVELOPMENT OF SITE PLANS; AN UPDATED SURVEY BY A LICENSED PROFESSIONAL IS RECOMMENDED.
2. THIS SITE PLAN HAS BEEN PREPARED BASED ON CITY OF ALACHUA LAND DEVELOPMENT CODE REQUIREMENTS, DUE DILIGENCE INFORMATION PROVIDED, AND THE CLIENT'S DESIRED DEVELOPMENT.
3. STORMWATER REQUIREMENTS SHALL COMPLY WITH ALL LOCAL AND SUWANNEE RIVER WATER MANAGEMENT DISTRICT REQUIREMENTS (SRWMD).
4. LAYOUTS ARE SUBJECT TO JURISDICTIONAL PERMIT REVIEW; PRE-APPLICATION MEETINGS ARE RECOMMENDED IN ADVANCE OF PERMIT APPLICATION AND DESIGN DEVELOPMENT.

LEGEND:

- ADJACENT PROPERTY LINE
- PROPERTY BOUNDARY
- PROPOSED CONCRETE CURB
- PROPOSED CONCRETE
- STORMWATER MANAGEMENT AREA
- PROPOSED YARD SETBACK
- PROPOSED TRAFFIC SIGN
- PARKING SPACE COUNT (#)
- LOT LEGEND REFERENCE (G)

N

CONVERT FULL MEDIAN TO DIRECTIONAL MEDIAN

FDOT WILL NOT PERMIT RIGHT TURN IN

EXTEND RIGHT TURN LANE

U.S. HIGHWAY NO. 441
(200-FT RIGHT OF WAY)

75'
220'
±260'
850'
20'
R5'
PROPOSED RIGHT IN ONLY

LANDSCAPE BUFFER
26'

± 3,200 SQ FT RETAIL/OFFICE
A

± 3,500 SQ FT BANK W/ DRIVE-THRU
B

± 2,200 SQ FT REST. W/ DRIVE-THRU
C

± 4,000 SQ FT RETAIL & REST. W/ DRIVE-THRU
D

E

±3,600 SQ FT
CAR WASH

Wawa
±6,100 SQ FT

F

STORMWATER MANAGEMENT AREA

STORMWATER MANAGEMENT AREA

4-STORY HOTEL
±48,600 SQ. FT.
G

STORMWATER MANAGEMENT AREA

H

COUNTY ROAD 235-A
(100-FT RIGHT OF WAY)

PARCEL ID
03042-052-007
±4.17 ACRES

0 50' 100'
SCALE 1" = 50'

MJ SIMPSON CONSULTING
P.O. BOX [illegible]
TAMPA, FL [illegible]
813.724[illegible]
INFO@MJSTOKESCO[illegible].COM
FLORIDA BUSINESS REGISTRY NO. 34448

REVISIONS

REV	DATE	DESCRIPTION	BY
01	12/16/21	REVISED FOR CROSS ACCESS AND FDOT	BY

Sunshine811

Call 811 or visit sunshine811.com two full business days before digging to have buried facilities located and marked.

Check positive response codes before you dig!

PROJECT NAME:

SANTA FE CROSSINGS

FOR

ALACHUA 441/235, LLC

CITY OF ALACHUA, ALACHUA COUNTY, FLORIDA

SHEET TITLE

PRELIMINARY SITE PLAN

PROJECT NO:	21-2001
CHECKED BY:	JJS
VERTICAL DATUM:	NAVD 1988
DATE:	11/01/2021

SHEET NUMBER

C-001

TABLE 1: Trip Generation for Santa Fe Crossing Commercial Complex

Alachua County, Florida

	Land Use					Distribution		Trips		Int.Cap.	External Trips		Pass-by	Net New Trips	
Lot	Description	ITE	ITE Trip Rates	Unit*	Trips	In	Out	In	Out	Rate	In	Out	Rate	In	Out
A	Small Office	712	(T) = 14.39 (X)	3.200	46	50%	50%	23	23	10%	21	21		21	21
B	Bank w/DT	912	(T) = 100.35 (X)	3.500	351	50%	50%	176	176	10%	158	158	35%	103	103
C	FF Rest. w/DT	934	(T) = 467.48 (X)	2.780	1300	50%	50%	650	650	10%	585	585	55%	263	263
D	Retail - Variety Store	814	(T) = 63.66(X)	2.000	127	50%	50%	64	64	10%	57	57	34%	38	38
D	FF Rest. w/DT	934	(T) = 467.48 (X)	2.000	935	50%	50%	468	468	10%	421	421	55%	189	189
E	Carwash	948	(T) = 140.20 (X)	3.600	505	50%	50%	253	253	10%	227	227		227	227
F	Gas Station/Super Conv. S	945	(T) = 230.52 (X)	20	4610	50%	50%	2305	2305	10%	2075	2075	76%	498	498
G	Hotel	310	(T) = 7.99 (X)	100	799	50%	50%	400	400	10%	360	360		360	360
			Daily Trips		**8673**			**4337**	**4337**	-867	**3903**	**3903**		**1698**	**1698**
	AM Peak Hour														
	Small Office	712	(T) = 1.67 (X)	3.200	5	82%	18%	4	1	10%	4	1		4	1
	Bank w/DT	912	(T) = 9.95 (X)	3.500	35	58%	42%	20	15	10%	18	13	29%	13	9
	FF Rest. w/DT	934	(T) = 44.61 (X)	2.780	124	51%	49%	63	61	10%	57	55	50%	28	27
	Retail - Variety Store	814	(T) = 3.04 (X)	2.000	6	55%	45%	3	3	10%	3	2	34%	2	2
	FF Rest. w/DT	934	(T) = 44.61 (X)	2.000	80	51%	49%	41	39	10%	37	35	50%	18	18
	Carwash	948	(T) = 14.20 (X)	3.600	51	50%	50%	26	26	10%	23	23		23	23
	Gas Station/Super Conv. S	945	(T) = 16.06 (X)	20	321	50%	50%	161	161	10%	144	144	76%	35	35
	Hotel	310	Eq (T) = 0.50 (X) - 7.45	100	43	56%	44%	24	19	10%	22	17		22	17
			AM Peak Hour Trips		**665**			**342**	**323**	-67	**308**	**291**		**145**	**131**
	PM Peak Hour														
	Small Office	712	(T) = 2.16 (X)	3.200	7	32%	68%	2	5	10%	2	4		2	4
	Bank w/DT	912	(T) = 21.01 (X)	3.500	74	50%	50%	37	37	10%	33	33	35%	22	22
	FF Rest. w/DT	934	(T) = 33.03 (X)	2.780	92	52%	48%	48	44	10%	43	40	55%	19	18
	Retail - Variety Store	814	(T) = 6.70 (X)	2.000	13	52%	48%	7	6	10%	6	6	34%	4	4
	FF Rest. w/DT	934	(T) = 33.03 (X)	2.000	66	52%	48%	34	32	10%	31	29	55%	14	13
	Carwash	948	(T) = 14.20 (X)	3.600	51	50%	50%	26	26	10%	23	23		23	23
	Gas Station/Super Conv. S	945	(T) = 18.42 (X)	20	368	50%	50%	184	184	10%	166	166	75%	41	41
	Hotel	310	Eq (T) = 0.74 (X) - 27.89	100	46	51%	49%	23	23	10%	21	20		21	20
			PM Peak Hour Trips		**717**			**361**	**356**	-72	**325**	**320**		**146**	**145**

*Units: fueling stations for gas station, ksf = 1,000 square feet for fast food restuarants,retail,office; rooms for hotel.

