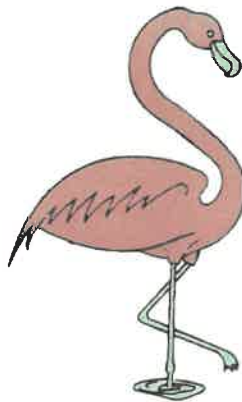


TENNIS FOREVER DEVELOPMENT TRAFFIC STUDY

COLUMBIA COUNTY, FLORIDA

January 2023



BUCKHOLZ TRAFFIC



BUCKHOLZ TRAFFIC
3585 KORI ROAD
JACKSONVILLE, FLORIDA 32257
(904) 886-2171 jwbuckholz@aol.com

January 26, 2023

Mr. Anjan Viplav
1361 SW Sisters Welcome Road
Lake City, Florida 32025

Re: Tennis Forever Traffic Study

Dear Mr. Viplav:

~~Attached is the completed traffic study. If there are any questions or comments regarding this study, please contact me.~~

Sincerely,



Digitally signed by Jeffrey
W. Buckholz
DN: cn=Jeffrey W.
Buckholz, o=BUCKHOLZ
TRAFFIC ENGINEERING, ou,
email=jwbuckholz@aol.co
m, c=US
Date: 2023.01.26 12:38:53
-05'00'

Jeffrey W. Buckholz, P.E., PTOE
Principal

This item has been digitally signed and sealed by Jeffrey W. Buckholz, P.E. on 1/26/23. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

INTRODUCTION

This proposed development will contain 60 multi-family residential units and a six-court tennis facility. The development will be located on the north side of SW Bascom Norris Drive between SW McFarland Avenue and SW Tomoka Terrace approximately 1/4 mile west of SR 47 in Lake City, Florida. Access to the residential development will be provided via two full access connections to SW Bascom Norris Drive and access to the tennis facility will be provided via one full access connection on SW Bascom Norris Drive opposite SW Tomoka Terrace.

SW Bascom Norris Drive is a two lane undivided urban major collector with a posted speed limit of 45 mph. SW McFarlane Avenue is a two lane undivided urban major collector with a posted speed limit of 35 mph. SR 47 is a four lane divided urban minor arterial with a posted speed limit of 45mph and SW Tomoka Terrace is a two lane undivided local road with no posted speed limit.

Figure 1 shows the site location and surrounding road network while Appendix A contains the proposed site plan. The development is expected to be complete and fully occupied by the end of 2026. Consequently, 2026 was chosen as the design year for this study.

EXISTING TRAFFIC VOLUMES

Weekday peak period manual turning movement counts were conducted by Buckholz Traffic personnel at the SR 47/SW Bascom Norris Drive intersection, at the SW Bascom Norris Drive/SW McFarland Avenue intersection and at the SW Bascom Norris Drive/SW Tomoka Terrace intersection. These counts, which are provided in Appendix B, were conducted during the weekday AM peak period (6:30-8:30 AM) and the weekday PM peak period (3:45 – 5:45 PM). The data was recorded at 15-minute intervals and includes a separate tabulation for trucks and pedestrians. Figures 2 and 3 graphically summarize the AM and PM peak hour and peak period counts.

Appendix C provides daily traffic volumes from three nearby FDOT traffic count stations. The existing average daily traffic on SW Bascom Norris Drive in the vicinity of the site is about 6400 vehicles per day.

TRIP GENERATION

Trip generation calculations were carried out using the 11th edition of ITE's Trip Generation Manual and referencing land use codes 220 (Multi-Family Low Rise Housing) and 490 (Tennis Courts). Tables 1 and 2 contain the daily, AM peak hour, and PM peak hour trip generation calculations. During an average weekday the development is expected to generate 642 trips (321 entering and 321 exiting) with 67 trips (23 entering and 44 exiting) occurring during the AM peak hour and 72 trips (42 entering and 30 exiting) occurring during the PM peak hour. All of these trips will be new trips.

SITE TRIP DISTRIBUTION AND TRAFFIC ASSIGNMENT

Weekday AM and PM peak hour site trips for the condos and the tennis facility were directionally distributed based on peak period turning movement counts and engineering judgment as shown in Figures 4 and 5. The results were added together to obtain the weekday peak hour site traffic assignments provided in Figure 6.

FUTURE TRAFFIC VOLUMES

The expected weekday 2026 peak hour background (No Build) traffic volumes and total (Build) traffic volumes at intersections of interest are graphically depicted in Figures 7 through 10. The No Build traffic volumes were obtained by multiplying the existing traffic volumes by a seasonal adjustment factor and then by a 1.1% annual growth rate. A linear regression analysis of FDOT daily traffic counts in the area (see graph C-1 in Appendix C) indicates that daily traffic volumes have been increasing at a median annual rate of 1.1% over recent years. The 2026 Build traffic volumes were then obtained by adding the traffic generated by the new development to the 2026 No Build traffic volumes.

TURN LANE EVALUATION

A formal analysis was made to determine if a right turn lane is warranted on westbound SW Bascom Norris Drive at any of the three site drives or at SW McFarlane Avenue. The methodology contained in NCHRP Report 279 was used to conduct this analysis. As is indicated in Figures 11 through 14, right turn volumes under expected 2026 Build conditions will not be high enough to warrant an exclusive right turn lane at any of the three site drives. However, right turn volumes are currently high enough at SW McFarlane Avenue to warrant an exclusive right turn lane. These results are supported by NCHRP Report 420 which requires 80 right turns per hour to warrant a right turn lane on a 2-lane roadway with a posted speed of 45 mph or less.

Using the 2026 Build traffic volumes a formal analysis was also made to determine if a left turn lane is warranted on SW Bascom Norris Drive at any of the three site drives, at SW Tomoka Terrace, or at SW McFarlane Avenue. The methodology contained in a paper written by M.D. Harmelink entitled: "Volume Warrants for Left Turn Storage Lanes at Unsignalized Grade Intersections" was used to conduct this evaluation. Applying engineering judgment, a minimum of 10 peak hour left turns from SW Bascom Norris Drive is also used in the turn lane evaluation which eliminates the condo site drive intersections from consideration. The results for the SW Bascom Norris Drive/SW Tomoka Terrace/Tennis Driveway intersection and the SW Bascom Norris Drive/SW McFarlane Avenue intersection indicate that traffic volumes on SW Bascom Norris Drive will be high enough to warrant an exclusive left turn lane at both SW McFarlane Avenue and at SW Tomoka Terrace Drive. The supporting analyses are provided in Figures 15 through 17.

UNSIGNALIZED INTERSECTION CAPACITY ANALYSIS

The SW Bascom Norris Drive/SW McFarland Avenue intersection, the SW Bascom Norris Drive/SW Tomoka Terrace intersection, and the site drive intersections were analyzed using the two-way stop control methodology contained in the year 2023 version of the Highway Capacity Software. The supporting calculations are provided in Appendix D. Table 3 summarizes the capacity analysis results under existing conditions while Tables 4 and 5 summarize the capacity analysis results under 2026 Build conditions.

All minor movements currently operate at level of service B or better during both weekday peak hours at the SW Bascom Norris Drive/SW Tomoka Terrace intersection. Under 2026 Build conditions at the new SW Bascom Norris Drive/SW Tomoka Terrace/Tennis Driveway intersection all minor movements are expected to operate at level of service C or better during both peak hours.

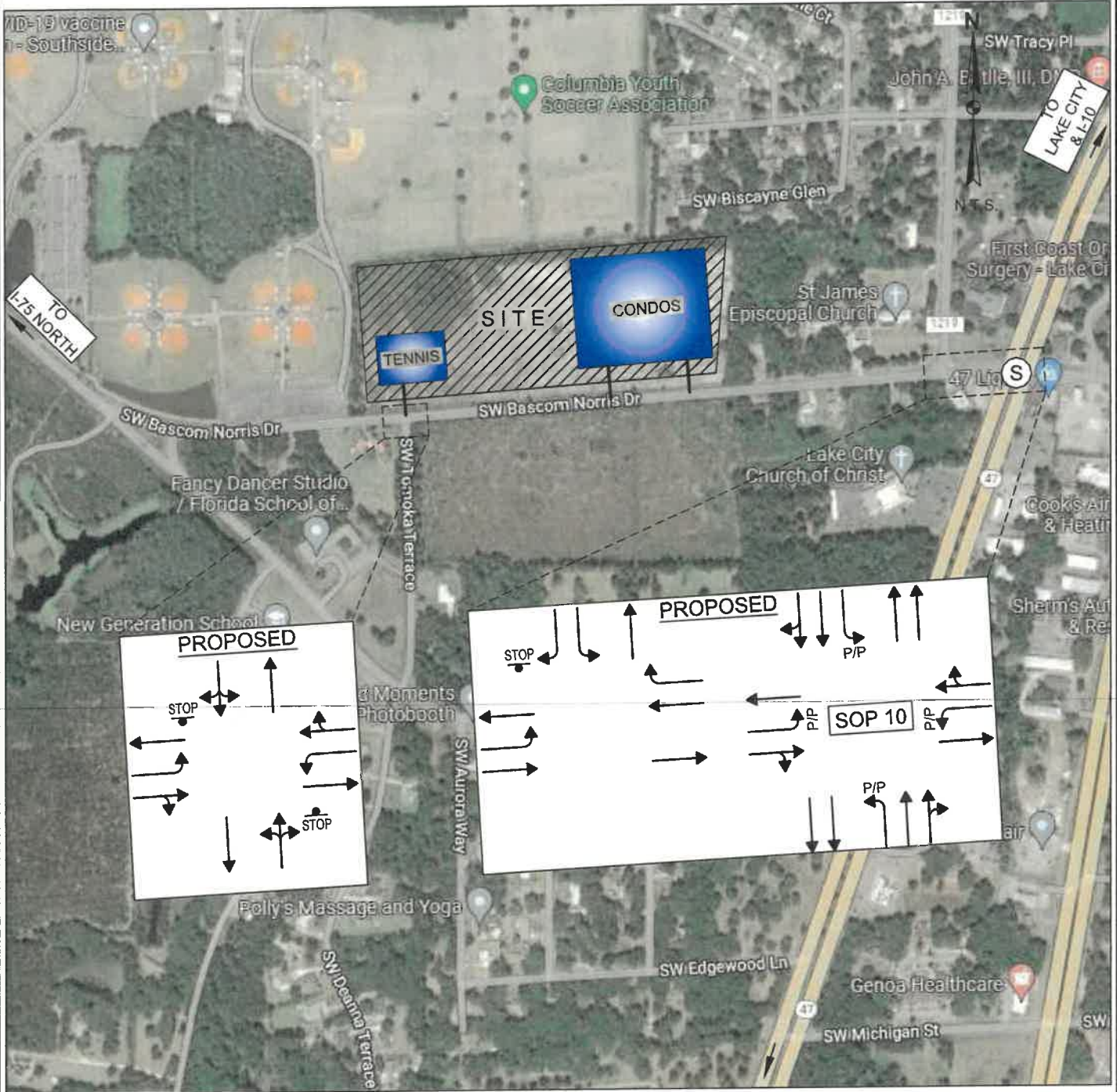
At the SW Bascom Norris Drive/SW McFarlane Avenue intersection all minor movements currently operate at level of service C or better during the weekday PM peak hour and level of service D or better during the weekday AM peak hour with minimal queuing and a volume-to-capacity ratio well below one. Under 2026 Build conditions all minor movements are expected to operate at level of service D or better during the weekday PM peak hour and level of service E or better during the weekday AM peak hour – still with minimal queuing and a volume-to-capacity ratio well below one.

All minor movements at the SW Bascom Norris Drive/East Condo Driveway intersection are expected to operate at level of service C or better during both peak hours under 2026 Build conditions with minimal queuing and a volume-to-capacity ratio well below one. The same is true for the SW Bascom Norris Drive/West Condo Driveway intersection.

SIGNALIZED INTERSECTION CAPACITY ANALYSIS

The SR 47/Bascom Norris Drive intersection was analyzed using the signalized intersection operational methodology contained in the year 2023 version of the Highway Capacity Software. The intersection capacity results for both 2023 existing conditions and 2026 Build conditions are summarized in Table 6 while Appendix E provides the supporting capacity analysis calculations. The existing signal timings for this intersection are provided in Appendix F. The intersection currently operates at level of service C during both weekday peak hours and is expected to continue to operate at level of service C during both peak hours under 2026 Build conditions. All volume-to-capacity ratios and queue storage ratios are under one for both existing and 2026 Build conditions.

Given the close proximity of SW McFarlane Avenue to SR 47, consideration should be given to decreasing the maximum green time for the main street movements and increasing the maximum green time for the side street movements at this traffic signal.



TO I-75
SOUTH

P/P = PROTECTED/PEMISSIVE
 (S) = TRAFFIC SIGNAL

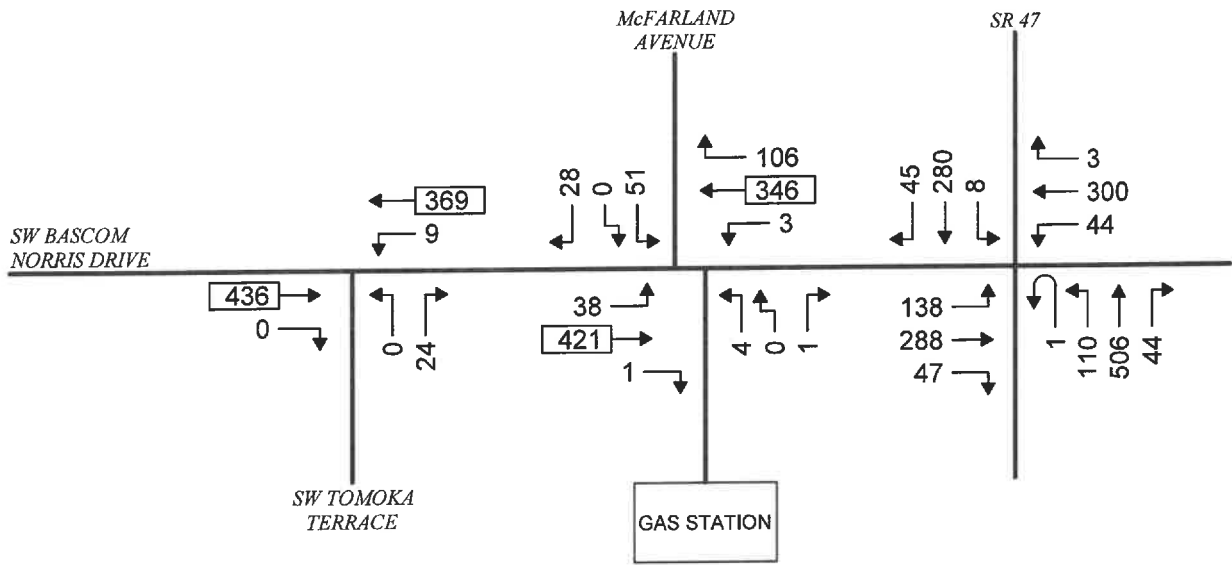
Buckholz Traffic

FIGURE 1
SITE LOCATION

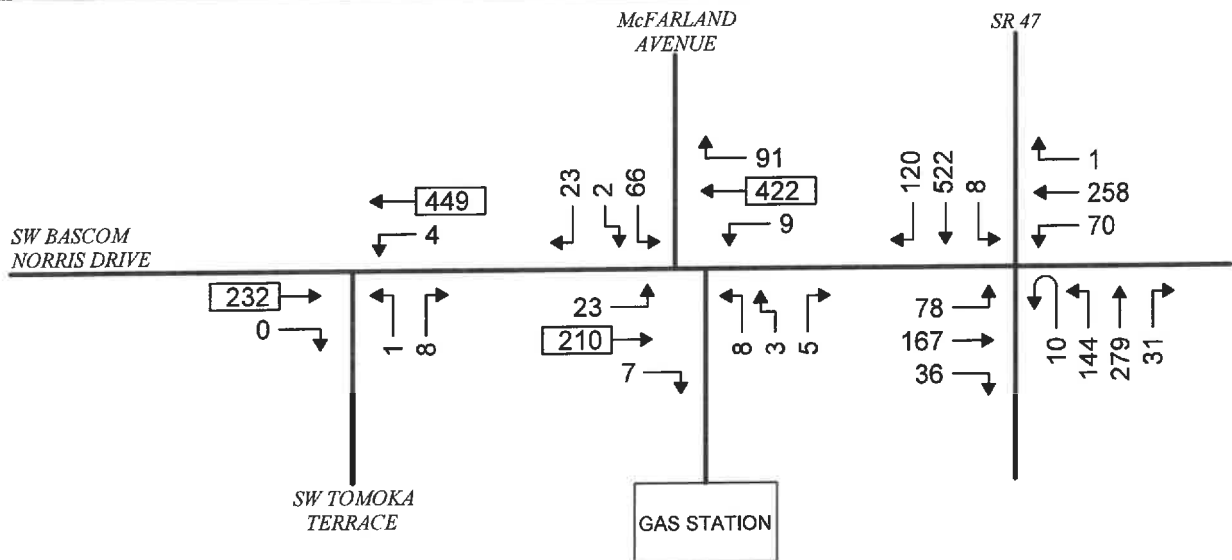


E:\23-1812\CAD\FIG_01.DWG

7:15-8:15 AM



4:30-5:30 PM



XXX = CALCULATED VALUE

Buckholz Traffic

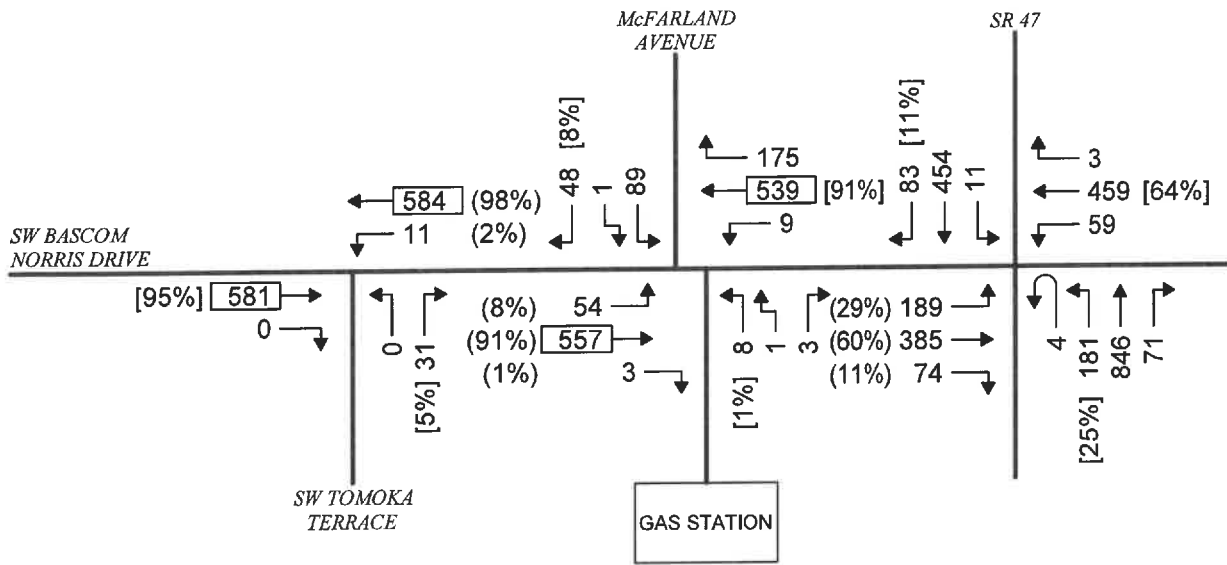
FIGURE 2

TRAFFIC COUNTS

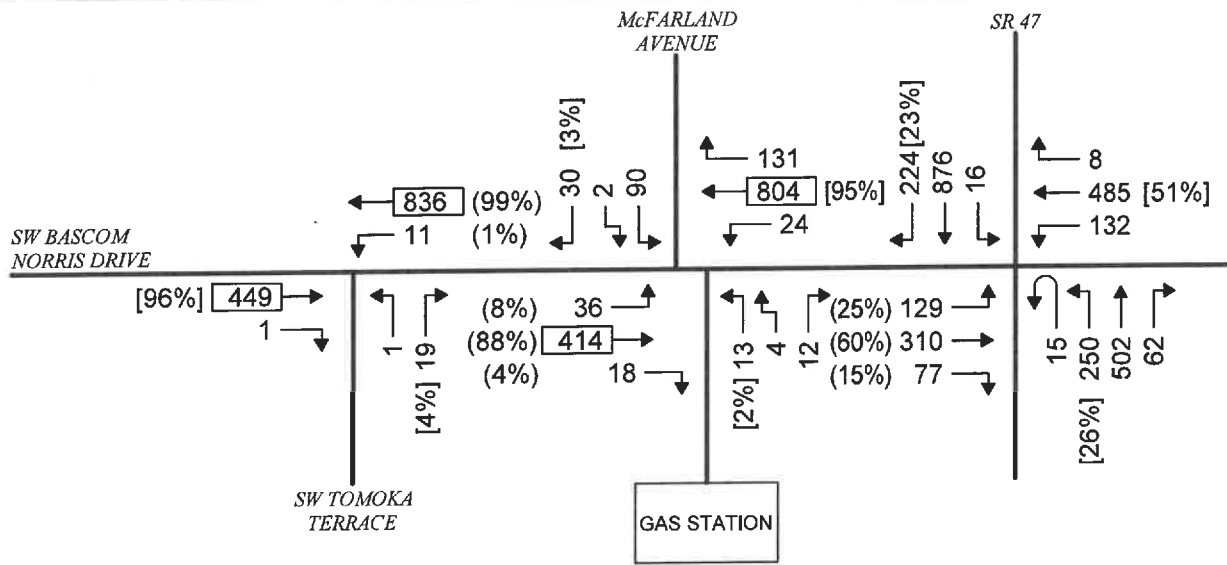
WEEKDAY PEAK HOURS



6:30-8:30 AM



3:45-5:45 PM



[XXX] = CALCULATED VALUE
 [XX%] = ENTERING SITE TRAFFIC DIRECTIONAL SPLIT
 (YY%) = EXITING SITE TRAFFIC DIRECTIONAL SPLIT

Buckholz Traffic

FIGURE 3

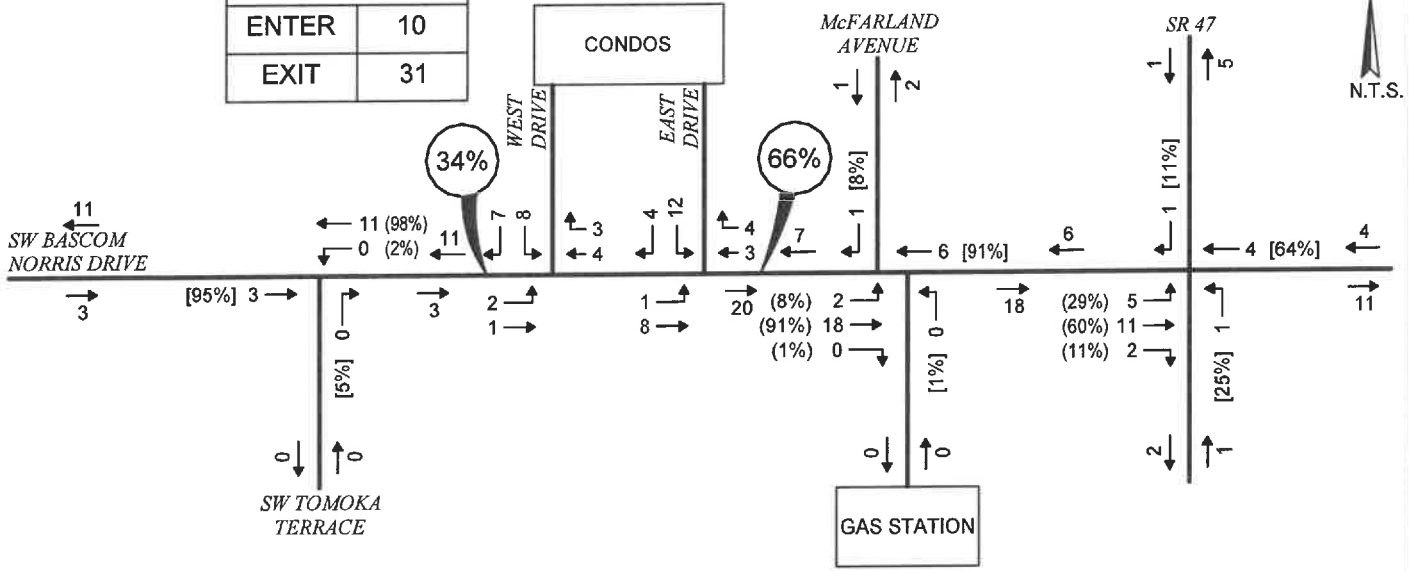
TRAFFIC COUNTS

WEEKDAY PEAK PERIODS



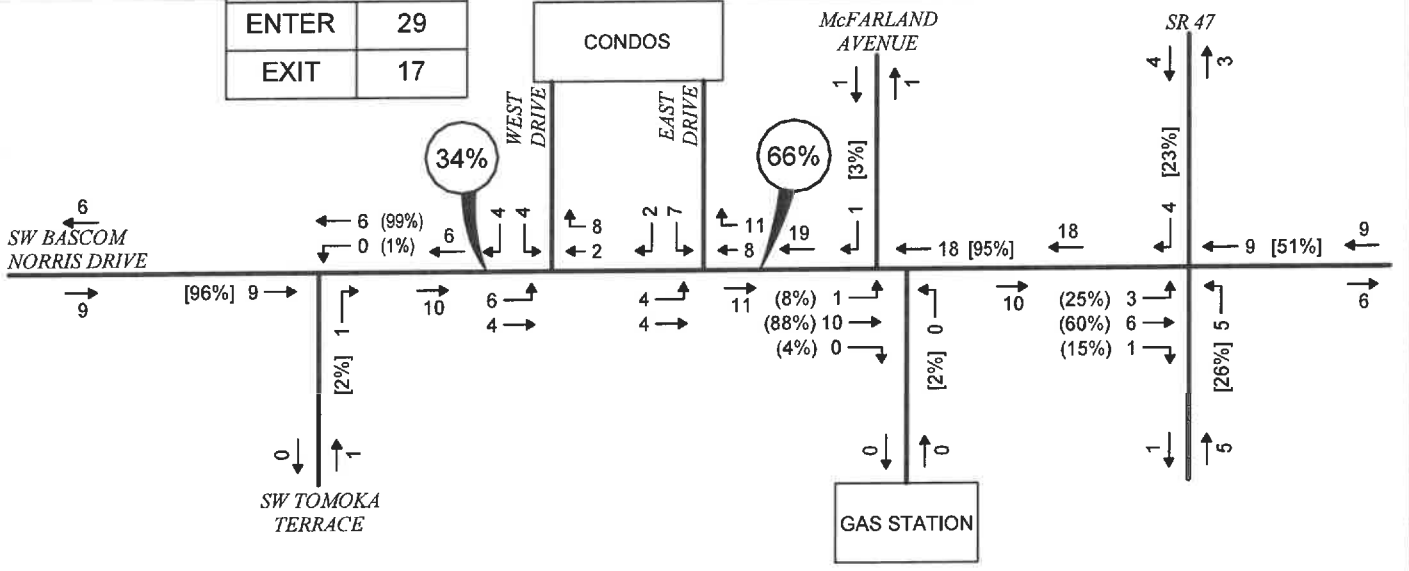
AM

TRIPS	
ENTER	10
EXIT	31



PM

TRIPS	
ENTER	29
EXIT	17



(XX%) = ESTIMATED EAST/WEST DIRECTIONAL SPLIT

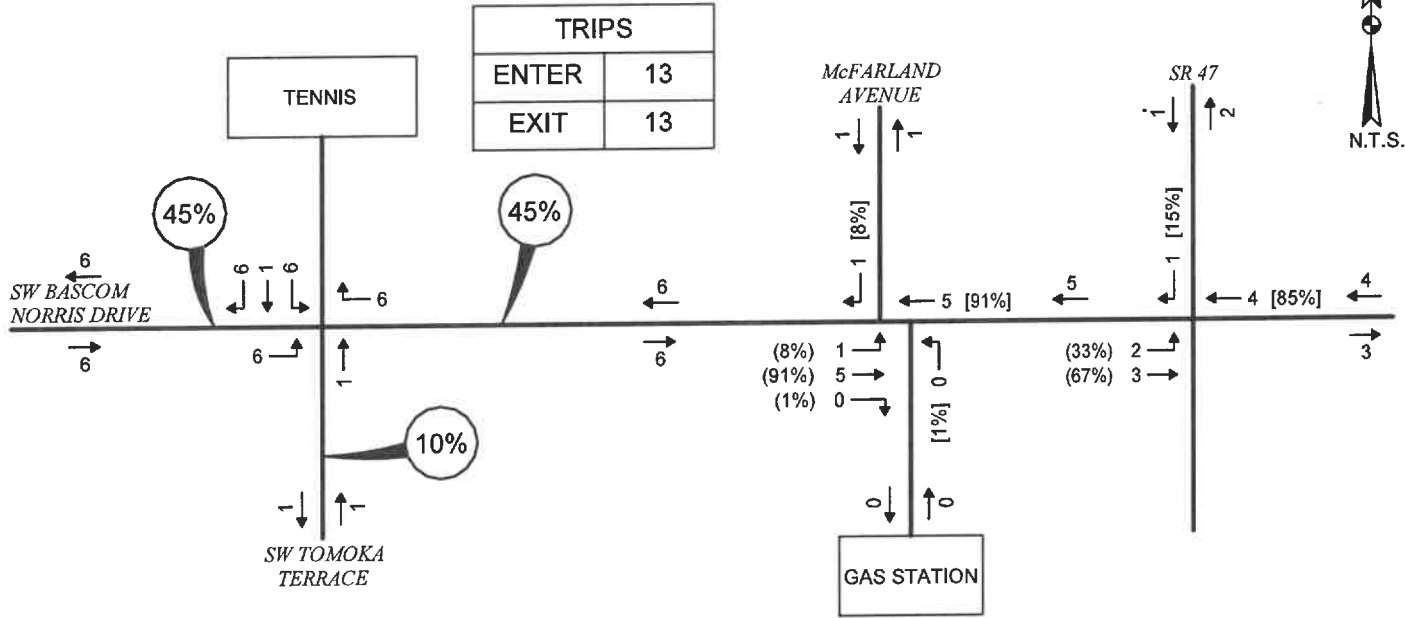
Buckholz Traffic

FIGURE 4
CONDO TRAFFIC
ASSIGNMENT

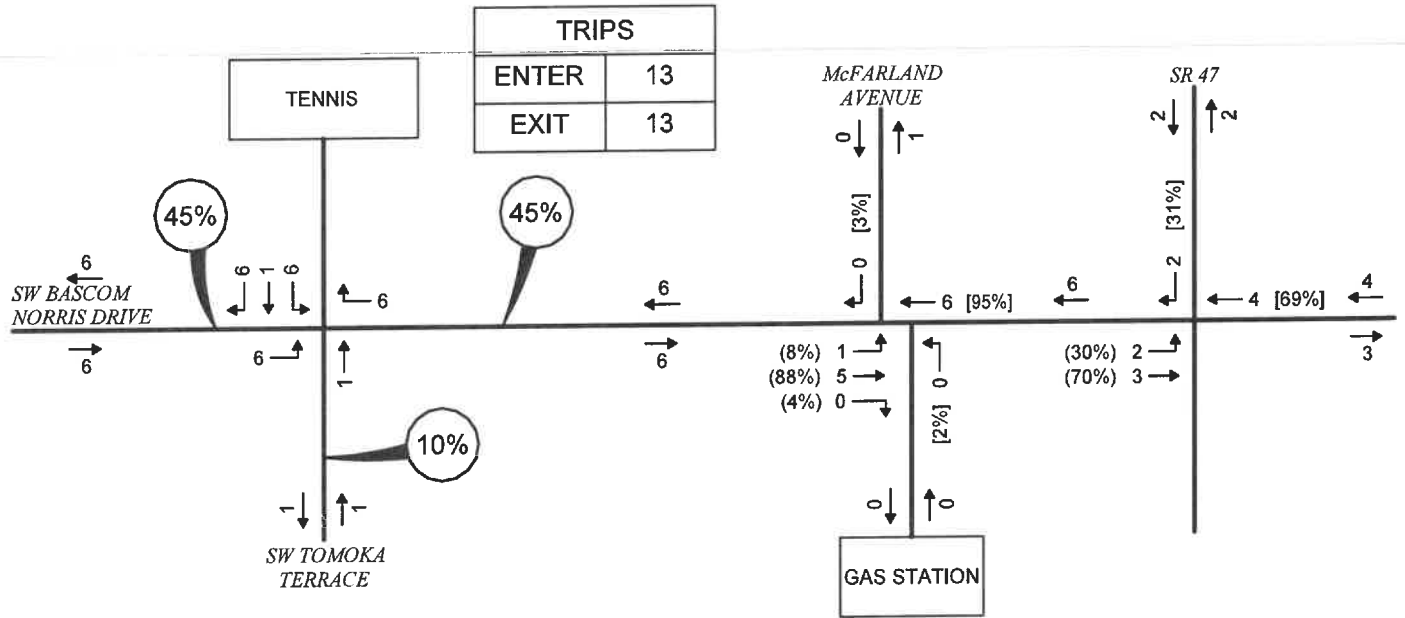


WEEKDAY PEAK HOURS

AM



PM



YY% = ESTIMATED DIRECTIONAL DISTRIBUTION

Buckholz Traffic

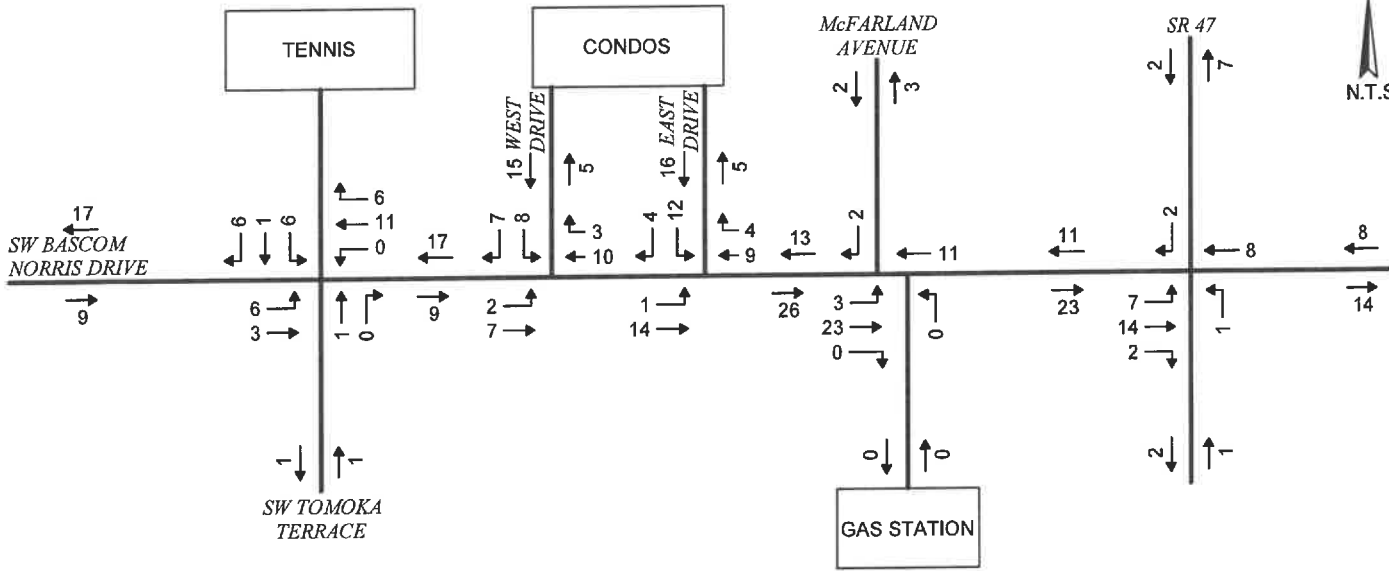
FIGURE 5

TENNIS TRAFFIC ASSIGNMENT

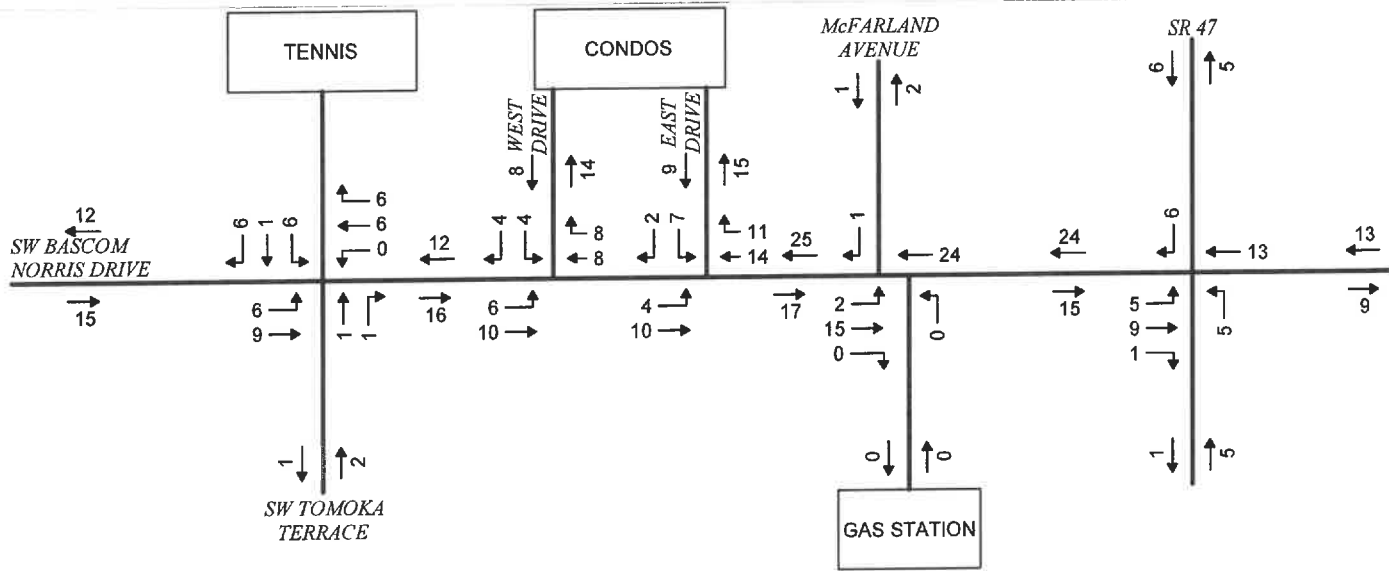
WEEKDAY PEAK HOURS



AM



PM



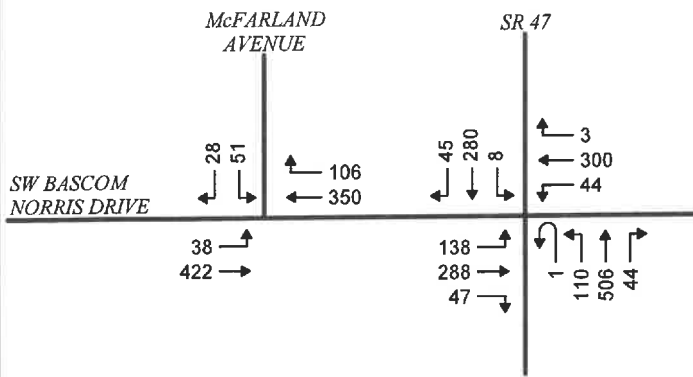
Buckholz Traffic

FIGURE 6

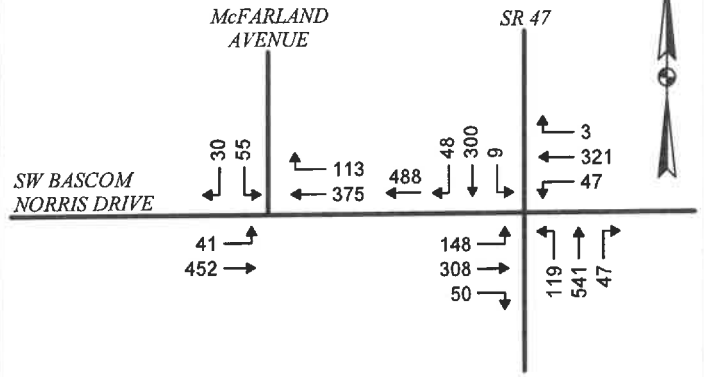
SITE TRAFFIC ASSIGNMENT

WEEKDAY PEAK HOURS

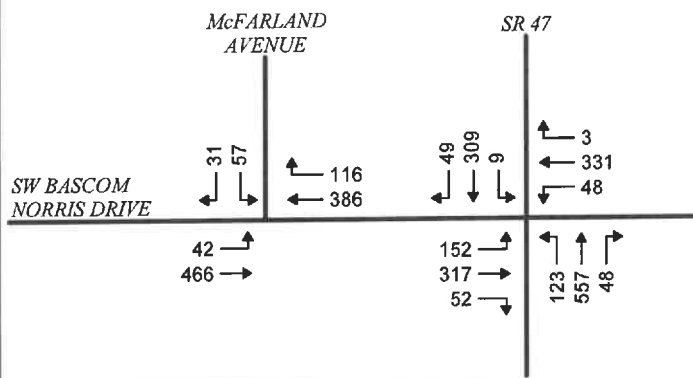




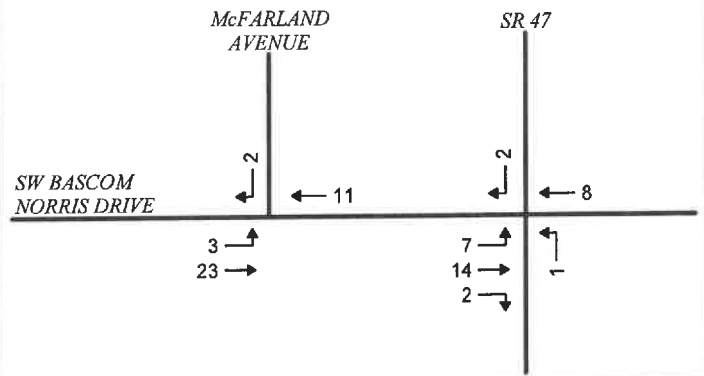
EXISTING TRAFFIC
01/12/23
7:15-8:15 AM



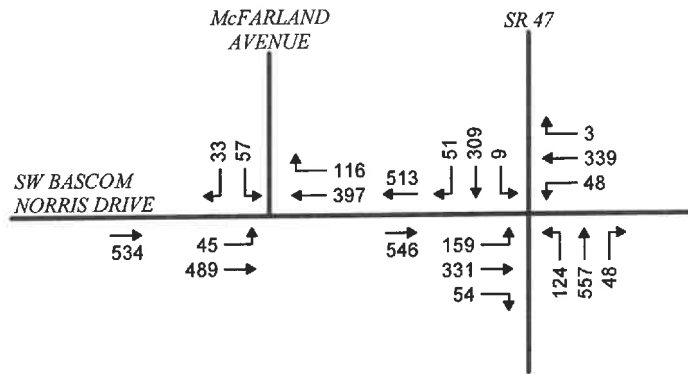
2023 SEASONALLY ADJUSTED TRAFFIC
FDOT SEASONAL CORRECTION FACTOR = 1.07



2026 NO BUILD TRAFFIC
AVERAGE ANNUAL GROWTH RATE = 1.1% (GF=1.03)



SITE TRAFFIC



2026 BUILD TRAFFIC

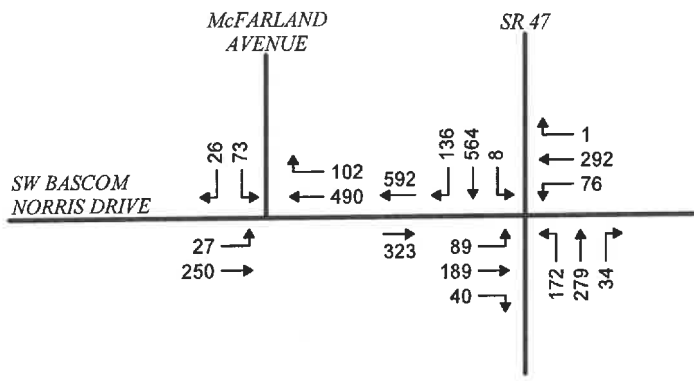
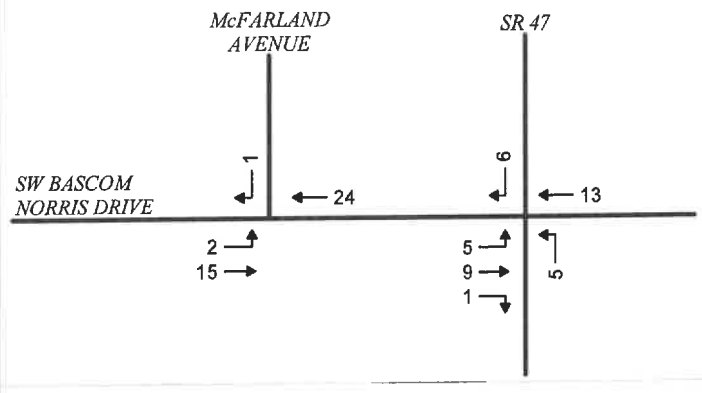
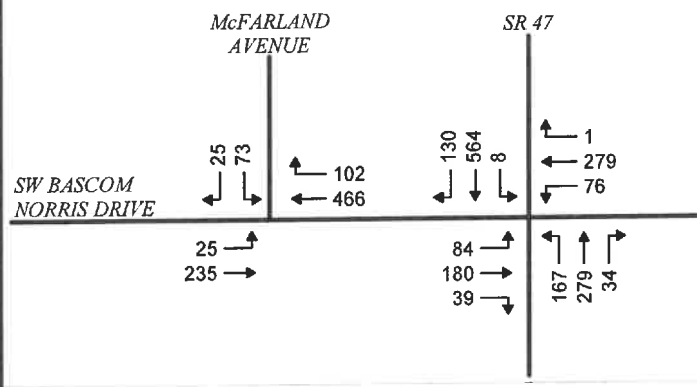
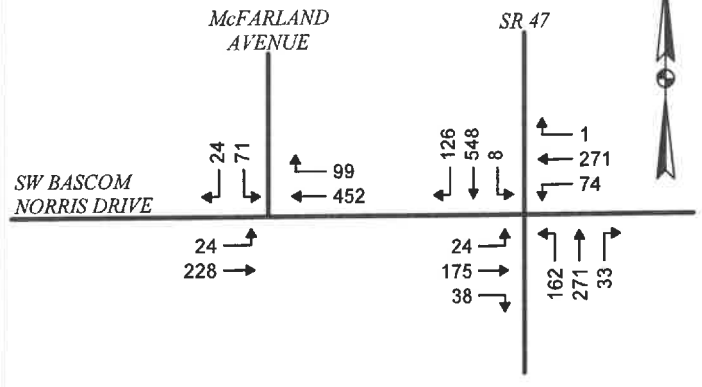
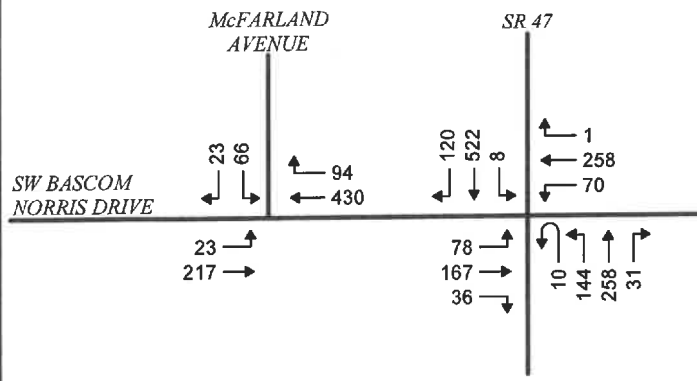
FIGURE 7

2026 BUILD TRAFFIC
SR 47 / SW BASCOM NORRIS DR.

WEEKDAY AM PEAK HOUR



Buckholz Traffic



2026 BUILD TRAFFIC