Source: *ITE 11th Edition Trip Generation*

Appendix B: Traffic Counts

FLORIDA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION STATISTICS OFFICE
2020 HISTORICAL AADT REPORT

COUNTY: 26 - ALACHUA

SITE: 0245 - SR 20 300' S. OF 222ND ST.(HIGH SPRINGS)

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2020	21000 F	N 10500	S 10500	9.50	58.00	5.60
2019	22000 C	N 11000	S 11000	9.50	58.00	5.60
2018	22000 C	N 11000	S 11000	9.50	57.90	4.90
2017	23000 C	N 11500	S 11500	9.50	53.80	4.60
2016	21000 C	N 10500	S 10500	9.50	53.60	4.90
2015	19300 C	N 9500	S 9800	9.50	57.00	5.20
2014	19000 C	N 9500	S 9500	9.50	57.40	5.40
2013	16900 C	N 8100	S 8800	9.50	57.80	5.00
2012	17300 C	N 8600	S 8700	9.50	58.40	4.90
2011	16900 C	N 8500	S 8400	9.50	58.80	5.50
2010	16900 C	N 8400	S 8500	10.13	59.87	5.10
2009	19200 C	N 9600	S 9600	10.04	57.81	6.20
2008	17500 C	N 8800	S 8700	10.17	57.73	7.30
2007	19500 C	N 9800	S 9700	10.22	58.44	5.70
2006	19300 C	N 9600	S 9700	9.98	59.05	6.70
2005	19200 C	N 9500	S 9700	10.10	58.20	19.60

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

FLORIDA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION STATISTICS OFFICE
2020 HISTORICAL AADT REPORT

COUNTY: 26 - ALACHUA

SITE: 0461 - SR 20 .2 MI. NW OF SR 93

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2020	28000 C	N 14000	S 14000	9.50	58.00	5.60
2019	30000 C	N 15000	S 15000	9.50	58.00	5.60
2018	28000 C	N 14000	S 14000	9.50	57.90	4.90
2017	29500 C	N 14500	S 15000	9.50	53.80	4.60
2016	26000 C	N 13000	S 13000	9.50	53.60	4.90
2015	24500 C	N 12500	S 12000	9.50	57.00	5.20
2014	23500 C	N 11500	S 12000	9.50	57.40	5.40
2013	23000 C	N 11500	S 11500	9.50	57.80	5.00
2012	21000 C	N 10500	S 10500	9.50	58.40	4.90
2011	21500 C	N 10500	S 11000	9.50	58.80	5.50
2010	21000 C	N 10500	S 10500	10.13	59.87	5.10
2009	24000 C	N 12000	S 12000	10.04	57.81	6.20
2008	22500 C	N 11000	S 11500	10.17	57.73	7.30
2007	26000 C	N 13000	S 13000	10.22	58.44	5.70
2006	24500 C	N 12000	S 12500	9.98	59.05	6.70
2005	21000 C	N 10500	S 10500	10.10	58.20	19.60

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

County: 26
Station: 0461
Description: SR 20 .2 MI. NW OF SR 93
Start Date: 07/22/2020
Start Time: 0000

	Direction: N					Direction: S					Combined
Time	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Total
0000	21	15	25	23	84	33	21	20	15	89	173
0100	32	17	13	12	74	14	24	11	16	65	139
0200	19	14	20	12	65	13	8	13	17	51	116
0300	22	32	25	40	119	11	24	22	31	88	207
0400	42	50	68	72	232	29	36	44	38	147	379
0500	63	101	149	131	444	38	55	71	80	244	688
0600	154	243	283	272	952	58	76	81	96	311	1263
0700	277	354	374	292	1297	97	99	128	156	480	1777
0800	263	249	250	226	988	159	175	122	173	629	1617
0900	213	223	224	208	868	171	177	165	181	694	1562
1000	244	200	183	242	869	178	163	192	177	710	1579
1100	217	208	238	222	885	177	216	208	202	803	1688
1200	259	284	247	228	1018	252	290	251	271	1064	2082
1300	238	218	198	204	858	230	242	249	252	973	1831
1400	215	241	246	205	907	234	267	279	279	1059	1966
1500	232	235	208	205	880	254	255	273	329	1111	1991
1600	221	212	199	224	856	309	365	332	395	1401	2257
1700	215	185	250	207	857	339	425	396	371	1531	2388
1800	170	173	182	139	664	260	255	260	221	996	1660
1900	125	107	99	100	431	167	177	167	129	640	1071
2000	107	110	95	80	392	145	132	108	101	486	878
2100	91	76	69	50	286	94	75	90	78	337	623
2200	46	47	41	27	161	54	44	44	55	197	358
2300	29	38	15	13	95	32	40	30	23	125	220
24-Hour Totals:					14282					14231	28513

Peak Volume Information

	Direction: N		Direction: S		Combined Directions	
	Hour	Volume	Hour	Volume	Hour	Volume
A.M.	700	1297	845	686	715	1825
P.M.	1200	1018	1645	1555	1645	2429
Daily	700	1297	1645	1555	1645	2429

Generated by SPS 5.0.53P
County: 26
Station: 0461
Description: SR 20 .2 MI. NW OF SR 93
Start Date: 07/23/2020
Start Time: 0000

	Direction: N					Direction: S					Combined
Time	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Total
0000	15	17	12	17	61	27	33	16	19	95	156
0100	10	19	14	22	65	20	16	18	9	63	128
0200	26	23	22	18	89	16	13	14	9	52	141
0300	17	21	30	55	123	13	19	18	33	83	206
0400	38	46	60	46	190	18	43	27	42	130	320
0500	55	88	135	128	406	32	53	65	60	210	616
0600	165	227	309	231	932	60	72	87	117	336	1268
0700	287	348	386	296	1317	76	124	143	152	495	1812
0800	270	268	261	240	1039	183	144	149	164	640	1679
0900	221	244	231	215	911	160	163	151	198	672	1583
1000	205	217	214	210	846	202	180	193	216	791	1637
1100	232	216	251	214	913	191	225	236	229	881	1794
1200	238	239	253	236	966	258	265	238	255	1016	1982
1300	257	253	225	279	1014	220	231	249	245	945	1959
1400	214	205	228	240	887	275	260	259	263	1057	1944
1500	260	211	195	169	835	230	258	275	330	1093	1928
1600	209	188	209	229	835	289	375	342	378	1384	2219
1700	260	197	224	208	889	338	440	385	365	1528	2417
1800	153	196	136	140	625	326	304	280	190	1100	1725
1900	133	150	138	110	531	181	181	188	146	696	1227
2000	106	100	98	80	384	150	154	130	100	534	918
2100	77	71	77	55	280	113	78	101	68	360	640
2200	50	56	39	33	178	75	63	49	50	237	415
2300	52	28	20	17	117	56	41	36	37	170	287
24-Hour Totals:					14433					14568	29001