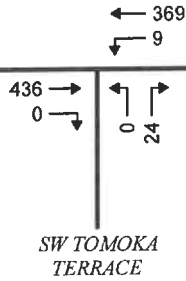
FIGURE 8
2026 BUILD TRAFFIC
SR 47 / SW BASCOM NORRIS DR.
WEEKDAY PM PEAK HOUR



Buckholz Traffic

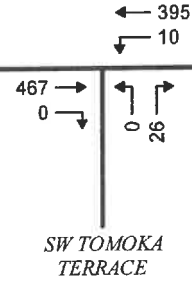
E:\23-1812\CAD\FIG_08.DWG

SW BASCOM
NORRIS DRIVE



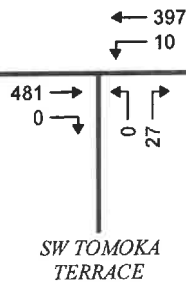
EXISTING TRAFFIC
01/12/23
7:15-8:15 AM

SW BASCOM
NORRIS DRIVE



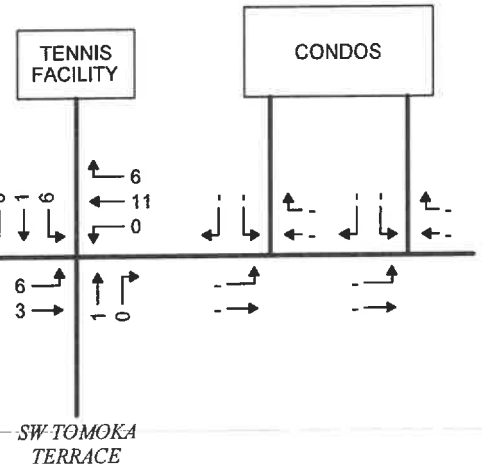
2023 SEASONALLY ADJUSTED TRAFFIC
FDOT SEASONAL CORRECTION FACTOR = 1.07

SW BASCOM
NORRIS DRIVE

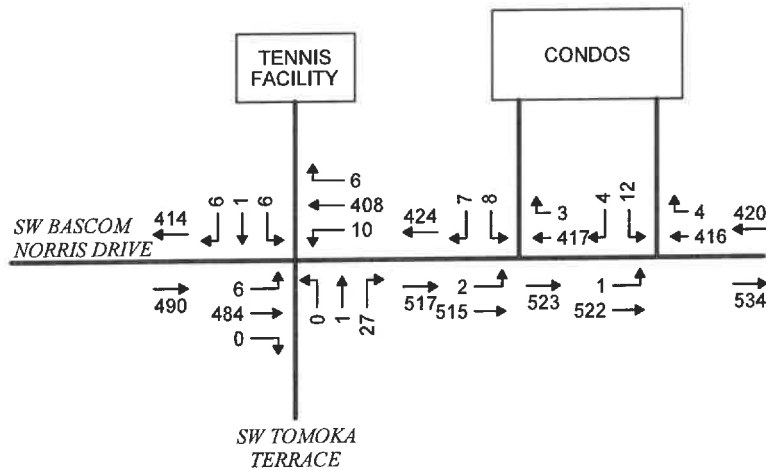


2026 NO BUILD TRAFFIC
AVERAGE ANNUAL GROWTH RATE = 1.1% (GF=1.03)

SW BASCOM
NORRIS DRIVE



SW TOMOKA
TERRACE
SITE TRAFFIC



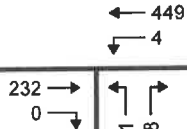
2026 BUILD TRAFFIC

FIGURE 9
2026 BUILD TRAFFIC
SW BASCOM NORRIS DR. /
SW TOMOKA TERRACE
WEEKDAY AM PEAK HOUR



Buckholz Traffic

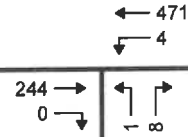
SW BASCOM
NORRIS DRIVE



SW TOMOKA
TERRACE

EXISTING TRAFFIC
01/09/23
4:30-5:30 PM

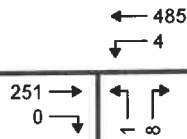
SW BASCOM
NORRIS DRIVE



SW TOMOKA
TERRACE

2023 SEASONALLY ADJUSTED TRAFFIC
FDOT SEASONAL CORRECTION FACTOR = 1.05

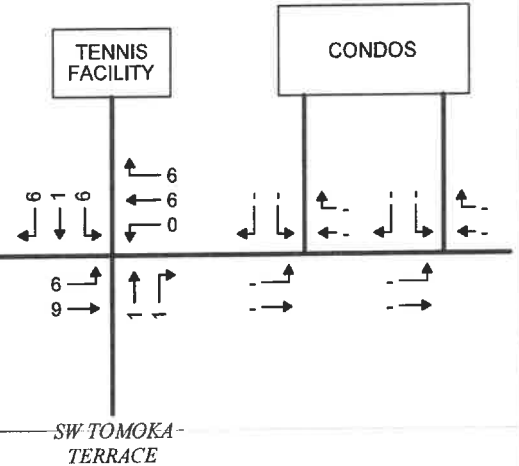
SW BASCOM
NORRIS DRIVE



SW TOMOKA
TERRACE

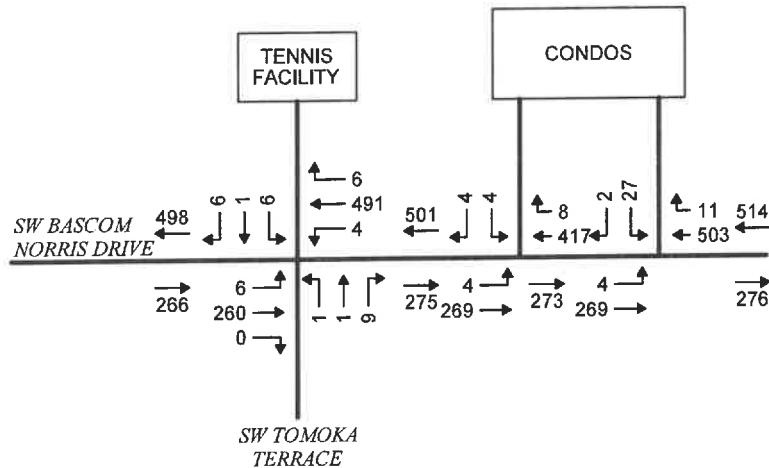
2026 NO BUILD TRAFFIC
AVERAGE ANNUAL GROWTH RATE = 1.1% (GF=1.03)

SW BASCOM
NORRIS DRIVE



SW TOMOKA
TERRACE

SITE TRAFFIC



SW TOMOKA
TERRACE

2026 BUILD TRAFFIC

FIGURE 10

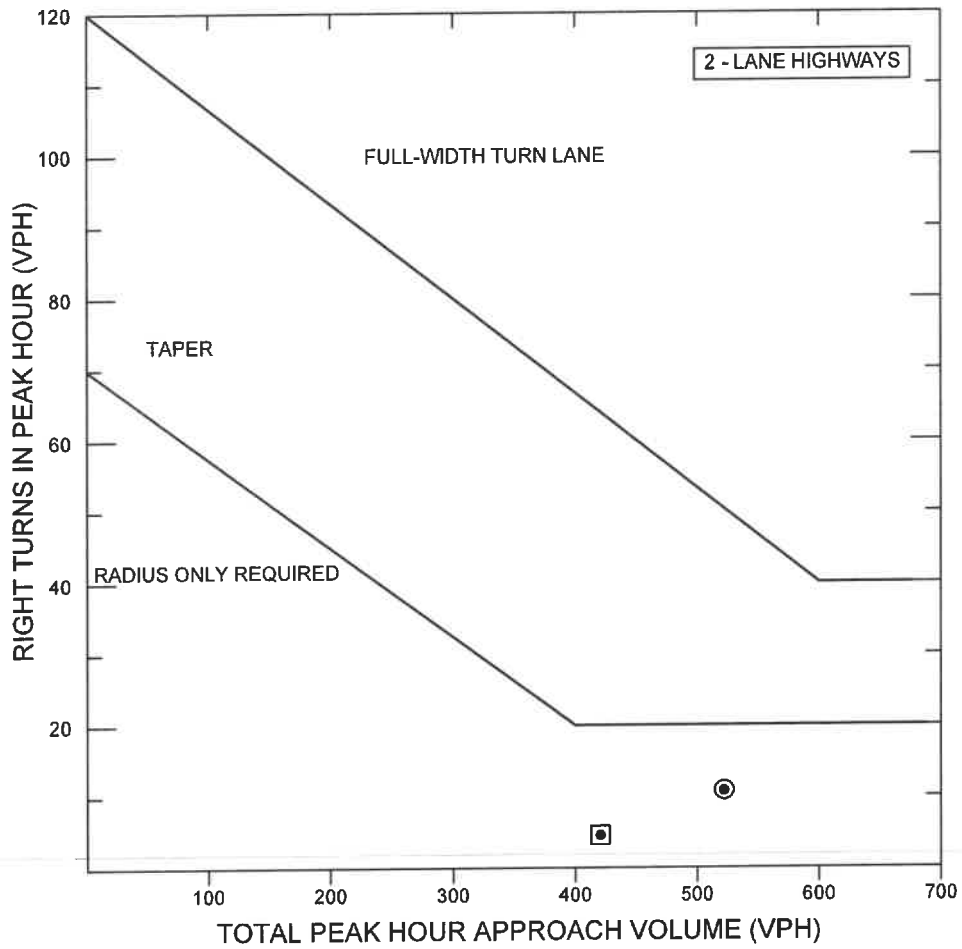
2026 BUILD TRAFFIC
SW BASCOM NORRIS DR. /
SW TOMOKA TERRACE