Peak Volume Information

	Direction: N		Direction: S		Combined Directions	
	Hour	Volume	Hour	Volume	Hour	Volume
A.M.	700	1317	800	640	715	1902
P.M.	1300	1014	1645	1541	1645	2451
Daily	700	1317	1645	1541	1645	2451

MPH Transportation Planning
Tallahassee, Florida
850-510-6461

Project No. MPH22-02
SFX Retail Site
US441 at CR235A

File Name : 441235
Site Code : 00000000
Start Date : 3/10/2022

Groups Printed- Vehicles - Buses & Trucks

	235 From North					441 From East					235 From South					441 From West					
Start Time	Rt	Th	Lt	RoR	App. Total	Rt	Th	Lt	RoR	App. Total	Rt	Th	Lt	RoR	App. Total	Rt	Th	Lt	RoR	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00	2	3	19	0	24	3	74	31	1	109	4	39	12	15	70	4	265	0	1	270	473
07:15	0	3	13	4	20	4	92	13	1	110	19	4	10	19	52	12	324	6	0	342	524
07:30	1	4	19	5	29	6	110	24	4	144	12	4	20	12	48	6	394	5	4	409	630
07:45	1	6	21	2	30	19	101	24	5	149	13	9	8	12	42	12	359	7	0	378	599
Total	4	16	72	11	103	32	377	92	11	512	48	56	50	58	212	34	1342	18	5	1399	2226
08:00	3	3	21	9	36	16	105	21	7	149	13	12	12	9	46	4	277	13	2	296	527
08:15	4	8	35	11	58	38	103	20	11	172	11	15	8	8	42	5	215	21	0	241	513
08:30	9	13	71	8	101	99	104	19	16	238	16	40	7	11	74	1	247	74	0	322	735
08:45	14	21	77	10	122	57	119	21	22	219	17	23	7	10	57	4	219	24	0	247	645
Total	30	45	204	38	317	210	431	81	56	778	57	90	34	38	219	14	958	132	2	1106	2420
16:00	5	9	23	3	40	22	279	31	3	335	9	4	15	18	46	15	153	3	2	173	594
16:15	0	3	11	2	16	17	295	32	4	348	13	5	16	15	49	12	159	6	2	179	592
16:30	1	4	17	9	31	17	297	32	5	351	3	3	15	21	42	5	158	3	2	168	592
16:45	2	1	16	10	29	20	311	33	10	374	11	9	20	38	78	6	185	5	3	199	680
Total	8	17	67	24	116	76	1182	128	22	1408	36	21	66	92	215	38	655	17	9	719	2458
17:00	3	7	17	7	34	20	293	49	6	368	8	8	16	37	69	9	142	9	2	162	633
17:15	5	5	15	8	33	23	368	47	10	448	8	7	20	25	60	14	171	8	7	200	741
17:30	5	3	25	6	39	14	383	48	8	453	5	10	25	25	65	17	166	2	6	191	748
17:45	1	4	21	3	29	15	339	40	5	399	1	4	19	12	36	11	159	12	6	188	652
Total	14	19	78	24	135	72	1383	184	29	1668	22	29	80	99	230	51	638	31	21	741	2774
Grand Total	56	97	421	97	671	390	3373	485	118	4366	163	196	230	287	876	137	3593	198	37	3965	9878
Apprch %	8.3	14.5	62.7	14.5		8.9	77.3	11.1	2.7		18.6	22.4	26.3	32.8		3.5	90.6	5.0	0.9		
Total %	0.6	1.0	4.3	1.0	6.8	3.9	34.1	4.9	1.2	44.2	1.7	2.0	2.3	2.9	8.9	1.4	36.4	2.0	0.4	40.1	

MPH Transportation Planning
Tallahassee, Florida
850-510-6461

Project No. MPH22-02
SFX Retail Site
US441 at CR235A

File Name : 441235
Site Code : 00000000
Start Date : 3/10/2022

	235 From North					441 From East					235 From South					441 From West					
Start Time	Rt	Th	Lt	RoR	App. Total	Rt	Th	Lt	RoR	App. Total	Rt	Th	Lt	RoR	App. Total	Rt	Th	Lt	RoR	App. Total	Int. Total
Peak Hour From 07:00 to 08:45 - Peak 1 of 1																					
Intersection	08:00																				
Volume	30	45	204	38	317	210	431	81	56	778	57	90	34	38	219	14	958	132	2	1106	2420
Percent	9.5	14.2	64.4	12.0		27.0	55.4	10.4	7.2		26.0	41.1	15.5	17.4		1.3	86.6	11.9	0.2		
08:30 Volume	9	13	71	8	101	99	104	19	16	238	16	40	7	11	74	1	247	74	0	322	735
Peak Factor																					0.823
High Int.	08:45					08:30					08:30					08:30					
Volume	14	21	77	10	122	99	104	19	16	238	16	40	7	11	74	1	247	74	0	322	
Peak Factor					0.650					0.817					0.740					0.859	
Peak Hour From 07:00 to 08:45 - Peak 1 of 1																					
By Approach	08:00					08:00					08:00					07:15					
Volume	30	45	204	38	317	210	431	81	56	778	57	90	34	38	219	34	1354	31	6	1425	
Percent	9.5	14.2	64.4	12.0		27.0	55.4	10.4	7.2		26.0	41.1	15.5	17.4		2.4	95.0	2.2	0.4		
High Int.	08:45					08:30					08:30					07:30					
Volume	14	21	77	10	122	99	104	19	16	238	16	40	7	11	74	6	394	5	4	409	
Peak Factor					0.650					0.817					0.740					0.871	
Peak Hour From 16:00 to 17:45 - Peak 1 of 1																					
Intersection	16:45																				
Volume	15	16	73	31	135	77	1355	177	34	1643	32	34	81	125	272	46	664	24	18	752	2802
Percent	11.1	11.9	54.1	23.0		4.7	82.5	10.8	2.1		11.8	12.5	29.8	46.0		6.1	88.3	3.2	2.4		
17:30 Volume	5	3	25	6	39	14	383	48	8	453	5	10	25	25	65	17	166	2	6	191	748
Peak Factor																					0.936
High Int.	17:30					17:30					16:45					17:15					
Volume	5	3	25	6	39	14	383	48	8	453	11	9	20	38	78	14	171	8	7	200	
Peak Factor					0.865					0.907					0.872					0.940	
Peak Hour From 16:00 to 17:45 - Peak 1 of 1																					
By Approach	16:45					17:00					16:45					16:45					
Volume	15	16	73	31	135	72	1383	184	29	1668	32	34	81	125	272	46	664	24	18	752	
Percent	11.1	11.9	54.1	23.0		4.3	82.9	11.0	1.7		11.8	12.5	29.8	46.0		6.1	88.3	3.2	2.4		
High Int.	17:30					17:30					16:45					17:15					
Volume	5	3	25	6	39	14	383	48	8	453	11	9	20	38	78	14	171	8	7	200	
Peak Factor					0.865					0.921					0.872					0.940	