WEEKDAY PM PEAK HOUR



Buckholz Traffic

WESTBOUND SW BASCOM NORRIS DRIVE @ EAST CONDO DRIVEWAY



NOMOGRAPH FOR RIGHT TURN LANES

SOURCE: TRANSPORTATION RESEARCH BOARD NCHRP REPORT #279

▣ AM PEAK HOUR

⊙ PM PEAK HOUR

V _A	420
V _R	4

V _A	514
V _R	11

NCHRP 420	
2 LANE	≤ 45 MPH

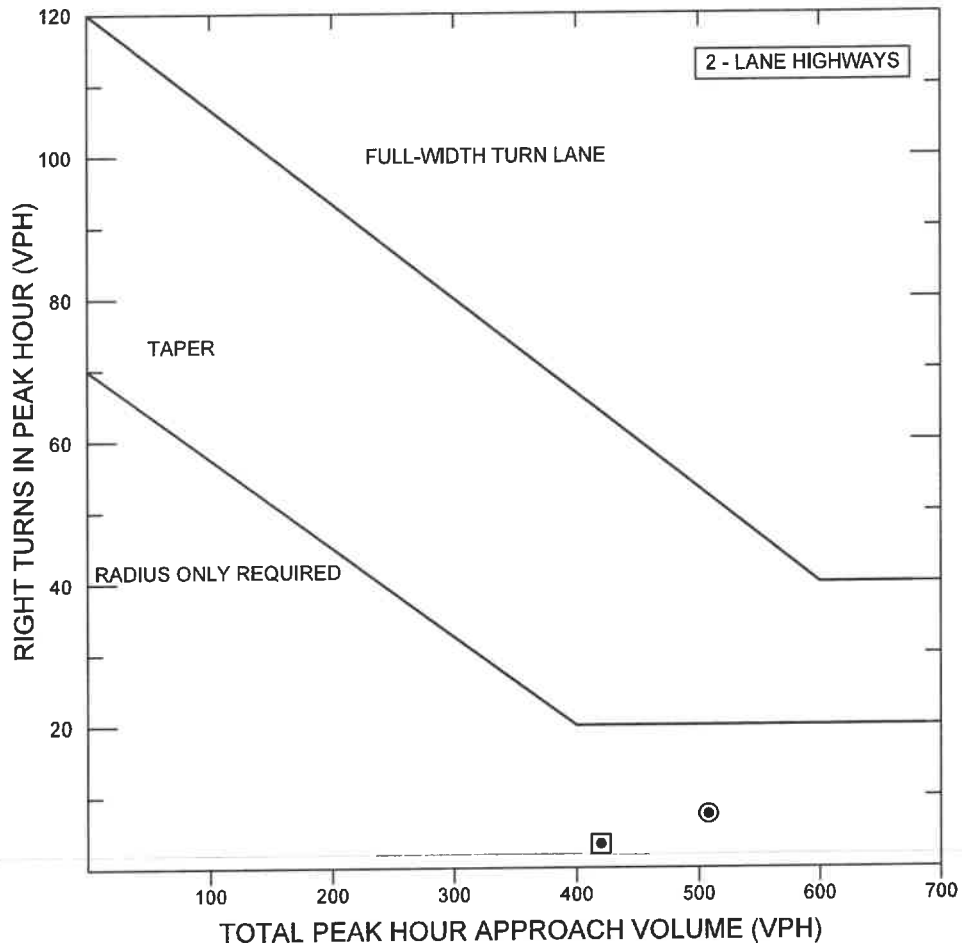
4 & 11 < 80 REQUIRED

FIGURE 11

RIGHT TURN
LANE ANALYSIS



WESTBOUND SW BASCOM NORRIS DRIVE @ WEST CONDO DRIVEWAY



NOMOGRAPH FOR RIGHT TURN LANES

SOURCE: TRANSPORTATION RESEARCH BOARD NCHRP REPORT #279

▣ AM PEAK HOUR

⊙ PM PEAK HOUR

V _A	420
V _R	3

V _A	505
V _R	8

NCHRP 420	
2 LANE	≤ 45 MPH

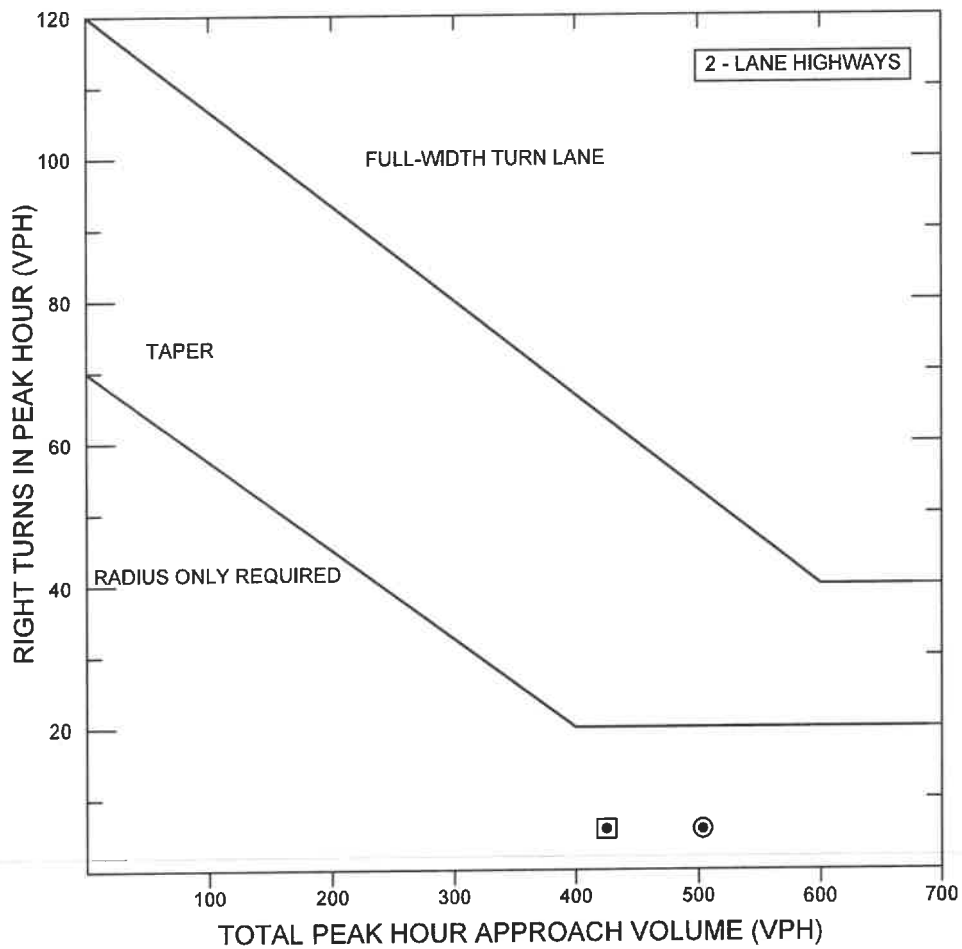
3 & 8 < 80 REQUIRED

FIGURE 12

RIGHT TURN
LANE ANALYSIS



WESTBOUND SW BASCOM NORRIS DRIVE @ TENNIS DRIVEWAY



NOMOGRAPH FOR RIGHT TURN LANES

SOURCE: TRANSPORTATION RESEARCH BOARD NCHRP REPORT #279

▣ AM PEAK HOUR

⊙ PM PEAK HOUR

V _A	424
V _R	6

V _A	501
V _R	6

NCHRP 420	
2 LANE	≤ 45 MPH

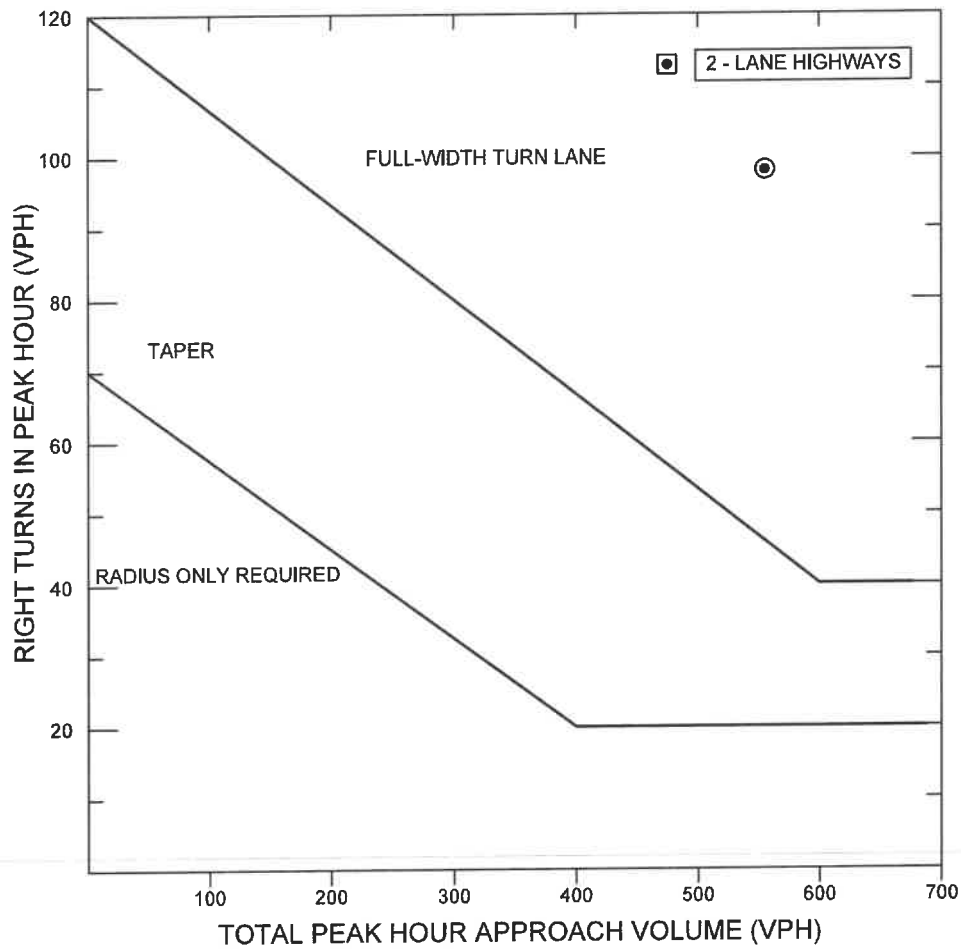
6 & 6 < 80 REQUIRED

FIGURE 13

RIGHT TURN
LANE ANALYSIS



WESTBOUND SW BASCOM NORRIS DRIVE @ SW McFARLANE AVENUE



NOMOGRAPH FOR RIGHT TURN LANES

SOURCE: TRANSPORTATION RESEARCH BOARD NCHRP REPORT #279

2023 TRAFFIC VOLUMES

▣ AM PEAK HOUR ⊙ PM PEAK HOUR

V _A	488
V _R	113

V _A	551
V _R	99

NCHRP 420	
2 LANE	≤ 45 MPH

116 & 102 > 80 REQUIRED

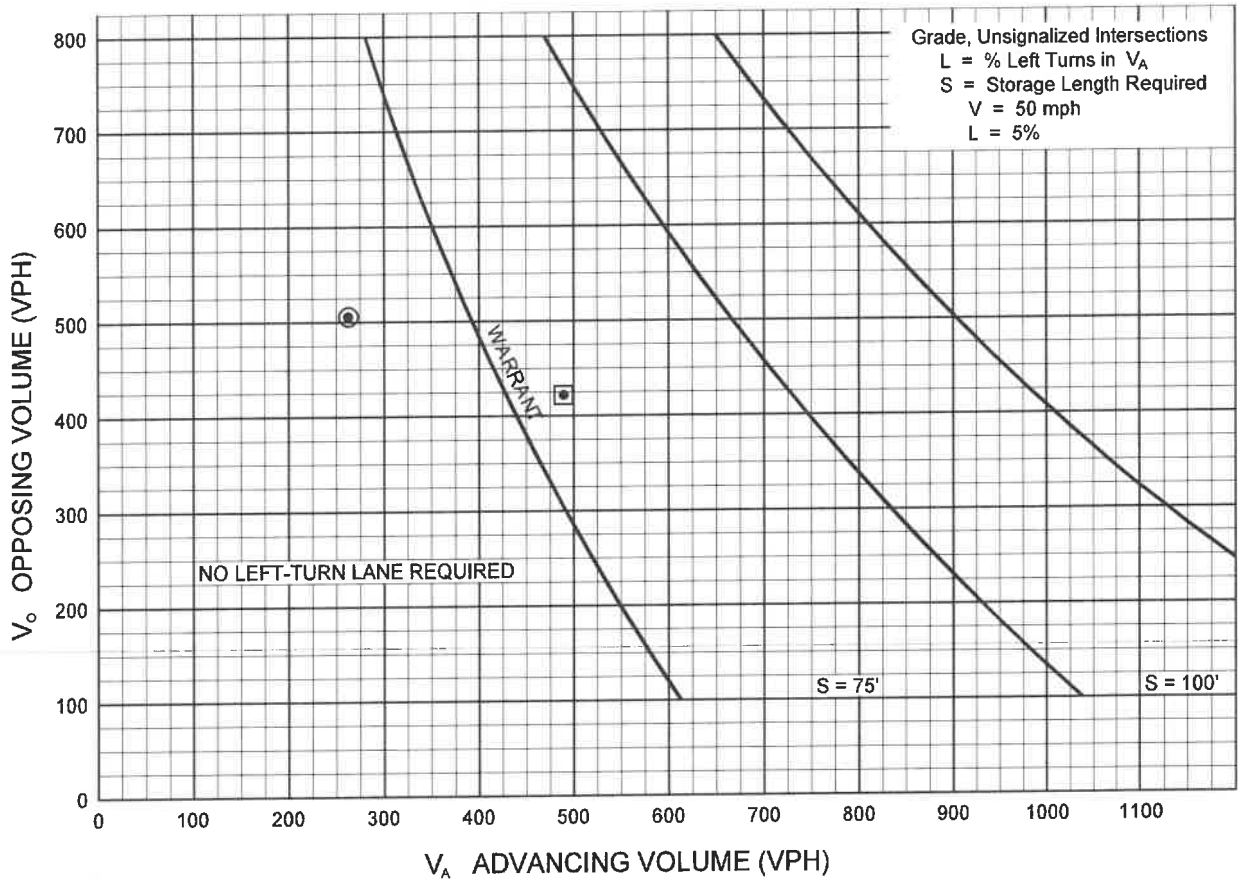
FIGURE 14

RIGHT TURN
LANE ANALYSIS



Buckholz Traffic

EASTBOUND SW BASCOM NORRIS DRIVE @ TENNIS DRIVEWAY



WARRANT FOR LEFT-TURN LANES ON TWO-LANE HIGHWAYS

☐ AM PEAK HOUR

$V_A = 490$
$V_O = 424$
$V_L = 6$
%LT = 1%

⊙ PM PEAK HOUR

$V_A = 266$
$V_O = 501$
$V_L = 6$
%LT = 2%

FIGURE 15

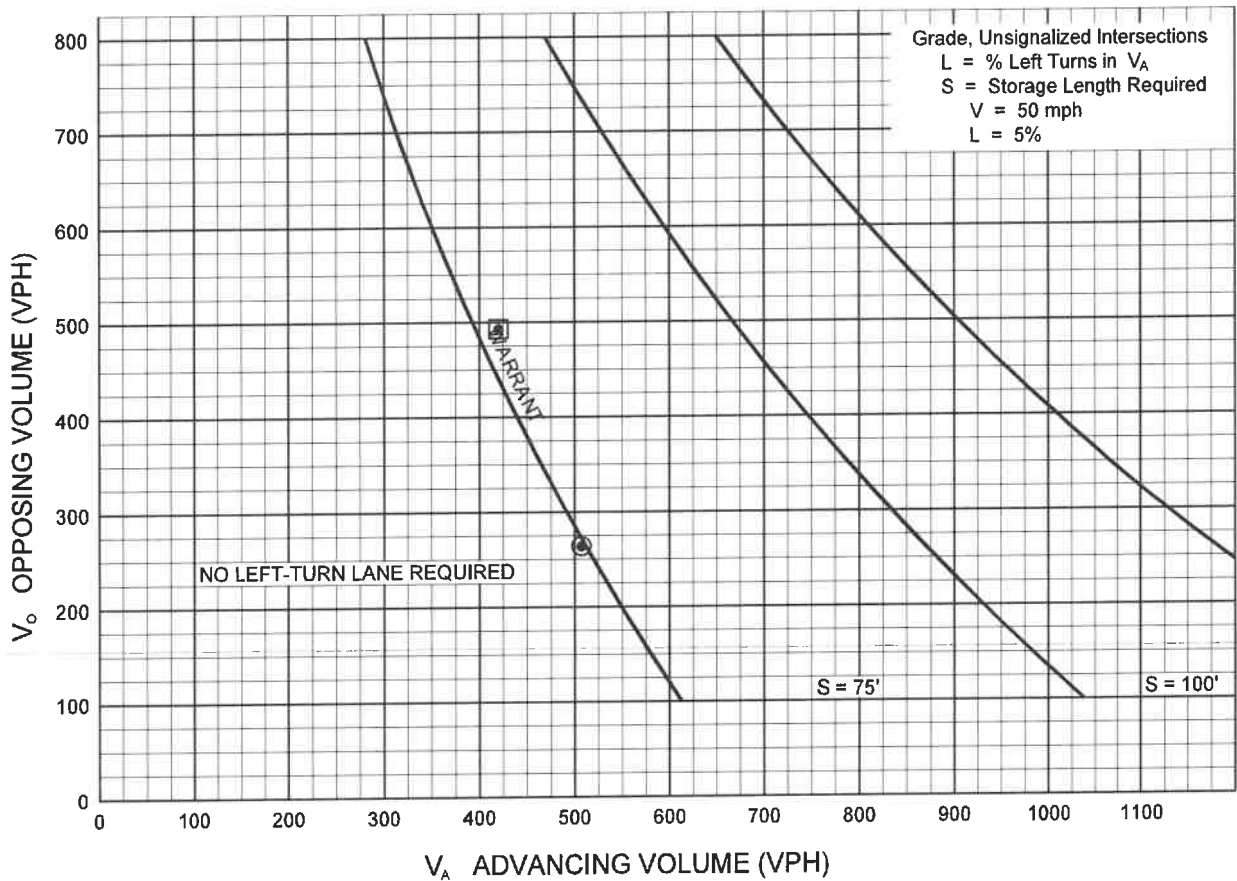
LEFT TURN
LANE ANALYSIS



SOURCE: HARMELINK

Buckholz Traffic

WESTBOUND SW BASCOM NORRIS DRIVE @ TOMOKA TERRACE



WARRANT FOR LEFT-TURN LANES ON TWO-LANE HIGHWAYS

☐ AM PEAK HOUR

$V_A = 424$
$V_o = 490$
$V_L = 10$
%LT = 2%

⊙ PM PEAK HOUR

$V_A = 501$
$V_o = 266$
$V_L = 4$
%LT = 1%

FIGURE 16

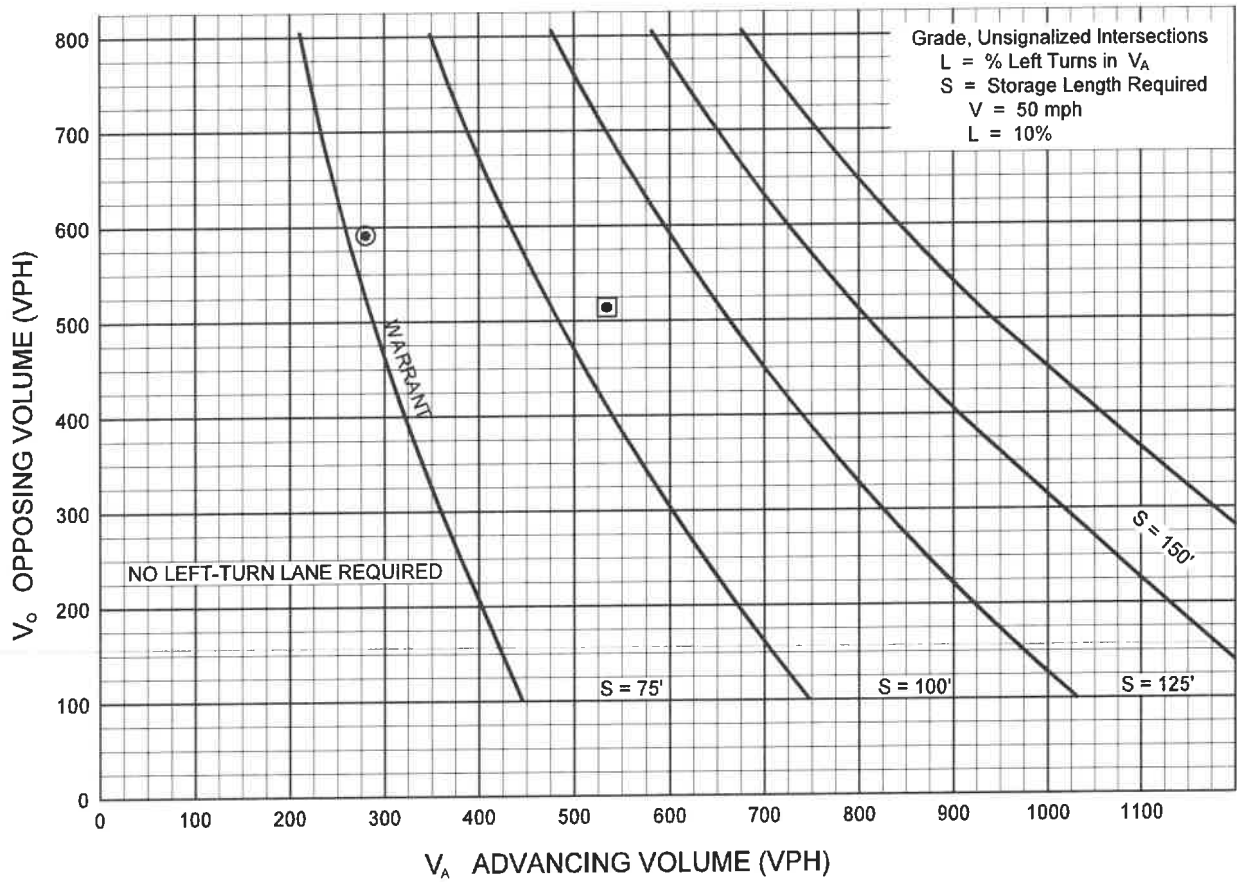
LEFT TURN
LANE ANALYSIS



SOURCE: HARMELINK

Buckholz Traffic

EASTBOUND SW BASCOM NORRIS DRIVE @ SW MCFARLANE AVENUE



WARRANT FOR LEFT-TURN LANES ON TWO-LANE HIGHWAYS

☐ AM PEAK HOUR

$V_A = 534$
$V_O = 513$
$V_L = 45$
%LT = 8%

⊙ PM PEAK HOUR

$V_A = 277$
$V_O = 592$
$V_L = 27$
%LT = 10%

FIGURE 17

LEFT TURN
LANE ANALYSIS



SOURCE: HARMELINK

TABLE 1

TRIP GENERATION CALCULATIONS

MULTIFAMILY HOUSING (LOW-RISE)
 Not Close to Rail Transit

Land Use Code 220

T = Number of Vehicle Trip Ends

X = Number of Dwelling Units = 60

<u>TIME PERIOD</u>	<u>TRIP GENERATION EQUATION</u>	<u>TOTAL TRIP ENDS</u>	<u>PERCENT ENTERING</u>	<u>PERCENT EXITING</u>	<u>TOTAL TRIP ENDS ENTERING</u>	<u>TOTAL TRIP ENDS EXITING</u>
WEEKDAY						
Daily	$T = 6.41 (X) + 75.31$	460	50%	50%	230	230
AM Peak Hour	$T = 0.31 (X) + 22.85$	41	24%	76%	10	31
PM Peak Hour	$T = 0.43 (X) + 20.55$	46	63%	37%	29	17

SOURCE: Institute of Transportation Engineers, "Trip Generation", 11th Edition (2021)

BUCKHOLZ TRAFFIC

TABLE 2

WEEKDAY TRIP GENERATION CALCULATIONS

TENNIS COURTS

Land Use Code 490

T = Number of Vehicle Trip Ends

X = Number of Courts = 6

<u>TIME PERIOD</u>	<u>TOTAL TRIP GENERATION EQUATION</u>	<u>TOTAL TRIP ENDS</u>	<u>PERCENT ENTERING</u>	<u>PERCENT EXITING</u>	<u>TOTAL TRIP ENDS ENTERING</u>	<u>TOTAL TRIP ENDS EXITING</u>
AVERAGE WEEKDAY						
Daily	T = 30.32 (X)	182	50%	50%	91	91
AM Peak Hour	T = 4.21 (X)	26	50%	50%	13	13
PM Peak Hour	T = 4.21 (X)	26	50%	50%	13	13

Estimated

SOURCE: Institute of Transportation Engineers, "Trip Generation", 11th Edition (2021)

BUCKHOLZ TRAFFIC

**TABLE 3
UNIGNALIZED INTERSECTION CAPACITY RESULTS
EXISTING CONDITIONS**

SW BASCOM NORRIS DRIVE / SW McFARLANE AVENUE

WEEKDAY AM PEAK HOUR				
Movement	LOS	Delay	V/C Ratio	95th % Queue (vehicles)
Eastbound Left Turn	A	8.8 sec/veh	0.05	1
Side Street Left Turn	D	30.8 sec/veh	0.32	1.3
Side Street Right Turn	B	11.9 sec/veh	0.06	1

WEEKDAY PM PEAK HOUR				
Movement	LOS	Delay	V/C Ratio	95th % Queue (vehicles)
Eastbound Left Turn	A	9.1 sec/veh	0.03	1
Side Street Left Turn	C	23.1 sec/veh	0.30	1.2
Side Street Right Turn	B	12.6 sec/veh	0.06	1

SW BASCOM NORRIS DRIVE / SW TOMOKA TERRACE

WEEKDAY AM PEAK HOUR				
Movement	LOS	Delay	V/C Ratio	95th % Queue (vehicles)
Westbound Left Turn	A	8.6 sec/veh	0.01	1
Side Street Approach	B	12.1 sec/veh	0.06	1

WEEKDAY PM PEAK HOUR				
Movement	LOS	Delay	V/C Ratio	95th % Queue (vehicles)
Westbound Left Turn	A	7.8 sec/veh	0.00	1
Side Street Approach	B	10.6 sec/veh	0.02	1

BUCKHOLZ TRAFFIC

**TABLE 4
UNIGNALIZED INTERSECTION CAPACITY RESULTS
2026 BUILD CONDITIONS**

SW BASCOM NORRIS DRIVE / SW McFARLANE AVENUE

WEEKDAY AM PEAK HOUR				
Movement	LOS	Delay	V/C Ratio	95th % Queue (vehicles)
Eastbound Left Turn	A	9.0 sec/veh	0.06	1
Side Street Left Turn	E	36.7 sec/veh	0.38	1.6
Side Street Right Turn	B	12.2 sec/veh	0.07	1

WEEKDAY PM PEAK HOUR				
Movement	LOS	Delay	V/C Ratio	95th % Queue (vehicles)
Eastbound Left Turn	A	9.3 sec/veh	0.04	1
Side Street Left Turn	D	26.9 sec/veh	0.35	1.5
Side Street Right Turn	B	13.2 sec/veh	0.07	1

SW BASCOM NORRIS DRIVE / SW TOMOKA TERRACE / TENNIS DRIVEWAY

WEEKDAY AM PEAK HOUR				
Movement	LOS	Delay	V/C Ratio	95th % Queue (vehicles)
Eastbound Left Turn	A	8.4 sec/veh	0.01	1
Westbound Left Turn	A	8.6 sec/veh	0.01	1
Northbound Approach	B	12.8 sec/veh	0.07	1
Southbound Approach	C	20.0 sec/veh	0.06	1

WEEKDAY PM PEAK HOUR				
Movement	LOS	Delay	V/C Ratio	95th % Queue (vehicles)
Eastbound Left Turn	A	8.7 sec/veh	0.01	1
Westbound Left Turn	A	7.9 sec/veh	0.00	1
Northbound Approach	B	11.8 sec/veh	0.02	1
Southbound Approach	C	16.9 sec/veh	0.05	1

BUCKHOLZ TRAFFIC

**TABLE 5
UNIGNALIZED INTERSECTION CAPACITY RESULTS
2026 BUILD CONDITIONS**

SW BASCOM NORRIS DRIVE / EAST CONDO DRIVEWAY

	WEEKDAY AM PEAK HOUR			
Movement	LOS	Delay	V/C Ratio	95th % Queue (vehicles)
Eastbound Left Turn	A	8.4 sec/veh	0.00	1
Side Street Approach	C	19.5 sec/veh	0.07	1

	WEEKDAY PM PEAK HOUR			
Movement	LOS	Delay	V/C Ratio	95th % Queue (vehicles)
Eastbound Left Turn	A	8.8 sec/veh	0.01	1
Side Street Approach	C	16.7 sec/veh	0.03	1

SW BASCOM NORRIS DRIVE / WEST CONDO DRIVEWAY

	WEEKDAY AM PEAK HOUR			
Movement	LOS	Delay	V/C Ratio	95th % Queue (vehicles)
Eastbound Left Turn	A	8.4 sec/veh	0.00	1
Side Street Approach	C	17.0 sec/veh	0.06	1

	WEEKDAY PM PEAK HOUR			
Movement	LOS	Delay	V/C Ratio	95th % Queue (vehicles)
Eastbound Left Turn	A	8.7 sec/veh	0.01	1
Side Street Approach	C	15.1 sec/veh	0.03	1

BUCKHOLZ TRAFFIC

**TABLE 6
SUMMARY OF SIGNALIZED INTERSECTION CAPACITY RESULTS
SR 47 / SW BASCOM NORRIS DRIVE**

EXISTING CONDITIONS

WEEKDAY AM PEAK HOUR	Highest v/c Ratio	Highest Queue Storage Ratio	Highest Delay Movements with LOS	Approach LOS	Intersection Delay & LOS
79 sec cycle	0.79 WBT	0.82 EBLT	WBT: 36.7 sec/veh LOS D	NB/SB: C EB/WB: C	30.4 sec/veh LOS C
WEEKDAY PM PEAK HOUR	Highest v/c Ratio	Highest Queue Storage Ratio	Highest Delay Movements with LOS	Approach LOS	Intersection Delay & LOS
86 sec cycle	0.81 SBT	0.63 WBT	WBT: 42.1 sec/veh LOS D	NB/SB: C EB/WB: C/D	30.8 sec/veh LOS C

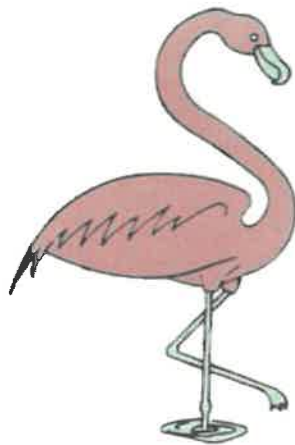
2026 BUILD CONDITIONS

WEEKDAY AM PEAK HOUR	Highest v/c Ratio	Highest Queue Storage Ratio	Highest Delay Movements with LOS	Approach LOS	Intersection Delay & LOS
82 sec cycle	0.80 WBT	0.90 EBLT	WBT: 37.6 sec/veh LOS D	NB/SB: C EB/WB: C/D	31.7 sec/veh LOS C
WEEKDAY PM PEAK HOUR	Highest v/c Ratio	Highest Queue Storage Ratio	Highest Delay Movements with LOS	Approach LOS	Intersection Delay & LOS
91 sec cycle	0.83 SBT	0.71 WBT	WBT: 44.6 sec/veh LOS D	NB/SB: C/D EB/WB: C/D	32.9 sec/veh LOS C

BUCKHOLZ TRAFFIC

APPENDIX A

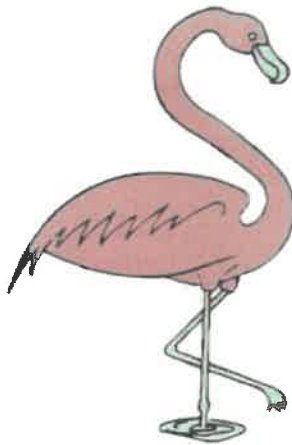
SITE PLAN





APPENDIX B

TURNING MOVEMENT COUNTS



JW BUCKHOLZ TRAFFIC ENGINEERING INC.
 MANUAL TURNING MOVEMENTS COUNT
 SR 47 @ SW BASCOM NORRIS DRIVE
 COLUMBIA COUNTY, FLORIDA

Site Code : 01122301
 Start Date: 01/12/23
 File I.D. : 01122301
 Page : 1

DAY: THURSDAY
 DATE: 01/12/23
 WEATHER: CLEAR & DRY
 BEGIN TIME (MILITARY): 06:30 Hrs

AUTOMOBILES, COMMERCIAL VEHICLES

Date 01/12/23	SR 47 From North				SW BASCOM NORRIS DRIVE From East				SR 47 From South				SW BASCOM NORRIS DRIVE From West				Total
	Left	Thru	Right	U-TURN	Left	Thru	Right	U-TURN	Left	Thru	Right	U-TURN	Left	Thru	Right	U-TURN	
06:30	0	36	6	0	4	16	0	0	10	66	3	0	10	7	4	0	162
06:45	0	40	14	0	3	28	0	0	13	103	5	0	13	18	6	0	243
07:00	1	49	9	0	2	39	0	0	22	87	9	2	16	35	9	0	280
07:15	0	65	8	0	9	44	0	0	19	113	12	0	33	50	13	0	366
Hr Total	1	190	37	0	18	127	0	0	64	369	29	2	72	110	32	0	1051
07:30	3	81	15	0	11	58	1	0	25	136	19	0	48	77	6	0	480
07:45	3	70	9	0	12	120	0	0	39	142	9	0	34	83	18	0	539
08:00	2	64	13	0	12	78	2	0	27	115	4	1	23	78	10	0	429
08:15	2	49	9	0	6	76	0	0	26	84	10	1	12	37	8	0	320
Hr Total	10	264	46	0	41	332	3	0	117	477	42	2	117	275	42	0	1768
TOTAL	11	454	83	0	59	459	3	0	181	846	71	4	189	385	74	0	2819

Peak Hour Analysis By Entire Intersection for the Period: 07:15 to 08:15 on 01/12/23

Peak start	07:15				07:15				07:15				07:15			
Volume	8	280	45	0	44	300	3	0	110	506	44	1	138	288	47	0
Percent	2%	84%	14%	0%	13%	86%	1%	0%	17%	77%	7%	0%	29%	61%	10%	0%
Pk total	333				347				661				473			
Highest	07:30				07:45				07:45				07:45			
Volume	3	81	15	0	12	120	0	0	39	142	9	0	34	83	18	0
Hi total	99				132				190				135			
PHF	.84				.66				.87				.88			

JW BUCKHOLZ TRAFFIC ENGINEERING INC.
 MANUAL TURNING MOVEMENTS COUNT
 SR 47 @ SW BASCOM NORRIS DRIVE
 COLUMBIA COUNTY, FLORIDA

DAY: THURSDAY
 DATE: 01/12/23
 WEATHER: CLEAR & DRY
 BEGIN TIME (MILITARY): 06:30 Hrs

Site Code : 01122301
 Start Date: 01/12/23
 File I.D. : 01122301
 Page : 1

AUTOMOBILES

Date	SR 47 From North				SW BASCOM NORRIS DRIVE From East				SR 47 From South				SW BASCOM NORRIS DRIVE From West				Total
	Left	Thru	Right	U-TURN	Left	Thru	Right	U-TURN	Left	Thru	Right	U-TURN	Left	Thru	Right	U-TURN	
06:30	0	31	6	0	4	16	0	0	10	63	3	0	9	7	4	0	153
06:45	0	36	14	0	3	27	0	0	13	99	5	0	13	18	6	0	234
07:00	1	44	8	0	2	39	0	0	21	82	9	2	16	33	9	0	266
07:15	0	64	8	0	9	43	0	0	19	108	11	0	33	50	12	0	357
Hr Total	1	175	36	0	18	125	0	0	63	352	28	2	71	108	31	0	1010
07:30	3	79	14	0	11	56	1	0	25	132	18	0	48	76	6	0	469
07:45	3	65	9	0	12	117	0	0	38	138	9	0	34	81	18	0	524
08:00	2	57	13	0	11	72	2	0	26	108	4	1	23	67	10	0	396
08:15	2	43	8	0	4	71	0	0	25	78	10	1	12	37	8	0	299
Hr Total	10	244	44	0	38	316	3	0	114	456	41	2	117	261	42	0	1688
TOTAL	11	419	80	0	56	441	3	0	177	808	69	4	188	369	73	0	2698

Peak Hour Analysis By Entire Intersection for the Period: 07:15 to 08:15 on 01/12/23

Peak start	07:15				07:15				07:15							
Volume	8	265	44	0	43	288	3	0	108	486	42	1	138	274	46	0
Percent	3%	84%	14%	0%	13%	86%	1%	0%	17%	76%	7%	0%	30%	60%	10%	0%
Pk total	317				334				637							
Highest	07:30				07:45				07:45							
Volume	3	79	14	0	12	117	0	0	38	138	9	0	34	81	18	0
Hi total	96				129				185							
PHF	.83				.65				.86							

JW BUCKHOLZ TRAFFIC ENGINEERING INC.

MANUAL TURNING MOVEMENTS COUNT

SR 47 @ SW BASCOM NORRIS DRIVE

COLUMBIA COUNTY, FLORIDA

Site Code : 01122301

Start Date: 01/12/23

File I.D. : 01122301

Page : 1

DAY: THURSDAY

DATE: 01/12/23

WEATHER: CLEAR & DRY

BEGIN TIME (MILITARY): 06:30 Hrs

COMMERCIAL VEHICLES

Date	SR 47 From North				SW BASCOM NORRIS DRIVE From East				SR 47 From South				SW BASCOM NORRIS DRIVE From West				Total
	Left	Thru	Right	U-TURN	Left	Thru	Right	U-TURN	Left	Thru	Right	U-TURN	Left	Thru	Right	U-TURN	
06:30	0	5	0	0	0	0	0	0	0	3	0	0	1	0	0	0	9
06:45	0	4	0	0	0	1	0	0	0	4	0	0	0	0	0	0	9
07:00	0	5	1	0	0	0	0	0	1	5	0	0	0	2	0	0	14
07:15	0	1	0	0	0	1	0	0	0	5	1	0	0	0	1	0	9
Hr Total	0	15	1	0	0	2	0	0	1	17	1	0	1	2	1	0	41
07:30	0	2	1	0	0	2	0	0	0	4	1	0	0	1	0	0	11
07:45	0	5	0	0	0	3	0	0	1	4	0	0	0	2	0	0	15
08:00	0	7	0	0	1	6	0	0	1	7	0	0	0	11	0	0	33
08:15	0	6	1	0	2	5	0	0	1	6	0	0	0	0	0	0	21
Hr Total	0	20	2	0	3	16	0	0	3	21	1	0	0	14	0	0	80
TOTAL	0	35	3	0	3	18	0	0	4	38	2	0	1	16	1	0	121

Peak Hour Analysis By Entire Intersection for the Period: 07:15 to 08:15 on 01/12/23

Peak start	07:15				07:15				07:15				07:15			
Volume	0	15	1	0	1	12	0	0	2	20	2	0	0	14	1	0
Percent	0%	94%	6%	0%	8%	92%	0%	0%	8%	83%	8%	0%	0%	93%	7%	0%
Pk total	16				13				24				15			
Highest	08:00				08:00				08:00				08:00			
Volume	0	7	0	0	1	6	0	0	1	7	0	0	0	11	0	0
Hi total	7				7				8				11			
PHF	.57				.46				.75				.34			

JW BUCKHOLZ TRAFFIC ENGINEERING INC.

MANUAL TURNING MOVEMENTS COUNT

SR 47 @ SW BASCOM NORRIS DRIVE

COLUMBIA COUNTY, FLORIDA

Site Code : 01122301

Start Date: 01/12/23

File I.D. : 01122301

Page : 1

DAY: THURSDAY

DATE: 01/12/23

WEATHER: CLEAR & DRY

BEGIN TIME (MILITARY): 06:30 Hrs

PEDESTRIAN & BICYCLES

Date	SR 47 From North				SW BASCOM NORRIS DRIVE From East				SR 47 From South				SW BASCOM NORRIS DRIVE From West				Total
	Left	Thru	Right	PEDS	Left	Thru	Right	PEDS	Left	Thru	Right	PEDS	Left	Thru	Right	PEDS	
06:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3
07:15	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2
Hr Total	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	1	5
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hr Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	1	5

Peak Hour Analysis By Entire Intersection for the Period: 07:15 to 08:15 on 01/12/23

Peak start	07:15				07:15				07:15				07:15			
Volume	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Percent	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	100%
Pk total	0				0				1				1			
Highest	06:30				06:30				07:15				07:15			
Volume	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Hi total	0				0				1				1			
PHF	.0				.0				.25				.25			

JW BUCKHOLZ TRAFFIC ENGINEERING INC.

MANUAL TURNING MOVEMENTS COUNT

SR 47 @ SW BASCOM NORRIS DRIVE

COLUMBIA COUNTY, FLORIDA

Site Code : 01092301

Start Date: 01/09/23

File I.D. : 01092301

Page : 1

DAY: MONDAY

DATE: 01/09/23

WEATHER: CLEAR & DRY

BEGIN TIME (MILITARY): 15:45 Hrs

AUTOMOBILES, COMMERCIAL VEHICLES

Date	SR 47 From North				SW BASCOM NORRIS DRIVE From East				SR 47 From South				SW BASCOM NORRIS DRIVE From West				Total
	Left	Thru	Right	U-TURN	Left	Thru	Right	U-TURN	Left	Thru	Right	U-TURN	Left	Thru	Right	U-TURN	
15:45	2	79	24	0	14	58	3	0	31	56	14	1	18	46	14	0	360
16:00	4	89	25	0	19	62	0	0	23	68	5	1	11	39	9	0	355
16:15	1	106	25	0	17	52	3	0	32	60	7	2	15	36	11	0	367
16:30	3	130	24	0	18	60	1	0	33	67	8	2	23	37	6	0	412
Hr Total	10	404	98	0	68	232	7	0	119	251	34	6	67	158	40	0	1494
16:45	0	97	29	0	12	60	0	0	34	64	10	4	19	35	6	0	370
17:00	5	169	38	0	23	80	0	0	45	73	10	4	17	41	10	0	515
17:15	0	126	29	0	17	58	0	0	32	54	3	0	19	54	14	0	406
17:30	1	80	30	0	12	55	1	0	20	60	5	1	7	22	7	0	301
Hr Total	6	472	126	0	64	253	1	0	131	251	28	9	62	152	37	0	1592
TOTAL	16	876	224	0	132	485	8	0	250	502	62	15	129	310	77	0	3086

Peak Hour Analysis By Entire Intersection for the Period: 16:30 to 17:30 on 01/09/23

Peak start	16:30				16:30				16:30				16:30			
Volume	8	522	120	0	70	258	1	0	144	258	31	10	78	167	36	0
Percent	1%	80%	18%	0%	21%	78%	0%	0%	33%	58%	7%	2%	28%	59%	13%	0%
Pk total	650				329				443				281			
Highest	17:00				17:00				17:00				17:15			
Volume	5	169	38	0	23	80	0	0	45	73	10	4	19	54	14	0
Hi total	212				103				132				87			
PHP	.77				.80				.84				.81			

JW BUCKHOLZ TRAFFIC ENGINEERING INC.