MPH Transportation Planning
Tallahassee, Florida
850-510-6461

Project No. MPH22-02
SFX Retail Site
US441 at CR235A

File Name : 441235
Site Code : 00000000
Start Date : 3/10/2022

Groups Printed- Buses & Trucks

	235 From North					441 From East					235 From South					441 From West					
Start Time	Rt	Th	Lt	RoR	App. Total	Rt	Th	Lt	RoR	App. Total	Rt	Th	Lt	RoR	App. Total	Rt	Th	Lt	RoR	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00	0	1	2	0	3	0	3	6	0	9	2	1	1	3	7	0	7	0	0	7	26
07:15	0	0	0	0	0	0	7	1	0	8	8	0	0	4	12	0	7	0	0	7	27
07:30	0	0	0	1	1	1	4	5	0	10	5	0	2	1	8	0	5	0	0	5	24
07:45	0	1	0	0	1	0	7	5	0	12	5	0	0	1	6	0	3	0	0	3	22
Total	0	2	2	1	5	1	21	17	0	39	20	1	3	9	33	0	22	0	0	22	99
08:00	0	0	0	1	1	1	4	11	0	16	6	1	0	3	10	0	9	0	0	9	36
08:15	0	0	0	0	0	0	5	9	0	14	3	0	0	4	7	0	5	1	0	6	27
08:30	0	0	2	0	2	2	4	13	0	19	7	0	0	2	9	0	4	0	0	4	34
08:45	0	0	0	0	0	5	7	9	1	22	5	1	0	5	11	0	4	0	0	4	37
Total	0	0	2	1	3	8	20	42	1	71	21	2	0	14	37	0	22	1	0	23	134
16:00	1	0	0	0	1	1	2	10	0	13	4	0	0	4	8	0	6	0	0	6	28
16:15	0	0	0	0	0	2	6	7	0	15	7	1	0	3	11	1	4	1	0	6	32
16:30	0	0	0	0	0	3	4	6	0	13	2	0	0	4	6	0	2	1	0	3	22
16:45	0	0	0	0	0	1	1	6	0	8	1	0	1	2	4	1	4	0	1	6	18
Total	1	0	0	0	1	7	13	29	0	49	14	1	1	13	29	2	16	2	1	21	100
17:00	0	1	0	0	1	1	3	8	0	12	3	0	0	3	6	0	4	0	0	4	23
17:15	0	0	0	0	0	0	0	4	0	4	3	0	0	5	8	2	5	1	0	8	20
17:30	0	0	0	0	0	0	2	7	0	9	2	0	0	4	6	0	2	0	0	2	17
17:45	0	0	0	0	0	1	2	9	0	12	1	1	0	3	5	0	3	0	1	4	21
Total	0	1	0	0	1	2	7	28	0	37	9	1	0	15	25	2	14	1	1	18	81
Grand Total	1	3	4	2	10	18	61	116	1	196	64	5	4	51	124	4	74	4	2	84	414
Apprch %	10.0	30.0	40.0	20.0		9.2	31.1	59.2	0.5		51.6	4.0	3.2	41.1		4.8	88.1	4.8	2.4		
Total %	0.2	0.7	1.0	0.5	2.4	4.3	14.7	28.0	0.2	47.3	15.5	1.2	1.0	12.3	30.0	1.0	17.9	1.0	0.5	20.3	

MPH Transportation Planning
Tallahassee, Florida
850-510-6461

Project No. MPH22-02
SFX Retail Site
US441 at CR235A

File Name : 441235
Site Code : 00000000
Start Date : 3/10/2022

	235 From North					441 From East					235 From South					441 From West					
Start Time	Rt	Th	Lt	RoR	App. Total	Rt	Th	Lt	RoR	App. Total	Rt	Th	Lt	RoR	App. Total	Rt	Th	Lt	RoR	App. Total	Int. Total
Peak Hour From 07:00 to 08:45 - Peak 1 of 1																					
Intersection	08:00																				
Volume	0	0	2	1	3	8	20	42	1	71	21	2	0	14	37	0	22	1	0	23	134
Percent	0.0	0.0	66.7	33.3		11.3	28.2	59.2	1.4		56.8	5.4	0.0	37.8		0.0	95.7	4.3	0.0		
08:45 Volume	0	0	0	0	0	5	7	9	1	22	5	1	0	5	11	0	4	0	0	4	37
Peak Factor																					0.905
High Int.	08:30					08:45					08:45					08:00					
Volume	0	0	2	0	2	5	7	9	1	22	5	1	0	5	11	0	9	0	0	9	
Peak Factor					0.375					0.807					0.841					0.639	
Peak Hour From 07:00 to 08:45 - Peak 1 of 1																					
By Approach	07:00					08:00					08:00					07:15					
Volume	0	2	2	1	5	8	20	42	1	71	21	2	0	14	37	0	24	0	0	24	
Percent	0.0	40.0	40.0	20.0		11.3	28.2	59.2	1.4		56.8	5.4	0.0	37.8		0.0	100.0	0.0	0.0		
High Int.	07:00					08:45					08:45					08:00					
Volume	0	1	2	0	3	5	7	9	1	22	5	1	0	5	11	0	9	0	0	9	
Peak Factor					0.417					0.807					0.841					0.667	
Peak Hour From 16:00 to 17:45 - Peak 1 of 1																					
Intersection	16:00																				
Volume	1	0	0	0	1	7	13	29	0	49	14	1	1	13	29	2	16	2	1	21	100
Percent	100.0	0.0	0.0	0.0		14.3	26.5	59.2	0.0		48.3	3.4	3.4	44.8		9.5	76.2	9.5	4.8		
16:15 Volume	0	0	0	0	0	2	6	7	0	15	7	1	0	3	11	1	4	1	0	6	32
Peak Factor																					0.781
High Int.	16:00					16:15					16:15					16:00					
Volume	1	0	0	0	1	2	6	7	0	15	7	1	0	3	11	0	6	0	0	6	
Peak Factor					0.250					0.817					0.659					0.875	
Peak Hour From 16:00 to 17:45 - Peak 1 of 1																					
By Approach	16:00					16:00					16:00					16:00					
Volume	1	0	0	0	1	7	13	29	0	49	14	1	1	13	29	2	16	2	1	21	
Percent	100.0	0.0	0.0	0.0		14.3	26.5	59.2	0.0		48.3	3.4	3.4	44.8		9.5	76.2	9.5	4.8		
High Int.	16:00					16:15					16:15					16:00					
Volume	1	0	0	0	1	2	6	7	0	15	7	1	0	3	11	0	6	0	0	6	
Peak Factor					0.250					0.817					0.659					0.875	

ON-SITE OBSERVATION REPORT

Project/#:	Santa Fe Crossing Commercial Complex MPH 22-02	Analyst:	M. Hemmen
Location:	US 441 at CR 235A	Date:	3/10/2022
Control:	Traffic Signal	Time:	7 AM - 6 PM
Lanes/Spd	US 441: 4-LND @ 55/45 mph ; CR235A: 2-LNU @ 45 mph		

	Isolated & Non-Isolated Intersections	No/Yes/NA Approach	
1	Does road curvature, vegetation, buildings, parked cars, etc.	N	
	block drivers' view of conflicting vehicles?		
2	Is the intersection skew angle so sharp that it makes it difficult	N	
	to view conflicting vehicles or complete turns?		
3	Do vehicle speeds appear too high?	N	
4	Does the delay for the minor road right-turn appear excessive?	N	
5	Does the delay for the minor road through appear excessive?	N	
6	Does the delay for the minor road left-turn appear excessive?	N	
7	Does the delay for the major road left-turn appear excessive?	Y	carryover
8	Does the queue for major road left-turns impede through traffic?	N	
9	As major road vehicles slow to turn do they impede other vehicles?	Y	semi-trucks
10	Do parking maneuvers impede other vehicles?	N	
11	Are drivers not complying with the traffic control devices?	N	
12	Is there evidence that one or more curb radii are too small?	N	
13	Do pedestrians appear to cause conflict with vehicular traffic?	N	None present
14	Are there guidance or control problems that could be mitigated by	N	
	raised-curb channelization?		
	Non-Isolated Intersections	No/Yes/NA Approach	
15	Do queues from adjacent signalized intersections spillback into	N	
	the subject intersection?		
16	Do vehicles slowing to turn at adjacent intersections or driveways	Y	coffee shop
	contribute to the delay to major/minor road drivers?		
17	Is it possible that some drivers are diverting to the subject	N	
	intersection because of congestion on a nearby street?		
18	Does the arrival pattern of major road traffic platoons contribute	N	
	to the delay of minor road drivers?		