MANUAL TURNING MOVEMENTS COUNT

SR 47 @ SW BASCOM NORRIS DRIVE

COLUMBIA COUNTY, FLORIDA

Site Code : 01092301

Start Date: 01/09/23

File I.D. : 01092301

Page : 1

DAY: MONDAY

DATE: 01/09/23

WEATHER: CLEAR & DRY

BEGIN TIME (MILITARY): 15:45 Hrs

AUTOMOBILES

Date	SR 47 From North				SW BASCOM NORRIS DRIVE From East				SR 47 From South				SW BASCOM NORRIS DRIVE From West				Total
	Left	Thru	Right	U-TURN	Left	Thru	Right	U-TURN	Left	Thru	Right	U-TURN	Left	Thru	Right	U-TURN	
Date 01/09/23	-----																
15:45	2	75	24	0	14	57	2	0	31	51	14	1	18	44	14	0	347
16:00	4	86	25	0	19	60	0	0	23	63	5	1	11	37	9	0	343
16:15	1	98	25	0	17	51	3	0	32	54	7	2	15	35	9	0	349
16:30	3	127	23	0	18	57	1	0	33	58	7	2	23	34	6	0	392
Hr Total	10	386	97	0	68	225	6	0	119	226	33	6	67	150	38	0	1431
16:45	0	96	28	0	11	58	0	0	33	60	10	4	19	34	5	0	358
17:00	5	164	37	0	22	80	0	0	44	67	10	4	17	40	10	0	500
17:15	0	117	29	0	17	58	0	0	31	49	3	0	19	54	13	0	390
17:30	1	79	30	0	12	54	1	0	20	52	5	1	7	20	5	0	287
Hr Total	6	456	124	0	62	250	1	0	128	228	28	9	62	148	33	0	1535

TOTAL	16	842	221	0	130	475	7	0	247	454	61	15	129	298	71	0	2966

Peak Hour Analysis By Entire Intersection for the Period: 16:30 to 17:30 on 01/09/23

Peak start	16:30				16:30				16:30				16:30			
Volume	8	504	117	0	68	253	1	0	141	234	30	10	78	162	34	0
Percent	1%	80%	19%	0%	21%	79%	0%	0%	34%	56%	7%	2%	28%	59%	12%	0%
Pk total	629				322				415				274			
Highest	17:00				17:00				17:00				17:15			
Volume	5	164	37	0	22	80	0	0	44	67	10	4	19	54	13	0
Hi total	206				102				125				86			
PHF	.76				.79				.83				.80			

JW BUCKHOLZ TRAFFIC ENGINEERING INC.

MANUAL TURNING MOVEMENTS COUNT

SR 47 @ SW BASCOM NORRIS DRIVE

COLUMBIA COUNTY, FLORIDA

Site Code : 01092301

Start Date: 01/09/23

File I.D. : 01092301

Page : 1

DAY: MONDAY

DATE: 01/09/23

WEATHER: CLEAR & DRY

BEGIN TIME (MILITARY): 15:45 Hrs

COMMERCIAL VEHICLES

Date 01/09/23	SR 47 From North				SW BASCOM NORRIS DRIVE From East				SR 47 From South				SW BASCOM NORRIS DRIVE From West				Total
	Left	Thru	Right	U-TURN	Left	Thru	Right	U-TURN	Left	Thru	Right	U-TURN	Left	Thru	Right	U-TURN	
15:45	0	4	0	0	0	1	1	0	0	5	0	0	0	2	0	0	13
16:00	0	3	0	0	0	2	0	0	0	5	0	0	0	2	0	0	12
16:15	0	8	0	0	0	1	0	0	0	6	0	0	0	1	2	0	18
16:30	0	3	1	0	0	3	0	0	0	9	1	0	0	3	0	0	20
Hr Total	0	18	1	0	0	7	1	0	0	25	1	0	0	8	2	0	63
16:45	0	1	1	0	1	2	0	0	1	4	0	0	0	1	1	0	12
17:00	0	5	1	0	1	0	0	0	1	6	0	0	0	1	0	0	15
17:15	0	9	0	0	0	0	0	0	1	5	0	0	0	0	1	0	16
17:30	0	1	0	0	0	1	0	0	0	8	0	0	0	2	2	0	14
Hr Total	0	16	2	0	2	3	0	0	3	23	0	0	0	4	4	0	57
TOTAL	0	34	3	0	2	10	1	0	3	48	1	0	0	12	6	0	120

Peak Hour Analysis By Entire Intersection for the Period: 16:30 to 17:30 on 01/09/23

Peak start 16:30	16:30				16:30				16:30							
Volume	0	18	3	0	2	5	0	0	3	24	1	0	0	5	2	0
Percent	0%	86%	14%	0%	29%	71%	0%	0%	11%	86%	4%	0%	0%	71%	29%	0%
Pk total	21				7				28							
Highest	17:15				16:30				16:30							
Volume	0	9	0	0	0	3	0	0	0	9	1	0	0	3	0	0
Hi total	9				3				10							
PHF	.58				.58				.70							

DAY: MONDAY

DATE: 01/09/23

WEATHER: CLEAR & DRY

BEGIN TIME (MILITARY): 15:45 Hrs

PEDESTRIAN & BICYCLES

Date 01/09/23	SR 47 From North				SW BASCOM NORRIS DRIVE From East				SR 47 From South				SW BASCOM NORRIS DRIVE From West				Total
	Left	Thru	Right	PEDS	Left	Thru	Right	PEDS	Left	Thru	Right	PEDS	Left	Thru	Right	PEDS	
15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hr Total	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hr Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1

Peak Hour Analysis By Entire Intersection for the Period: 16:30 to 17:30 on 01/09/23

Peak start 16:30	16:30				16:30				16:30							
Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Percent	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Pk total	0				0				0							
Highest	15:45				15:45				15:45							
Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hi total	0				0				0							
PHF	.0				.0				.0							

TABLE B-1
SW Bascom Norris Drive / SW McFarlane Avenue
TURNING MOVEMENT COUNTS - ALL VEHICLES

Thursday, January 12, 2023

	SW BASCOM NORRIS DR.				SW McFARLANE AVE.			GAS STATION DRIVEWAY			All
	EB Left Turn	EB Right Turn	WB Left Turn	WB Right Turn	SB Left Turn	"Thru" to Gas Station	SB Right Turn	NB Left Turn	"Thru" to McFarlane	NB Right Turn	
6:30-6:45 AM	2	1	4	2	9	0	1	2	0	2	23
6:45-7:00 AM	2	0	1	16	4	0	1	1	0	0	25
7:00-7:15 AM	4	1	1	18	13	0	9	0	0	0	46
7:15-7:30 AM	13	0	1	17	9	0	10	0	0	0	50
7:30-7:45 AM	9	0	1	22	17	0	5	1	0	1	56
7:45-8:00 AM	13	0	0	39	14	0	8	1	0	0	75
8:00-8:15 AM	3	1	1	28	11	0	5	2	0	0	51
8:15-8:30 AM	8	0	0	33	12	1	9	1	1	0	65
AM PEAK PERIOD:	54	3	9	175	89	1	48	8	1	3	391
AM PEAK HOUR: 7:15-8:15 AM	38	1	3	106	51	0	28	4	0	1	232

Monday, January 9, 2023

	SW BASCOM NORRIS DR.				SW McFARLANE AVE.			GAS STATION DRIVEWAY			All
	EB Left Turn	EB Right Turn	WB Left Turn	WB Right Turn	SB Left Turn	"Thru" to Gas Station	SB Right Turn	NB Left Turn	"Thru" to McFarlane	NB Right Turn	
3:45-4:00 PM	1	2	1	3	3	0	0	1	0	2	13
4:00-4:15 PM	3	2	2	9	5	0	0	1	0	0	22
4:15-4:30 PM	2	6	4	13	5	0	2	3	1	3	39
4:30-4:45 PM	5	4	2	15	17	0	1	1	0	2	47
4:45-5:00 PM	4	1	1	24	14	1	6	3	1	0	55
5:00-5:15 PM	4	1	5	23	17	0	5	3	1	1	60
5:15-5:30 PM	10	1	1	29	18	1	11	1	1	2	75
5:30-5:45 PM	7	1	8	15	11	0	5	0	0	2	49
PM PEAK PERIOD:	36	18	24	131	90	2	30	13	4	12	360
PM PEAK HOUR: 4:30-5:30 PM	23	7	9	91	66	2	23	8	3	5	237

BUCKHOLZ TRAFFIC

TABLE B-2
SW Bascom Norris Drive / SW McFarlane Avenue
TURNING MOVEMENT COUNTS - TRUCKS

Thursday, January 12, 2023

	SW BASCOM NORRIS DR.				SW McFARLANE AVE.			GAS STATION DRIVEWAY			All
	EB Left Turn	EB Right Turn	WB Left Turn	WB Right Turn	SB Left Turn	"Thru" to Gas Station	SB Right Turn	NB Left Turn	"Thru" to McFarlane	NB Right Turn	
6:30-6:45 AM	0	0	0	0	0	0	0	0	0	0	0
6:45-7:00 AM	0	0	0	0	0	0	0	0	0	0	0
7:00-7:15 AM	0	0	0	0	0	0	0	0	0	0	0
7:15-7:30 AM	1	0	0	0	0	0	0	0	0	0	1
7:30-7:45 AM	0	0	0	0	1	0	1	0	0	0	2
7:45-8:00 AM	0	0	0	1	0	0	0	0	0	0	1
8:00-8:15 AM	0	0	0	3	0	0	0	0	0	0	3
8:15-8:30 AM	1	0	0	1	0	0	1	0	0	0	3
AM PEAK PERIOD:	2	0	0	5	1	0	2	0	0	0	10
AM PEAK HOUR:	1	0	0	4	1	0	1	0	0	0	7
7:16-8:15 AM											

Monday, January 9, 2023

	SW BASCOM NORRIS DR.				SW McFARLANE AVE.			GAS STATION DRIVEWAY			All
	EB Left Turn	EB Right Turn	WB Left Turn	WB Right Turn	SB Left Turn	"Thru" to Gas Station	SB Right Turn	NB Left Turn	"Thru" to McFarlane	NB Right Turn	
3:45-4:00 PM	0	0	0	0	0	0	0	0	0	0	0
4:00-4:15 PM	0	0	0	0	0	0	0	0	0	0	0
4:15-4:30 PM	0	0	0	0	0	0	0	0	0	1	1
4:30-4:45 PM	0	0	0	0	1	0	0	0	0	0	1
4:45-5:00 PM	0	0	0	0	0	0	0	0	0	0	0
5:00-5:15 PM	0	0	0	0	0	0	0	0	0	0	0
5:15-5:30 PM	1	0	0	1	1	0	0	0	0	0	3
5:30-5:45 PM	0	0	0	0	1	0	0	0	0	0	1
PM PEAK PERIOD:	1	0	0	1	3	0	0	0	0	0	6
PM PEAK HOUR:	1	0	0	1	2	0	0	0	0	0	4
4:30-5:30 PM											

BUCKHOLZ TRAFFIC

TABLE B-3
SW Bascom Norris Drive / SW Tamoka Terrace
TURNING MOVEMENT COUNTS - ALL VEHICLES

Thursday, January 12, 2023

	SW BASCOM NORRIS DR.		SW TOMOKA TERR.		All
	WB Left Turn	EB Right Turn	NB Left Turn	NB Right Turn	
6:30-6:45 AM	0	0	0	0	0
6:45-7:00 AM	1	0	0	0	1
7:00-7:15 AM	0	0	0	3	3
7:15-7:30 AM	0	0	0	7	7
7:30-7:45 AM	4	0	0	5	9
7:45-8:00 AM	2	0	0	8	10
8:00-8:15 AM	3	0	0	4	7
8:15-8:30 AM	1	0	0	4	5
AM PEAK PERIOD:	11	0	0	31	42

AM PEAK HOUR:	9	0	0	24	33
7:15-8:15 AM					

Monday, January 9, 2023

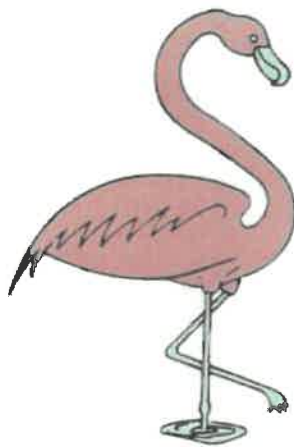
	SW BASCOM NORRIS DR.		SW TOMOKA TERR.		All
	WB Left Turn	EB Right Turn	NB Left Turn	NB Right Turn	
3:45-4:00 PM	2	0	0	5	7
4:00-4:15 PM	0	0	0	1	1
4:15-4:30 PM	2	1	0	4	7
4:30-4:45 PM	0	0	0	2	2
4:45-5:00 PM	3	0	1	2	6
5:00-5:15 PM	0	0	0	2	2
5:15-5:30 PM	1	0	0	2	3
5:30-5:45 PM	3	0	0	1	4
PM PEAK PERIOD:	11	1	1	19	32

PM PEAK HOUR:	4	0	1	8	13
4:30-5:30 PM					

BUCKHOLZ TRAFFIC

APPENDIX C

FDOT TRAFFIC DATA

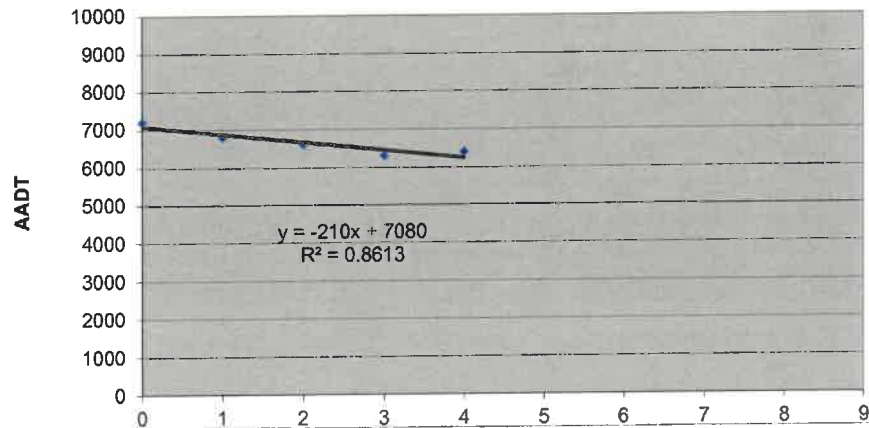


**TABLE C-1
LINEAR REGRESSION ANALYSIS**

Bascom Norris Drive, West of McFarland Avenue

Year	X	Actual AADT (Y)	Predicted AADT
2017	0	7200	7080
2018	1	6800	6870
2019	2	6600	6660
2020	3	6300	6450
2021	4	6400	6240
2022	5		6030
2023	6		5820
2024	7		5610
2025	8		5400
2026	9		5190

i = -3.4%



BUCKHOLZ TRAFFIC

FLORIDA DEPARTMENT OF TRANSPORTATION
 TRANSPORTATION STATISTICS OFFICE
 2021 HISTORICAL AADT REPORT

COUNTY: 29 - COLUMBIA

SITE: 5040 - CR 100A (BASCOM NORRIS DR) W. OF MCFARLANE AVE.

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2021	6400 F	0	0	9.00	54.20	12.60
2020	6300 C	N 0	S 0	9.00	54.80	1.30
2019	6600 C	N 0	S 0	9.00	54.80	0.90
2018	6800 C	N 0	S 0	9.00	54.70	6.60
2017	7200 C	N 0	S 0	9.00	55.50	1.10
2016	7100 C	N 0	S 0	9.00	53.90	1.30
2015	7000 C	N 0	S 0	9.00	54.50	0.90
2014	6800 C	N 0	S 0	9.00	54.40	1.40
2013	7000 C	N 0	S 0	9.00	55.30	1.20
2012	6500 C	N 0	S 0	9.00	54.70	0.80
2011	7300 C	N 0	S 0	9.00	53.70	1.80
2010	6500 C	N 0	S 0	9.94	54.40	1.40
2009	6500 C	N 0	S 0	9.78	54.18	3.50
2008	7400 C	N 0	S 0	9.82	54.63	2.00
2007	6700 C	N 0	S 0	9.99	54.46	1.40
2006	7900 C	N 0	S 0	10.01	55.64	1.90

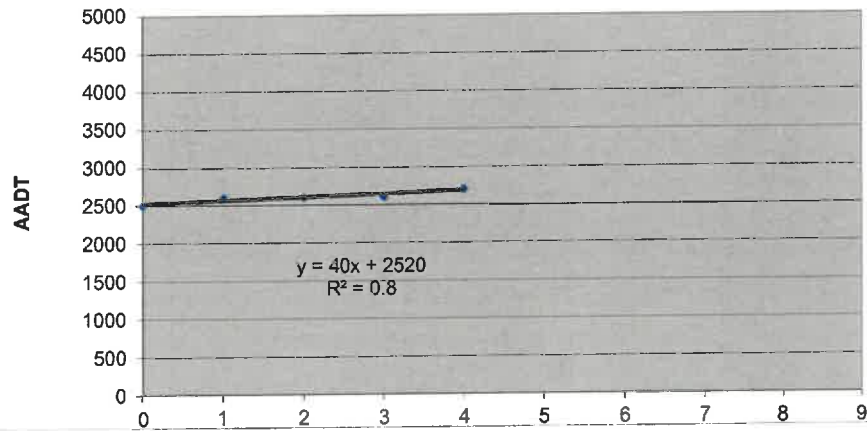
AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE
 S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; R = FOURTH YEAR ESTIMATE
 V = FIFTH YEAR ESTIMATE; 6 = SIXTH YEAR ESTIMATE; X = UNKNOWN
 *K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

**TABLE C-2
LINEAR REGRESSION ANALYSIS**

McFarland Avenue, North of Bascom Norris Drive

Year	X	Actual AADT (Y)	Predicted AADT
2017	0	2500	2520
2018	1	2600	2560
2019	2	2600	2600
2020	3	2600	2640
2021	4	2700	2680
2022	5		2720
2023	6		2760
2024	7		2800
2025	8		2840
2026	9		2880

i = 1.5%



BUCKHOLZ TRAFFIC

FLORIDA DEPARTMENT OF TRANSPORTATION
 TRANSPORTATION STATISTICS OFFICE
 2021 HISTORICAL AADT REPORT

COUNTY: 29 - COLUMBIA

SITE: 5025 - MCFARLAND AVE. .1 MI. N. OF BASCOM NORRIS DR. (HPMS)

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2021	2700 R	0	0	9.00	54.20	3.60
2020	2600 T	0	0	9.00	54.80	3.70
2019	2600 S	0	0	9.00	54.80	3.40
2018	2600 F	0	0	9.00	54.70	3.90
2017	2500 C	N 0	S 0	9.00	55.50	2.90
2016	2800 R	0	0	9.00	53.90	3.20
2015	2700 T	0	0	9.00	54.50	4.30
2014	2700 S	0	0	9.00	54.40	3.10
2013	2700 F	0	0	9.00	55.30	3.00
2012	2700 C	N 0	S 0	9.00	54.70	3.90

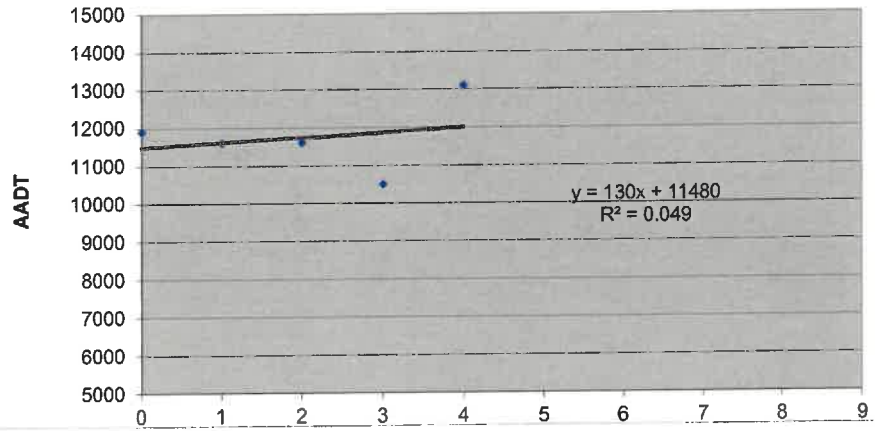
AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE
 S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; R = FOURTH YEAR ESTIMATE
 V = FIFTH YEAR ESTIMATE; 6 = SIXTH YEAR ESTIMATE; X = UNKNOWN
 *K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

**TABLE C-3
LINEAR REGRESSION ANALYSIS**

SR 47, South of Bascom Norris Drive

Year	X	Actual AADT (Y)	Predicted AADT
2017	0	11900	11480
2018	1	11600	11610
2019	2	11600	11740
2020	3	10500	11870
2021	4	13100	12000
2022	5		12130
2023	6		12260
2024	7		12390
2025	8		12520
2026	9		12650

i = 1.1%



BUCKHOLZ TRAFFIC

FLORIDA DEPARTMENT OF TRANSPORTATION
 TRANSPORTATION STATISTICS OFFICE
 2021 HISTORICAL AADT REPORT

COUNTY: 29 - COLUMBIA

SITE: 0227 - SR 47 300' S. OF BASCOM NORRIS DR..