Comments/Explanations to above responses

7	Significant semi-truck traffic in westbound left turn lane resulted in carryover of queued trips
9	as slow start to turn maneuver limited the number of vehicles turning during allocated green
13	No pedestrians observed all day as no sdiewalks are present except in front of the high school
16	Driveway to Ellianos Coffee Shop has no turn lane and is only 200 feet east of traffic signal
	vevhicles traveling through signal often exceed 50+ mph while turning vehicles slow to 10 mph
GEN	Traffic Signal configuration is Mast Arms (4) with horizontal light assemblies.
	Pedestrian buttons only on north side of US 441 (high school), sidewalk only in front of HS.
	Bike Lanes are present only on East-West approaches of US 441; none on CR235A
	Protected Permitted left turn phase for all approaches. Good progression all movements.
	Signal cycle times were 120 seconds in the a.m. and 150 seconds in the p.m.
	CR 235A phasing limited by presence detection of turning vehicles (phase can be skipped)
	Heavy semi-truck traffic to/from CR 235A south of US 441 to Walmart, Sysco & Dollar General
	distribution centers on CR 235A 2 miles to the south.

Appendix C: NCHRP Report 457 Analysis & HCS Intersection Analysis

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*M.Hemmen*
Agency/Co.	*MPH Transportation Planning*
Date Performed	*3/21/2022*
Analysis Time Period	*AM Peak*

Site Information

Intersection	*Project Drive at CR 235A*
Jurisdiction	*Alachua City & County*
Analysis Year	*2023*

Project Description *MPH 22-02 Santa Fe Crossing*

East/West Street: *Project Drive South*	North/South Street: *CR 235A*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*31*	*223*			*124*	*58*
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*34*	*247*	*0*	*0*	*137*	*64*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*0*	*1*	*0*
Configuration	*L*	*T*				*TR*
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*109*		*29*			
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*121*	*0*	*32*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration		*LR*				

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*						*LR*	
v (veh/h)	*34*						*153*	
C (m) (veh/h)	*1383*						*580*	
v/c	*0.02*						*0.26*	
95% queue length	*0.08*						*1.05*	
Control Delay (s/veh)	*7.7*						*13.4*	
LOS	*A*						*B*	
Approach Delay (s/veh)	--	--					*13.4*	
Approach LOS	--	--					*B*	

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*M.Hemmen*
Agency/Co.	*MPH Transportation Planning*
Date Performed	*3/21/2022*
Analysis Time Period	*PM Peak*

Site Information

Intersection	*Project Drive at CR 235A*
Jurisdiction	*Alachua City & County*
Analysis Year	*2023*

Project Description *MPH 22-02 Santa Fe Crossing*

East/West Street: *Project Drive South*	North/South Street: *CR 235A*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*33*	*277*			*262*	*58*
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*36*	*307*	*0*	*0*	*291*	*64*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*0*	*1*	*0*
Configuration	*L*	*T*				*TR*
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*96*		*32*			
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*106*	*0*	*35*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration		*LR*				

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*						*LR*	
v (veh/h)	*36*						*141*	
C (m) (veh/h)	*1215*						*445*	
v/c	*0.03*						*0.32*	
95% queue length	*0.09*						*1.34*	
Control Delay (s/veh)	*8.1*						*16.8*	
LOS	*A*						*C*	
Approach Delay (s/veh)	--	--					*16.8*	
Approach LOS	--	--					*C*	

SHORT REPORT

General Information		Site Information	
Analyst	*M.Hemmen*	Intersection	*US 441 at CR 235A*
Agency or Co.	*MPH Transportation Planning*	Area Type	*All other areas*
Date Performed	*3/21/2022*	Jurisdiction	*FDOT & Alachua County*
Time Period	*AM Peak Hour*	Analysis Year	*2022 Existing*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes	*1*	*2*	*1*	*1*	*2*	*1*	*1*	*1*	*1*	*1*	*1*	*0*
Lane Group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*	
Volume (vph)	*132*	*958*	*16*	*81*	*431*	*266*	*34*	*90*	*95*	*204*	*45*	*68*
% Heavy Vehicles	*1*	*2*	*0*	*50*	*5*	*3*	*0*	*2*	*35*	*1*	*1*	*1*
PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Pretimed/Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup Lost Time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	
Extension of Effective Green	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	
Arrival Type	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	
Unit Extension	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*0*	*0*	*2*	*0*	*0*	*56*	*0*	*0*	*38*	*0*	*0*	*38*
Lane Width	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	
Parking/Grade/Parking	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*
Parking/Hour												
Bus Stops/Hour	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	
Minimum Pedestrian Time		*3.2*			*3.2*			*3.2*			*3.2*	

Phasing	Excl. Left	WB Only	EW Perm	04	SB Only	NS Perm	07	08
Timing	G = *15.0*	G = *15.0*	G = *45.0*	G =	G = *20.0*	G = *15.0*	G =	G =
	Y = *4*	Y = *0*	Y = *6*	Y =	Y = *4*	Y = *6*	Y =	Y =

Duration of Analysis (hrs) = *0.25* — Cycle Length C = *130.0*

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adjusted Flow Rate	*147*	*1064*	*16*	*90*	*479*	*233*	*38*	*100*	*63*	*227*	*83*	
Lane Group Capacity	*518*	*1228*	*559*	*370*	*1590*	*1266*	*154*	*215*	*331*	*418*	*531*	
v/c Ratio	*0.28*	*0.87*	*0.03*	*0.24*	*0.30*	*0.18*	*0.25*	*0.47*	*0.19*	*0.54*	*0.16*	
Green Ratio	*0.46*	*0.35*	*0.35*	*0.65*	*0.46*	*0.81*	*0.12*	*0.12*	*0.28*	*0.32*	*0.30*	
Uniform Delay d_1	*20.5*	*39.7*	*28.1*	*15.7*	*21.9*	*2.8*	*52.4*	*53.8*	*35.9*	*35.1*	*33.4*	
Delay Factor k	*0.11*	*0.40*	*0.11*	*0.11*	*0.11*	*0.11*	*0.11*	*0.11*	*0.11*	*0.14*	*0.11*	
Incremental Delay d_2	*0.3*	*6.8*	*0.0*	*0.3*	*0.1*	*0.1*	*0.8*	*1.6*	*0.3*	*1.5*	*0.1*	
PF Factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
Control Delay	*20.8*	*46.5*	*28.1*	*16.0*	*22.0*	*2.9*	*53.2*	*55.3*	*36.2*	*36.6*	*33.6*	
Lane Group LOS	*C*	*D*	*C*	*B*	*C*	*A*	*D*	*E*	*D*	*D*	*C*	
Approach Delay	*43.2*			*15.8*			*48.9*			*35.8*		
Approach LOS	*D*			*B*			*D*			*D*		
Intersection Delay	*34.1*			Intersection LOS			*C*					