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2021	13100 C	N 7000	S 6100	9.00	54.20	5.10
2020	10500 C	N 5500	S 5000	9.00	54.80	5.60
2019	11600 C	N 6000	S 5600	9.00	54.80	3.90
2018	11600 C	N 6200	S 5400	9.00	54.70	3.90
2017	11900 C	N 6200	S 5700	9.00	55.50	4.20
2016	11300 C	N 5900	S 5400	9.00	53.90	4.00
2015	10700 C	N 5600	S 5100	9.00	54.50	4.00
2014	11200 C	N 5900	S 5300	9.00	54.40	3.40
2013	9600 C	N 5100	S 4500	9.00	55.30	4.00
2012	10200 C	N 5400	S 4800	9.00	54.70	3.80
2011	10300 C	N 5500	S 4800	9.00	53.70	4.60
2010	9800 C	N 5700	S 4100	9.94	54.40	4.20
2009	11200 F	N 5800	S 5400	9.78	54.18	4.30
2008	11200 C	N 5900	S 5300	9.82	54.63	3.90
2007	10000 C	N 5200	S 4800	9.99	54.46	4.40
2006	9400 F	N 4800	S 4600	10.01	55.64	10.60

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: 29
 STATION: 0227
 DESCRIPTION: SR 47 300' S. OF BASCOM NORRIS DR.
 START DATE: 09/29/2021
 START TIME: 0000

TIME	DIRECTION: N					DIRECTION: S					COMBINED TOTAL
	1ST	2ND	3RD	4TH	TOTAL	1ST	2ND	3RD	4TH	TOTAL	
0000	3	8	2	3	16	10	9	9	6	34	50
0100	4	5	4	9	22	14	3	6	8	31	53
0200	1	4	2	3	10	8	7	5	6	26	36
0300	4	6	9	16	35	3	6	10	7	26	61
0400	9	19	16	20	64	3	4	7	12	26	90
0500	15	29	38	59	141	12	12	19	21	64	205
0600	58	72	88	91	309	28	28	55	58	169	478
0700	115	157	172	210	654	69	100	91	91	351	1005
0800	177	155	114	114	560	81	97	75	68	321	881
0900	109	91	99	106	405	76	72	96	81	325	730
1000	103	108	103	97	411	96	75	84	100	355	766
1100	113	112	135	151	511	93	85	109	114	401	912
1200	123	118	112	111	464	115	120	101	122	458	922
1300	108	112	122	122	464	103	93	99	132	427	891
1400	141	149	142	168	600	119	124	129	107	479	1079
1500	128	147	147	121	543	134	114	125	139	512	1055
1600	106	142	151	117	516	155	134	149	146	584	1100
1700	149	144	141	109	543	172	157	138	113	580	1123
1800	109	91	67	68	335	90	59	80	65	294	629
1900	71	54	41	49	215	73	64	63	46	246	461
2000	36	25	21	27	109	51	31	44	49	175	284
2100	25	28	25	24	102	33	26	24	20	103	205
2200	17	11	12	9	49	15	20	30	19	84	133
2300	9	4	7	3	23	11	11	10	16	48	71

24-HOUR TOTALS: 7101 6119 13220

	DIRECTION: N		DIRECTION: S		COMBINED DIRECTIONS	
	HOUR	VOLUME	HOUR	VOLUME	HOUR	VOLUME
A.M.	715	716	715	363	715	1079
P.M.	1400	600	1630	624	1630	1185
DAILY	715	716	1630	624	1630	1185

TRUCK PERCENTAGE 4.70 5.62 5.13

CLASSIFICATION SUMMARY DATABASE

DIR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTTRK	TOTVOL
N	26	4502	2239	15	125	42	1	34	110	4	2	0	1	0	0	334	7101
S	28	3945	1802	5	88	63	22	34	128	3	1	0	0	0	0	344	6119

2021 PEAK SEASON FACTOR CATEGORY REPORT - REPORT TYPE: ALL
 CATEGORY: 2900 COLUMBIA COUNTYWIDE

MOCF: 0.96
 PSCF

WEEK	DATES	SF	PSCF
1	01/01/2021 - 01/02/2021	1.03	1.07
2	01/03/2021 - 01/09/2021	1.05	1.09
3	01/10/2021 - 01/16/2021	1.07	1.11
4	01/17/2021 - 01/23/2021	1.06	1.10
5	01/24/2021 - 01/30/2021	1.05	1.09
6	01/31/2021 - 02/06/2021	1.04	1.08
7	02/07/2021 - 02/13/2021	1.04	1.08
8	02/14/2021 - 02/20/2021	1.03	1.07
9	02/21/2021 - 02/27/2021	1.01	1.05
10	02/28/2021 - 03/06/2021	1.00	1.04
11	03/07/2021 - 03/13/2021	0.98	1.02
12	03/14/2021 - 03/20/2021	0.97	1.01
*13	03/21/2021 - 03/27/2021	0.97	1.01
*14	03/28/2021 - 04/03/2021	0.97	1.01
*15	04/04/2021 - 04/10/2021	0.96	1.00
*16	04/11/2021 - 04/17/2021	0.96	1.00
*17	04/18/2021 - 04/24/2021	0.96	1.00
*18	04/25/2021 - 05/01/2021	0.95	0.99
*19	05/02/2021 - 05/08/2021	0.95	0.99
*20	05/09/2021 - 05/15/2021	0.94	0.98
*21	05/16/2021 - 05/22/2021	0.95	0.99
*22	05/23/2021 - 05/29/2021	0.95	0.99
*23	05/30/2021 - 06/05/2021	0.96	1.00
*24	06/06/2021 - 06/12/2021	0.96	1.00
*25	06/13/2021 - 06/19/2021	0.97	1.01
26	06/20/2021 - 06/26/2021	0.99	1.03
27	06/27/2021 - 07/03/2021	1.00	1.04
28	07/04/2021 - 07/10/2021	1.02	1.06
29	07/11/2021 - 07/17/2021	1.03	1.07
30	07/18/2021 - 07/24/2021	1.04	1.08
31	07/25/2021 - 07/31/2021	1.04	1.08
32	08/01/2021 - 08/07/2021	1.04	1.08
33	08/08/2021 - 08/14/2021	1.05	1.09
34	08/15/2021 - 08/21/2021	1.05	1.09
35	08/22/2021 - 08/28/2021	1.04	1.08
36	08/29/2021 - 09/04/2021	1.03	1.07
37	09/05/2021 - 09/11/2021	1.02	1.06
38	09/12/2021 - 09/18/2021	1.01	1.05
39	09/19/2021 - 09/25/2021	1.00	1.04
40	09/26/2021 - 10/02/2021	0.99	1.03
41	10/03/2021 - 10/09/2021	0.99	1.03
42	10/10/2021 - 10/16/2021	0.98	1.02
43	10/17/2021 - 10/23/2021	0.99	1.03
44	10/24/2021 - 10/30/2021	0.99	1.03
45	10/31/2021 - 11/06/2021	1.00	1.04
46	11/07/2021 - 11/13/2021	1.01	1.05
47	11/14/2021 - 11/20/2021	1.01	1.05
48	11/21/2021 - 11/27/2021	1.02	1.06
49	11/28/2021 - 12/04/2021	1.02	1.06
50	12/05/2021 - 12/11/2021	1.02	1.06
51	12/12/2021 - 12/18/2021	1.03	1.07
52	12/19/2021 - 12/25/2021	1.05	1.09
53	12/26/2021 - 12/31/2021	1.07	1.11

* PEAK SEASON

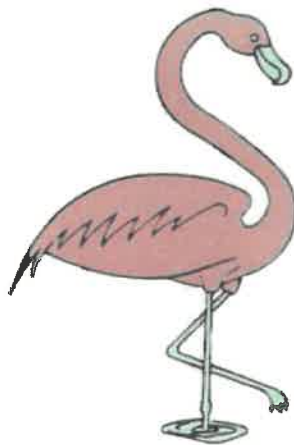
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2_2900_PKSEASON.TXT

APPENDIX D

CAPACITY CALCULATIONS UNSIGNALIZED INTERSECTIONS

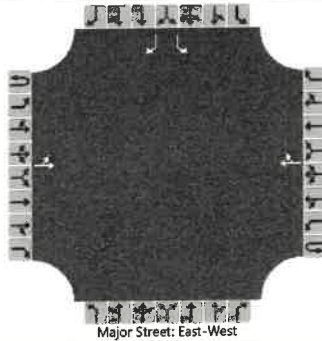


AM PEAK HOUR

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	J. Buckholz	Intersection	SW Bascom Norris Dr. / SW McFarlane Ave.
Agency/Co.	BUCKHOLZ TRAFFIC	Jurisdiction	Columbia County
Date Performed	1/18/2023	East/West Street	SW Bascom Norris Drive
Analysis Year	2023	North/South Street	SW McFarlane Avenue
Time Analyzed	Weekday AM Peak Hour	Peak Hour Factor	0.84
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	#23-1812		

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	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		1	0	1
Configuration		LT						TR						L		R
Volume (veh/h)		41	452				375	113						55		30
Percent Heavy Vehicles (%)		3												2		4
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized														No		
Median Type Storage					Undivided											

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.13												6.42		6.24
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.23												3.52		3.34

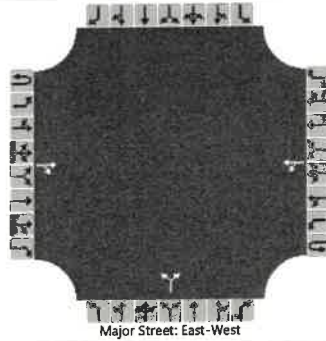
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		49												65		36	
Capacity, c (veh/h)		988												204		557	
v/c Ratio		0.05												0.32		0.06	
95% Queue Length, Q ₉₅ (veh)		0.2												1.3		0.2	
Control Delay (s/veh)		8.8	0.6											30.8		11.9	
Level of Service (LOS)		A	A											D		B	
Approach Delay (s/veh)		1.3												24.1			
Approach LOS		A												C			

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	J. Buckholz	Intersection	SW Bascom Norris Dr. / SW Tomoka Terrace
Agency/Co.	BUCKHOLZ TRAFFIC	Jurisdiction	Columbia County
Date Performed	1/18/2023	East/West Street	SW Bascom Norris Drive
Analysis Year	2023	North/South Street	SW Tomoka Terrace
Time Analyzed	Weekday AM Peak Hour	Peak Hour Factor	0.84
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	#23-1812		

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	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume (veh/h)			467	0		10	395			0		26				
Percent Heavy Vehicles (%)						0				0		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.10				6.40		6.20				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.20				3.50		3.30				

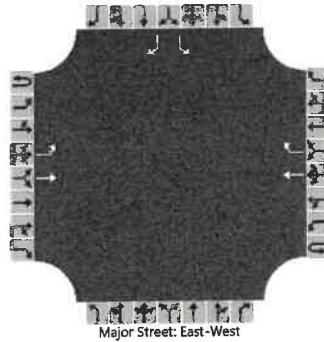
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						12						31				
Capacity, c (veh/h)						1025						534				
v/c Ratio						0.01						0.06				
95% Queue Length, Q ₉₅ (veh)						0.0						0.2				
Control Delay (s/veh)						8.6	0.1					12.1				
Level of Service (LOS)						A	A					B				
Approach Delay (s/veh)						0.3				12.1						
Approach LOS						A				B						

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	J. Buckholz	Intersection	SW Bascom Norris Dr. / SW McFarlane Ave.
Agency/Co.	BUCKHOLZ TRAFFIC	Jurisdiction	Columbia County
Date Performed	1/18/2023	East/West Street	SW Bascom Norris Drive
Analysis Year	2026	North/South Street	SW McFarlane Avenue
Time Analyzed	AM Peak Hr. BUILD Traffic	Peak Hour Factor	0.84
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	#23-1812		

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	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority														1	0	1
Number of Lanes	0	1	1	0	0	0	1	1		0	0	0		1	0	1
Configuration		L	T				T	R						L		R
Volume (veh/h)		45	489				397	116						57		33
Percent Heavy Vehicles (%)		3												2		4
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized							No							No		
Median Type Storage							Undivided									

Critical and Follow-up Headways

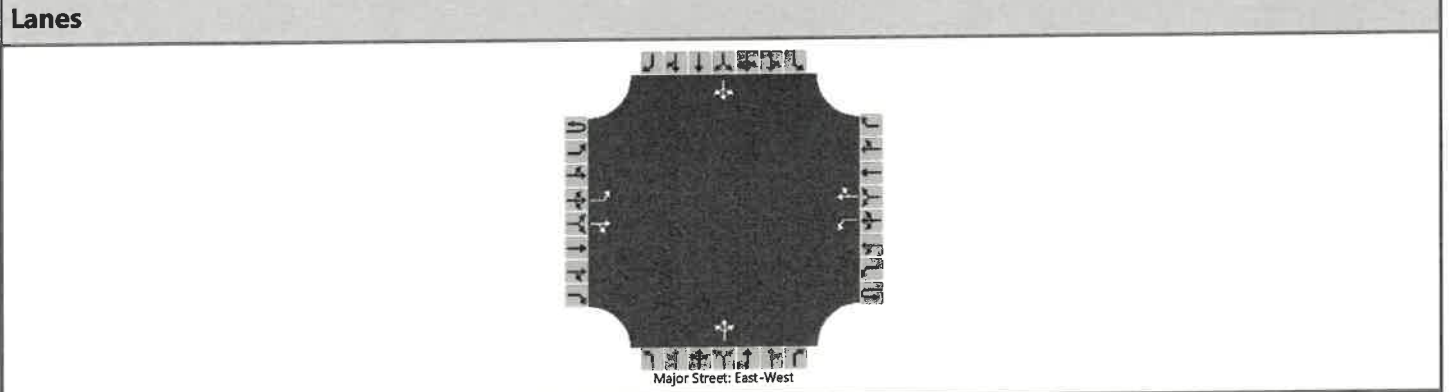
Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.13												6.42		6.24
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.23												3.52		3.34

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		54												68		39	
Capacity, c (veh/h)		963												204		587	
v/c Ratio		0.06												0.33		0.07	
95% Queue Length, Q ₉₅ (veh)		0.2												1.4		0.2	
Control Delay (s/veh)		9.0												31.3		11.6	
Level of Service (LOS)		A												D		B	
Approach Delay (s/veh)		0.8												24.1			
Approach LOS		A												C			

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	J. Buckholz	Intersection	SW Bascom Norris Dr. / SW Tomoka Terr. / T...
Agency/Co.	BUCKHOLZ TRAFFIC	Jurisdiction	Columbia County
Date Performed	1/18/2023	East/West Street	SW Bascom Norris Drive
Analysis Year	2026	North/South Street	SW Tomoka Terrace / TennisDriveway
Time Analyzed	AM Peak Hr. BUILD Traffic	Peak Hour Factor	0.84
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	#23-1812		



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	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12	
Priority																	
Number of Lanes	0	1	1	0	0	1	1	0		0	1	0		0	1	0	
Configuration		L		TR		L		TR			LTR				LTR		
Volume (veh/h)		6	484	0		10	408	6		0	1	27		6	1	6	
Percent Heavy Vehicles (%)		0				0				0	0	0		0	0	0	
Proportion Time Blocked																	
Percent Grade (%)										0				0			
Right Turn Channelized																	
Median Type Storage	Undivided																

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.10	6.50	6.20		7.10	6.50	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.00	3.30

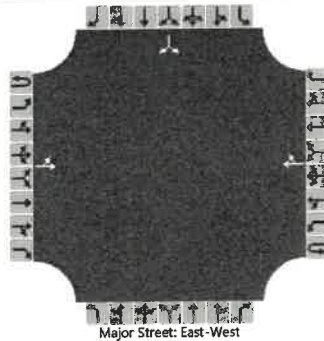
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		7				12					33				15		
Capacity, c (veh/h)		1081				1007					494				258		
v/c Ratio		0.01				0.01					0.07				0.06		
95% Queue Length, Q ₉₅ (veh)		0.0				0.0					0.2				0.2		
Control Delay (s/veh)		8.4				8.6					12.8				19.9		
Level of Service (LOS)		A				A					B				C		
Approach Delay (s/veh)		0.1				0.2				12.8				19.9			
Approach LOS		A				A				B				C			

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	J. Buckholz	Intersection	SW Bascom Norris Dr. / East Condo Dr.
Agency/Co.	BUCKHOLZ TRAFFIC	Jurisdiction	Columbia County
Date Performed	1/18/2023	East/West Street	SW Bascom Norris Drive
Analysis Year	2026	North/South Street	East Condo Driveway
Time Analyzed	AM Peak Hr. BUILD Traffic	Peak Hour Factor	0.84
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	#23-1812		

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	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume (veh/h)		1	522				416	4						12		4
Percent Heavy Vehicles (%)		2												2		2
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

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

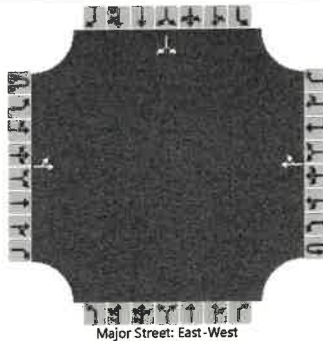
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		1														19
Capacity, c (veh/h)		1064														268
v/c Ratio		0.00														0.07
95% Queue Length, Q ₉₅ (veh)		0.0														0.2
Control Delay (s/veh)		8.4	0.0													19.5
Level of Service (LOS)		A	A													C
Approach Delay (s/veh)		0.0												19.5		
Approach LOS		A												C		

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	J. Buckholz	Intersection	SW Bascom Norris Dr. / West Condo Dr.
Agency/Co.	BUCKHOLZ TRAFFIC	Jurisdiction	Columbia County
Date Performed	1/18/2023	East/West Street	SW Bascom Norris Drive
Analysis Year	2026	North/South Street	West Condo Driveway
Time Analyzed	AM Peak Hr. BUILD Traffic	Peak Hour Factor	0.84
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	#23-1812		