SHORT REPORT

General Information		Site Information	
Analyst	*M.Hemmen*	Intersection	*US 441 at CR 235A*
Agency or Co.	*MPH Transportation Planning*	Area Type	*All other areas*
Date Performed	*3/21/2022*	Jurisdiction	*FDOT & Alachua County*
Time Period	*AM Peak Hour*	Analysis Year	*2023 Existing+Bkgrnd+Project*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes	*1*	*2*	*1*	*1*	*2*	*1*	*1*	*1*	*1*	*1*	*1*	*0*
Lane Group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*	
Volume (vph)	*157*	*1108*	*16*	*152*	*509*	*271*	*122*	*114*	*97*	*208*	*92*	*69*
% Heavy Vehicles	*1*	*2*	*0*	*50*	*5*	*3*	*0*	*2*	*35*	*1*	*1*	*1*
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
Pretimed/Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup Lost Time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	
Extension of Effective Green	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	
Arrival Type	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	
Unit Extension	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*0*	*0*	*2*	*0*	*0*	*56*	*0*	*0*	*38*	*0*	*0*	*38*
Lane Width	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	
Parking/Grade/Parking	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*
Parking/Hour												
Bus Stops/Hour	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	
Minimum Pedestrian Time		*3.2*			*3.2*			*3.2*			*3.2*	

Phasing	Excl. Left	WB Only	EW Perm	04	SB Only	NS Perm	07	08
Timing	G = *12.0*	G = *15.0*	G = *48.0*	G =	G = *16.0*	G = *19.0*	G =	G =
	Y = *4*	Y = *0*	Y = *6*	Y =	Y = *4*	Y = *6*	Y =	Y =

Duration of Analysis (hrs) = *0.25* | Cycle Length C = *130.0*

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adjusted Flow Rate	*171*	*1204*	*15*	*165*	*553*	*234*	*133*	*124*	*64*	*226*	*134*	
Lane Group Capacity	*474*	*1310*	*596*	*342*	*1670*	*1303*	*186*	*272*	*340*	*385*	*543*	
v/c Ratio	*0.36*	*0.92*	*0.03*	*0.48*	*0.33*	*0.18*	*0.72*	*0.46*	*0.19*	*0.59*	*0.25*	
Green Ratio	*0.46*	*0.37*	*0.37*	*0.65*	*0.48*	*0.83*	*0.15*	*0.15*	*0.28*	*0.32*	*0.30*	
Uniform Delay d_1	*20.8*	*39.1*	*26.1*	*28.8*	*20.6*	*2.2*	*52.9*	*50.8*	*35.1*	*35.2*	*34.4*	
Delay Factor k	*0.11*	*0.44*	*0.11*	*0.11*	*0.11*	*0.11*	*0.28*	*0.11*	*0.11*	*0.18*	*0.11*	
Incremental Delay d_2	*0.5*	*10.6*	*0.0*	*1.1*	*0.1*	*0.1*	*12.3*	*1.2*	*0.3*	*2.3*	*0.2*	
PF Factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
Control Delay	*21.3*	*49.7*	*26.1*	*29.8*	*20.7*	*2.3*	*65.2*	*52.0*	*35.4*	*37.5*	*34.6*	
Lane Group LOS	*C*	*D*	*C*	*C*	*C*	*A*	*E*	*D*	*D*	*D*	*C*	
Approach Delay	*46.0*			*17.7*			*54.2*			*36.5*		
Approach LOS	*D*			*B*			*D*			*D*		
Intersection Delay	*36.8*			Intersection LOS						*D*		

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*M.Hemmen*
Agency/Co.	*MPH Transportation Planning*
Date Performed	*3/21/2022*
Analysis Time Period	*AM Peak*

Site Information

Intersection	*US 441 at Project Drive*
Jurisdiction	*FDOT & City of Alachua*
Analysis Year	*2023*

Project Description *MPH 22-02 Santa Fe Crossing*

East/West Street: *US 441* | North/South Street: *Project Drive North*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		*1128*	*92*	*69*	*544*	
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*0*	*1253*	*102*	*76*	*604*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Two Way Left Turn Lane*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*1*	*1*	*2*	*0*
Configuration		*T*	*R*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)			*153*			
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*170*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*1*	*0*	*0*	*0*
Configuration			*R*			

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*			*R*			
v (veh/h)		*76*			*170*			
C (m) (veh/h)		*514*			*432*			
v/c		*0.15*			*0.39*			
95% queue length		*0.52*			*1.84*			
Control Delay (s/veh)		*13.2*			*18.6*			
LOS		*B*			*C*			
Approach Delay (s/veh)	--	--	*18.6*					
Approach LOS	--	--	*C*					

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*M.Hemmen*
Agency/Co.	*MPH Transportation Planning*
Date Performed	*3/21/2022*
Analysis Time Period	*PM Peak*

Site Information

Intersection	*US 441 at Project Drive*
Jurisdiction	*FDOT & City of Alachua*
Analysis Year	*2023*

Project Description *MPH 22-02 Santa Fe Crossing*

East/West Street: *US 441*	North/South Street: *Project Drive North*
Intersection Orientation: *East-West*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		*767*	*81*	*100*	*1512*	
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*0*	*852*	*90*	*111*	*1680*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Two Way Left Turn Lane*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*1*	*1*	*2*	*0*
Configuration		*T*	*R*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)			*200*			
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*222*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*1*	*0*	*0*	*0*
Configuration			*R*			

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*			*R*			
v (veh/h)		*111*			*222*			
C (m) (veh/h)		*736*			*582*			
v/c		*0.15*			*0.38*			
95% queue length		*0.53*			*1.78*			
Control Delay (s/veh)		*10.8*			*14.9*			
LOS		*B*			*B*			
Approach Delay (s/veh)	--	--	*14.9*					
Approach LOS	--	--	*B*					

SHORT REPORT

General Information		Site Information	
Analyst	*M.Hemmen*	Intersection	*US 441 at CR 235A*
Agency or Co.	*MPH Transportation Planning*	Area Type	*All other areas*
Date Performed	*3/21/2022*	Jurisdiction	*FDOT & Alachua County*
Time Period	*PM Peak Hour*	Analysis Year	*2022 Existing*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes	*1*	*2*	*1*	*1*	*2*	*1*	*1*	*1*	*1*	*1*	*1*	*0*
Lane Group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*	
Volume (vph)	*24*	*664*	*64*	*177*	*1355*	*111*	*81*	*34*	*157*	*73*	*16*	*46*
% Heavy Vehicles	*8*	*2*	*5*	*16*	*2*	*6*	*2*	*2*	*17*	*1*	*1*	*1*
PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Pretimed/Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup Lost Time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	
Extension of Effective Green	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	
Arrival Type	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	
Unit Extension	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*0*	*0*	*18*	*0*	*0*	*34*	*0*	*0*	*125*	*0*	*0*	*31*
Lane Width	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	
Parking/Grade/Parking	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*
Parking/Hour												
Bus Stops/Hour	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	
Minimum Pedestrian Time		*3.2*			*3.2*			*3.2*			*3.2*	

Phasing	Excl. Left	WB Only	EW Perm	04	Excl. Left	NB Only	NS Perm	08
Timing	G = *15.0*	G = *25.0*	G = *55.0*	G =	G = *14.0*	G = *8.0*	G = *19.0*	G =
	Y = *4*	Y = *0*	Y = *6*	Y =	Y = *4*	Y = *4*	Y = *6*	Y =

Duration of Analysis (hrs) = *0.25* — Cycle Length C = *160.0*

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adjusted Flow Rate	*27*	*738*	*51*	*197*	*1506*	*86*	*90*	*38*	*36*	*81*	*35*	
Lane Group Capacity	*202*	*1219*	*836*	*550*	*1774*	*1067*	*478*	*361*	*699*	*320*	*207*	
v/c Ratio	*0.13*	*0.61*	*0.06*	*0.36*	*0.85*	*0.08*	*0.19*	*0.11*	*0.05*	*0.25*	*0.17*	
Green Ratio	*0.44*	*0.34*	*0.54*	*0.66*	*0.50*	*0.70*	*0.32*	*0.19*	*0.51*	*0.21*	*0.12*	
Uniform Delay d_1	*29.2*	*43.5*	*17.2*	*14.7*	*34.8*	*7.6*	*39.1*	*53.1*	*20.0*	*52.8*	*63.4*	
Delay Factor k	*0.11*	*0.19*	*0.11*	*0.11*	*0.38*	*0.11*	*0.11*	*0.11*	*0.11*	*0.11*	*0.11*	
Incremental Delay d_2	*0.3*	*0.9*	*0.0*	*0.4*	*4.1*	*0.0*	*0.2*	*0.1*	*0.0*	*0.4*	*0.4*	
PF Factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
Control Delay	*29.5*	*44.4*	*17.3*	*15.1*	*38.9*	*7.7*	*39.3*	*53.2*	*20.1*	*53.2*	*63.8*	
Lane Group LOS	*C*	*D*	*B*	*B*	*D*	*A*	*D*	*D*	*C*	*D*	*E*	
Approach Delay	*42.2*			*34.7*			*38.3*			*56.4*		
Approach LOS	*D*			*C*			*D*			*E*		
Intersection Delay	*37.9*			Intersection LOS			*D*					

SHORT REPORT

General Information		Site Information	
Analyst	*M.Hemmen*	Intersection	*US 441 at CR 235A*
Agency or Co.	*MPH Transportation Planning*	Area Type	*All other areas*
Date Performed	*3/21/2022*	Jurisdiction	*FDOT & Alachua County*
Time Period	*PM Peak Hour*	Analysis Year	*2023 Existing+Bkgrnd+Project*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes	*1*	*2*	*1*	*1*	*2*	*1*	*1*	*1*	*1*	*1*	*1*	*0*
Lane Group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*	
Volume (vph)	*32*	*869*	*65*	*276*	*1482*	*113*	*163*	*43*	*160*	*74*	*32*	*47*
% Heavy Vehicles	*8*	*2*	*5*	*16*	*2*	*6*	*2*	*2*	*17*	*1*	*1*	*1*
PHF	*0.94*	*0.94*	*0.94*	*0.94*	*0.94*	*0.94*	*0.94*	*0.94*	*0.94*	*0.94*	*0.94*	*0.94*
Pretimed/Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup Lost Time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	
Extension of Effective Green	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	
Arrival Type	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	
Unit Extension	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*0*	*0*	*18*	*0*	*0*	*34*	*0*	*0*	*125*	*0*	*0*	*31*
Lane Width	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	
Parking/Grade/Parking	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*
Parking/Hour												
Bus Stops/Hour	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	
Minimum Pedestrian Time		*3.2*			*3.2*			*3.2*			*3.2*	

Phasing	Excl. Left	WB Only	EW Perm	04	Excl. Left	NB Only	NS Perm	08
Timing	G = *15.0*	G = *25.0*	G = *55.0*	G =	G = *14.0*	G = *8.0*	G = *19.0*	G =
	Y = *4*	Y = *0*	Y = *6*	Y =	Y = *4*	Y = *4*	Y = *6*	Y =

Duration of Analysis (hrs) = *0.25* | Cycle Length C = *160.0*

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adjusted Flow Rate	*34*	*924*	*50*	*294*	*1577*	*84*	*173*	*46*	*37*	*79*	*51*	
Lane Group Capacity	*202*	*1219*	*836*	*499*	*1774*	*1067*	*464*	*361*	*699*	*318*	*212*	
v/c Ratio	*0.17*	*0.76*	*0.06*	*0.59*	*0.89*	*0.08*	*0.37*	*0.13*	*0.05*	*0.25*	*0.24*	
Green Ratio	*0.44*	*0.34*	*0.54*	*0.66*	*0.50*	*0.70*	*0.32*	*0.19*	*0.51*	*0.21*	*0.12*	
Uniform Delay d_1	*30.6*	*46.6*	*17.2*	*30.6*	*36.0*	*7.6*	*41.2*	*53.3*	*20.0*	*52.7*	*64.0*	
Delay Factor k	*0.11*	*0.31*	*0.11*	*0.18*	*0.41*	*0.11*	*0.11*	*0.11*	*0.11*	*0.11*	*0.11*	
Incremental Delay d_2	*0.4*	*2.8*	*0.0*	*1.8*	*6.0*	*0.0*	*0.5*	*0.2*	*0.0*	*0.4*	*0.6*	
PF Factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
Control Delay	*31.0*	*49.4*	*17.2*	*32.4*	*42.0*	*7.7*	*41.7*	*53.5*	*20.1*	*53.1*	*64.5*	
Lane Group LOS	*C*	*D*	*B*	*C*	*D*	*A*	*D*	*D*	*C*	*D*	*E*	
Approach Delay	*47.2*			*39.1*			*40.7*			*57.6*		
Approach LOS	*D*			*D*			*D*			*E*		
Intersection Delay	*42.4*			Intersection LOS			*D*					

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *MPH 22-02 Santa Fe Crossing*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane Group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*	
Initial Queue/Lane	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	
Flow Rate/Lane Group	*27*	*738*	*51*	*197*	*1506*	*86*	*90*	*38*	*36*	*81*	*35*	
Satflow/Lane	*459*	*1862*	*1538*	*839*	*1862*	*1524*	*1498*	*1863*	*1380*	*1552*	*1744*	
Capacity/Lane Group	*202*	*1219*	*836*	*550*	*1774*	*1067*	*478*	*361*	*699*	*320*	*207*	
Flow Ratio	*0.1*	*0.2*	*0.0*	*0.2*	*0.4*	*0.1*	*0.1*	*0.0*	*0.0*	*0.1*	0.0	
v/c Ratio	*0.13*	*0.61*	*0.06*	*0.36*	*0.85*	*0.08*	*0.19*	*0.11*	*0.05*	*0.25*	*0.17*	
I Factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
Arrival Type	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	
Platoon Ratio	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	
PF Factor	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	
Q_1	*0.7*	*14.2*	*1.1*	*3.3*	*30.5*	*1.2*	*2.8*	*1.4*	*0.8*	*2.9*	*1.4*	
k_B	*0.4*	*0.7*	*0.9*	*0.7*	*0.9*	*1.0*	*0.6*	*0.5*	*0.8*	*0.5*	*0.4*	
Q_2	*0.1*	*1.1*	*0.1*	*0.4*	*4.2*	*0.1*	*0.1*	*0.1*	*0.0*	*0.2*	*0.1*	
Q Average	*0.7*	*15.4*	*1.1*	*3.7*	*34.7*	*1.3*	*3.0*	*1.5*	*0.9*	*3.1*	*1.5*	
Percentile Back of Queue (95th percentile)												
$f_{B\%}$	*2.1*	*1.8*	*2.1*	*2.0*	*1.6*	*2.1*	*2.0*	*2.1*	*2.1*	*2.0*	*2.1*	
Back of Queue	*1.5*	*27.0*	*2.3*	*7.4*	*55.1*	*2.7*	*5.9*	*3.0*	*1.8*	*6.2*	*3.0*	
Queue Storage Ratio												
Queue Spacing	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	
Queue Storage	*310*	*2000*	*265*	*315*	*1120*	*1120*	*165*	*1000*	*250*	*385*	*1000*	
Average Queue Storage Ratio	*0.1*	*0.2*	*0.1*	*0.3*	*0.8*	*0.0*	*0.4*	*0.0*	*0.1*	*0.2*	*0.0*	
95% Queue Storage Ratio	*0.1*	*0.3*	*0.2*	*0.6*	*1.2*	*0.1*	*0.9*	*0.1*	*0.2*	*0.4*	*0.1*	

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *MPH 22-02 Santa Fe Crossing*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane Group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*	
Initial Queue/Lane	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	
Flow Rate/Lane Group	*171*	*1204*	*15*	*165*	*553*	*234*	*133*	*124*	*64*	*226*	*134*	
Satflow/Lane	*1028*	*1862*	*1615*	*498*	*1809*	*1568*	*1275*	*1863*	*1196*	*1219*	*1810*	
Capacity/Lane Group	*474*	*1310*	*596*	*342*	*1670*	*1303*	*186*	*272*	*340*	*385*	*543*	
Flow Ratio	*0.2*	*0.3*	*0.0*	*0.3*	*0.2*	*0.1*	*0.1*	*0.1*	*0.1*	*0.2*	0.1	
v/c Ratio	*0.36*	*0.92*	*0.03*	*0.48*	*0.33*	*0.18*	*0.72*	*0.46*	*0.19*	*0.59*	*0.25*	
I Factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
Arrival Type	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	
Platoon Ratio	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	
PF Factor	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	
Q_1	*3.4*	*21.8*	*0.3*	*2.3*	*6.4*	*1.7*	*4.6*	*4.1*	*1.7*	*6.0*	*3.7*	
k_B	*0.5*	*0.7*	*0.6*	*0.4*	*0.8*	*1.0*	*0.3*	*0.4*	*0.5*	*0.5*	*0.6*	
Q_2	*0.3*	*4.7*	*0.0*	*0.4*	*0.4*	*0.2*	*0.7*	*0.3*	*0.1*	*0.6*	*0.2*	
Q Average	*3.7*	*26.4*	*0.4*	*2.7*	*6.8*	*1.9*	*5.3*	*4.4*	*1.9*	*6.7*	*3.9*	
Percentile Back of Queue (95th percentile)												
$f_{B\%}$	*2.0*	*1.6*	*2.1*	*2.0*	*1.9*	*2.0*	*1.9*	*2.0*	*2.0*	*1.9*	*2.0*	
Back of Queue	*7.4*	*43.3*	*0.8*	*5.5*	*13.0*	*3.9*	*10.3*	*8.7*	*3.8*	*12.8*	*7.6*	
Queue Storage Ratio												
Queue Spacing	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	
Queue Storage	*310*	*1000*	*265*	*315*	*1120*	*1120*	*165*	*1000*	*250*	*385*	*1000*	
Average Queue Storage Ratio	*0.3*	*0.7*	*0.0*	*0.2*	*0.2*	*0.0*	*0.8*	*0.1*	*0.2*	*0.4*	*0.1*	
95% Queue Storage Ratio	*0.6*	*1.1*	*0.1*	*0.4*	*0.3*	*0.1*	*1.6*	*0.2*	*0.4*	*0.8*	*0.2*	

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *MPH 22-02 Santa Fe Crossing*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane Group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*	
Initial Queue/Lane	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	
Flow Rate/Lane Group	*34*	*924*	*50*	*294*	*1577*	*84*	*173*	*46*	*37*	*79*	*51*	
Satflow/Lane	*459*	*1862*	*1538*	*760*	*1862*	*1524*	*1454*	*1863*	*1380*	*1546*	*1787*	
Capacity/Lane Group	*202*	*1219*	*836*	*499*	*1774*	*1067*	*464*	*361*	*699*	*318*	*212*	
Flow Ratio	*0.1*	*0.3*	*0.0*	*0.4*	*0.4*	*0.1*	*0.1*	*0.0*	*0.0*	*0.1*	0.0	
v/c Ratio	*0.17*	*0.76*	*0.06*	*0.59*	*0.89*	*0.08*	*0.37*	*0.13*	*0.05*	*0.25*	*0.24*	
I Factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
Arrival Type	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	
Platoon Ratio	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	
PF Factor	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	
Q_1	*0.9*	*19.1*	*1.0*	*5.4*	*33.1*	*1.2*	*5.6*	*1.7*	*0.8*	*2.8*	*2.1*	
k_B	*0.4*	*0.7*	*0.9*	*0.6*	*0.9*	*1.0*	*0.6*	*0.5*	*0.8*	*0.5*	*0.4*	
Q_2	*0.1*	*2.1*	*0.1*	*0.9*	*5.3*	*0.1*	*0.4*	*0.1*	*0.0*	*0.2*	*0.1*	
Q Average	*0.9*	*21.2*	*1.1*	*6.2*	*38.4*	*1.3*	*5.9*	*1.8*	*0.9*	*3.0*	*2.2*	
Percentile Back of Queue (95th percentile)												
$f_{B\%}$	*2.1*	*1.7*	*2.1*	*1.9*	*1.6*	*2.1*	*1.9*	*2.0*	*2.1*	*2.0*	*2.0*	
Back of Queue	*1.9*	*35.8*	*2.3*	*12.0*	*60.4*	*2.6*	*11.5*	*3.6*	*1.8*	*6.0*	*4.4*	
Queue Storage Ratio												
Queue Spacing	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	
Queue Storage	*310*	*2000*	*265*	*315*	*1120*	*1120*	*165*	*1000*	*250*	*385*	*1000*	
Average Queue Storage Ratio	*0.1*	*0.3*	*0.1*	*0.5*	*0.9*	*0.0*	*0.9*	*0.0*	*0.1*	*0.2*	*0.1*	
95% Queue Storage Ratio	*0.2*	*0.4*	*0.2*	*1.0*	*1.3*	*0.1*	*1.7*	*0.1*	*0.2*	*0.4*	*0.1*	