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	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume (veh/h)		2	515				417	3						8		7
Percent Heavy Vehicles (%)		2												2		2
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

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

Delay, Queue Length, and Level of Service

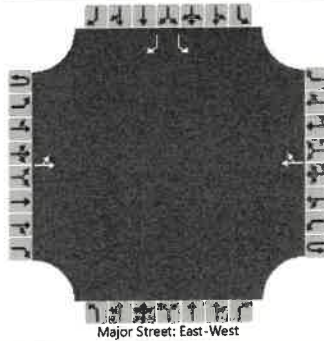
Flow Rate, v (veh/h)		2													18		
Capacity, c (veh/h)		1064													318		
v/c Ratio		0.00													0.06		
95% Queue Length, Q ₉₅ (veh)		0.0													0.2		
Control Delay (s/veh)		8.4	0.0												17.0		
Level of Service (LOS)		A	A												C		
Approach Delay (s/veh)		0.1												17.0			
Approach LOS		A												C			

PM PEAK HOUR

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	J. Buckholz	Intersection	SW Bascom Norris Dr. / SW McFarlane Ave.
Agency/Co.	BUCKHOLZ TRAFFIC	Jurisdiction	Columbia County
Date Performed	1/10/2023	East/West Street	SW Bascom Norris Drive
Analysis Year	2023	North/South Street	SW McFarlane Avenue
Time Analyzed	Weekday PM Peak Hour	Peak Hour Factor	0.83
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	#23-1812		

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	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		1	0	1
Configuration		LT						TR						L		R
Volume (veh/h)		24	228				452	99						71		24
Percent Heavy Vehicles (%)		5												2		0
Proportion Time Blocked																
Percent Grade (%)																0
Right Turn Channelized																No
Median Type Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.15												6.42		6.20
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.25												3.52		3.30

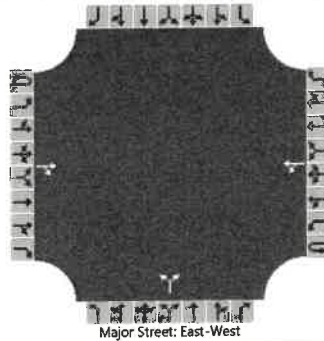
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		29												86		29	
Capacity, c (veh/h)		911												283		502	
v/c Ratio		0.03												0.30		0.06	
95% Queue Length, Q ₉₅ (veh)		0.1												1.2		0.2	
Control Delay (s/veh)		9.1	0.3											23.1		12.6	
Level of Service (LOS)		A	A											C		B	
Approach Delay (s/veh)		1.2												20.5			
Approach LOS		A												C			

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	J. Buckholz	Intersection	SW Bascom Norris Dr. / SW Tomoka Terrace
Agency/Co.	BUCKHOLZ TRAFFIC	Jurisdiction	Columbia County
Date Performed	1/10/2023	East/West Street	SW Bascom Norris Drive
Analysis Year	2023	North/South Street	SW Tomoka Terrace
Time Analyzed	Weekday PM Peak Hour	Peak Hour Factor	0.83
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	#23-1812		

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	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume (veh/h)			244	0		4	471			1		8				
Percent Heavy Vehicles (%)						0				0		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

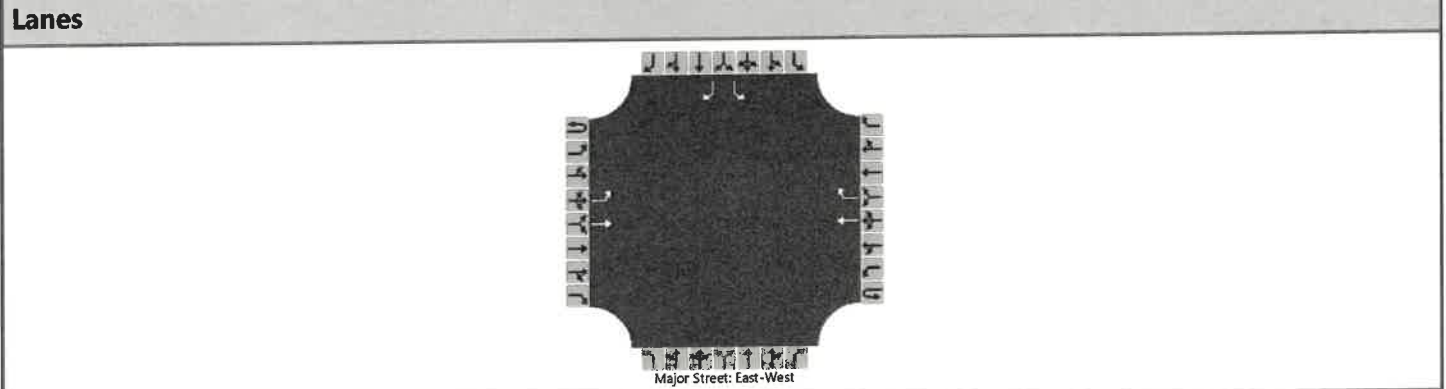
Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.10				6.40		6.20				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.20				3.50		3.30				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						5						11				
Capacity, c (veh/h)						1279						654				
v/c Ratio						0.00						0.02				
95% Queue Length, Q ₉₅ (veh)						0.0						0.1				
Control Delay (s/veh)						7.8	0.0					10.6				
Level of Service (LOS)						A	A					B				
Approach Delay (s/veh)						0.1				10.6						
Approach LOS						A				B						

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	J. Buckholz	Intersection	SW Bascom Norris Dr. / SW McFarlane Ave.
Agency/Co.	BUCKHOLZ TRAFFIC	Jurisdiction	Columbia County
Date Performed	1/18/2023	East/West Street	SW Bascom Norris Drive
Analysis Year	2026	North/South Street	SW McFarlane Avenue
Time Analyzed	PM Peak Hr. BUILD Traffic	Peak Hour Factor	0.83
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	#23-1812		



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	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	1	1	0	0	0	1	1		0	0	0		1	0	1
Configuration		L	T				T	R						L		R
Volume (veh/h)		27	250				490	102						73		26
Percent Heavy Vehicles (%)		5												2		0
Proportion Time Blocked																
Percent Grade (%)																0
Right Turn Channelized							No									No
Median Type Storage							Undivided									

Critical and Follow-up Headways

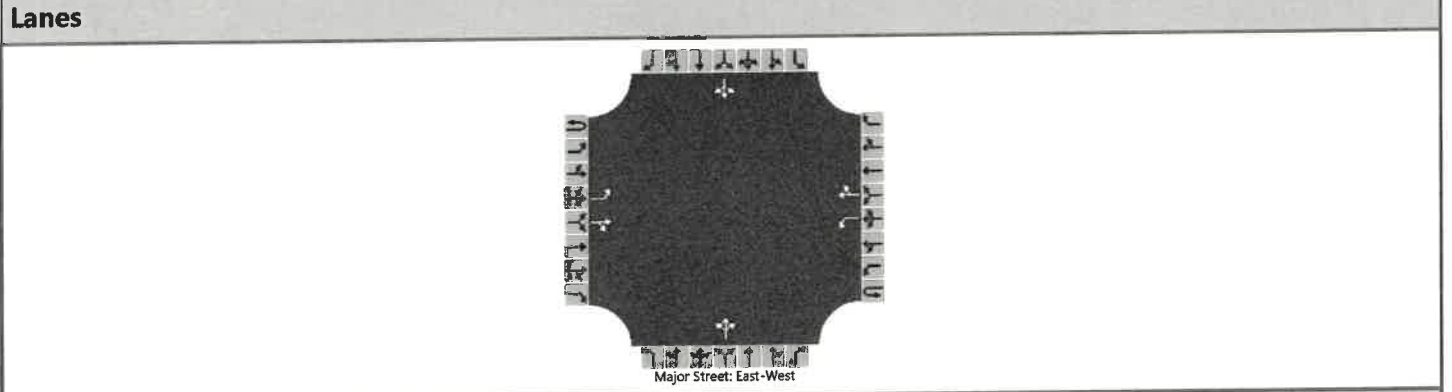
Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.15												6.42		6.20
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.25												3.52		3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		33												88		31	
Capacity, c (veh/h)		873												275		511	
v/c Ratio		0.04												0.32		0.06	
95% Queue Length, Q ₉₅ (veh)		0.1												1.3		0.2	
Control Delay (s/veh)		9.3												24.1		12.5	
Level of Service (LOS)		A												C		B	
Approach Delay (s/veh)		0.9												21.0			
Approach LOS		A												C			

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	J. Buckholz	Intersection	SW Bascom Norris Dr. / SW Tomoka Terr. / T...
Agency/Co.	BUCKHOLZ TRAFFIC	Jurisdiction	Columbia County
Date Performed	1/18/2023	East/West Street	SW Bascom Norris Drive
Analysis Year	2026	North/South Street	SW Tomoka Terrace / Tennis Driveway
Time Analyzed	PM Peak Hr. BUILD Traffic	Peak Hour Factor	0.83
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	#23-1812		



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	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12	
Priority																	
Number of Lanes	0	1	1	0	0	1	1	0		0	1	0		0	1	0	
Configuration		L		TR		L		TR			LTR				LTR		
Volume (veh/h)		6	260	0		4	491	6		1	1	9		6	1	6	
Percent Heavy Vehicles (%)		0				0				0	0	0		0	0	0	
Proportion Time Blocked																	
Percent Grade (%)										0				0			
Right Turn Channelized																	
Median Type Storage	Undivided																

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.10	6.50	6.20		7.10	6.50	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.00	3.30

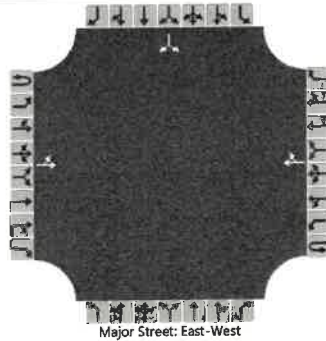
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		7				5					13					16	
Capacity, c (veh/h)		988				1258					543					319	
v/c Ratio		0.01				0.00					0.02					0.05	
95% Queue Length, Q ₉₅ (veh)		0.0				0.0					0.1					0.2	
Control Delay (s/veh)		8.7				7.9					11.8					16.9	
Level of Service (LOS)		A				A					B					C	
Approach Delay (s/veh)		0.2				0.1				11.8				16.9			
Approach LOS		A				A				B				C			

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	J. Buckholz	Intersection	SW Bascom Norris Dr. / East Condo Dr.
Agency/Co.	BUCKHOLZ TRAFFIC	Jurisdiction	Columbia County
Date Performed	1/18/2023	East/West Street	SW Bascom Norris Drive
Analysis Year	2026	North/South Street	East Condo Driveway
Time Analyzed	PM Peak Hr. BUILD Traffic	Peak Hour Factor	0.83
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	#23-1812		

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	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR								LR
Volume (veh/h)		4	269				503	11						7		2
Percent Heavy Vehicles (%)		2												2		2
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

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

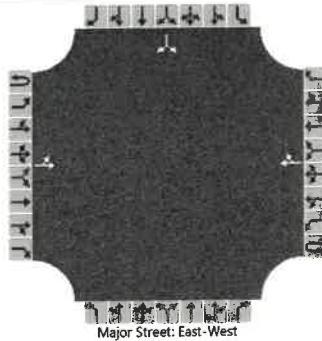
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		5														11	
Capacity, c (veh/h)		961														318	
v/c Ratio		0.01														0.03	
95% Queue Length, Q ₉₅ (veh)		0.0														0.1	
Control Delay (s/veh)		8.8	0.1													16.7	
Level of Service (LOS)		A	A													C	
Approach Delay (s/veh)		0.2												16.7			
Approach LOS		A												C			

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	J. Buckholz	Intersection	SW Bascom Norris Dr. / West Condo Dr.
Agency/Co.	BUCKHOLZ TRAFFIC	Jurisdiction	Columbia County
Date Performed	1/18/2023	East/West Street	SW Bascom Norris Drive
Analysis Year	2026	North/South Street	West Condo Driveway
Time Analyzed	PM Peak Hr. BUILD Traffic	Peak Hour Factor	0.83
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	#23-1812		

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	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume (veh/h)		6	269				497	8						4		4
Percent Heavy Vehicles (%)		2												2		2
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type Storage		Undivided														

Critical and Follow-up Headways

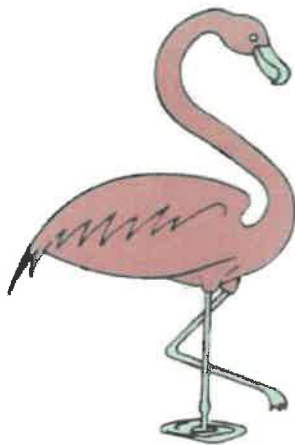
Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.12												6.42		6.22
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.22												3.52		3.32

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		7														10
Capacity, c (veh/h)		970														366
v/c Ratio		0.01														0.03
95% Queue Length, Q ₉₅ (veh)		0.0														0.1
Control Delay (s/veh)		8.7	0.1													15.1
Level of Service (LOS)		A	A													C
Approach Delay (s/veh)		0.3												15.1		
Approach LOS		A												C		

APPENDIX E

CAPACITY CALCULATIONS SIGNALIZED INTERSECTIONS



AM PEAK HOUR

HCS Signalized Intersection Results Summary

General Information					Intersection Information										
Agency	BUCKHOLZ TRAFFIC				Duration, h	0.250									
Analyst	J. Buckholz	Analysis Date	Jan 16, 2023		Area Type	Other									
Jurisdiction	Columbia County	Time Period	AM Peak Hour		PHF	0.84									
Urban Street	SR 47	Analysis Year	2023		Analysis Period	1> 16:30									
Intersection	SW Bascom Norris Drive	File Name	2023_AM_SR47_SWBascomNorris.xus												
Project Description	2023 AM Peak Hr Traffic														
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				148	308	50	47	321	3	119	541	47	9	300	48
Signal Information															
Cycle, s	79.0	Reference Phase	2												
Offset, s	110	Reference Point	End												
Uncoordinated	Yes	Simult. Gap E/W	Off												
Force Mode	Fixed	Simult. Gap N/S	Off												
Green	1.3	5.6	15.0	4.2	4.4	20.9									
Yellow	4.8	0.0	4.8	4.0	0.0	4.0									
Red	2.0	0.0	2.0	2.4	0.0	3.6									
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase				3	8	7	4	1	6	5	2				
Case Number				1.1	4.0	1.1	4.0	1.1	4.0	1.1	4.0				
Phase Duration, s				15.0	32.9	10.6	28.5	13.7	27.4	8.1	21.8				
Change Period, (Y+R _c), s				7.3	7.6	6.4	7.6	6.8	6.8	6.8	6.8				
Max Allow Headway (MAH), s				4.9	6.9	4.9	6.8	4.9	4.4	4.9	4.5				
Queue Clearance Time (g _s), s				7.4	18.7	3.7	17.3	6.9	16.0	2.4	10.5				
Green Extension Time (g _e), s				0.4	3.2	0.1	3.6	0.3	3.1	0.0	1.8				
Phase Call Probability				0.98	1.00	0.71	1.00	0.96	1.00	0.21	1.00				
Max Out Probability				0.22	0.47	0.00	0.12	0.11	0.01	0.00	0.00				
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h				176	426		56	386		142	355	345	11	211	204
Adjusted Saturation Flow Rate (s), veh/h/ln				1810	1796		1781	1852		1781	1841	1789	1810	1826	1738
Queue Service Time (g _s), s				5.4	16.7		1.7	15.3		4.9	13.9	14.0	0.4	8.3	8.5
Cycle Queue Clearance Time (g _c), s				5.4	16.7		1.7	15.3		4.9	13.9	14.0	0.4	8.3	8.5
Green Ratio (g/C)				0.36	0.32		0.32	0.26		0.29	0.26	0.26	0.21	0.19	0.19
Capacity (c), veh/h				340	575		267	490		326	481	467	165	347	330
Volume-to-Capacity Ratio (X)				0.517	0.742		0.210	0.787		0.434	0.738	0.740	0.065	0.608	0.617
Back of Queue (Q), ft/ln (95 th percentile)				102.7	317.5		33	312.7		90.1	257.4	260.6	7.4	174.4	170.1
Back of Queue (Q), veh/ln (95 th percentile)				4.1	12.3		1.3	12.2		3.5	10.0	9.8	0.3	6.7	6.5
Queue Storage Ratio (RQ) (95 th percentile)				0.82	0.00		0.22	0.66		0.30	0.00	0.00	0.02	0.00	0.00
Uniform Delay (d ₁), s/veh				19.6	24.0		20.3	27.0		22.4	26.7	26.7	25.8	29.3	29.4
Incremental Delay (d ₂), s/veh				1.7	7.1		0.5	9.7		1.3	3.2	3.3	0.2	2.4	2.7
Initial Queue Delay (d ₃), s/veh				0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh				21.3	31.1		20.9	36.7		23.7	29.9	30.0	26.0	31.8	32.0
Level of Service (LOS)				C	C		C	D		C	C	C	C	C	C
Approach Delay, s/veh / LOS				28.2		C	34.7		C	28.9		C	31.8		C
Intersection Delay, s/veh / LOS				30.4						C					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS															
Bicycle LOS Score / LOS															

HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	BUCKHOLZ TRAFFIC				Duration, h	0.250										
Analyst	J. Buckholz	Analysis Date	Jan 17, 2023		Area Type	Other										
Jurisdiction	Columbia County	Time Period	AM Peak Hour		PHF	0.84										
Urban Street	SR 47	Analysis Year	2026		Analysis Period	1> 16:30										
Intersection	SW Bascom Norris Drive	File Name	2026_B_AM_SR47_SWBascomNorris.xus													
Project Description	2026 BUILD AM Peak Hr Traffic															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					159	331	54	48	339	3	124	557	48	9	309	51
Signal Information																
Cycle, s	81.5	Reference Phase	2													
Offset, s	110	Reference Point	End													
Uncoordinated	Yes	Simult. Gap E/W	Off													
Force Mode	Fixed	Simult. Gap N/S	Off													
Green	1.3	6.0	15.0	4.4	4.8	22.4										
Yellow	4.8	0.0	4.8	4.0	0.0	4.0										
Red	2.0	0.0	2.0	2.4	0.0	3.6										
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					3	8	7	4	1	6	5	2				
Case Number					1.1	4.0	1.1	4.0	1.1	4.0	1.1	4.0				
Phase Duration, s					15.6	34.8	10.8	30.0	14.1	27.8	8.1	21.8				
Change Period, (Y+R _c), s					7.3	7.6	6.4	7.6	6.8	6.8	6.8	6.8				
Max Allow Headway (MAH), s					4.9	6.9	4.9	6.8	4.9	4.4	4.9	4.5				
Queue Clearance Time (g _s), s					7.9	20.6	3.8	18.7	7.2	17.0	2.4	11.2				
Green Extension Time (g _e), s					0.5	3.0	0.1	3.7	0.3	3.2	0.0	1.9				
Phase Call Probability					0.99	1.00	0.73	1.00	0.96	1.00	0.22	1.00				
Max Out Probability					0.31	0.67	0.00	0.18	0.15	0.01	0.00	0.00				
Movement Group Results					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement					3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h					189	458		57	407		148	365	355	11	218	211
Adjusted Saturation Flow Rate (s), veh/h/ln					1810	1795		1781	1853		1781	1841	1789	1810	1826	1736
Queue Service Time (g _s), s					5.9	18.6		1.8	16.7		5.2	15.0	15.0	0.4	9.0	9.2
Cycle Queue Clearance Time (g _c), s					5.9	18.6		1.8	16.7		5.2	15.0	15.0	0.4	9.0	9.2
Green Ratio (g/C)					0.38	0.33		0.33	0.27		0.29	0.26	0.26	0.20	0.18	0.18
Capacity (c), veh/h					343	599		260	509		317	475	462	154	336	320
Volume-to-Capacity Ratio (X)					0.552	0.765		0.220	0.800		0.466	0.768	0.770	0.070	0.649	0.659
Back of Queue (Q), ft/ln (95 th percentile)					113	348.3		34.6	336.1		98	275.7	279.2	7.8	191.3	186.1
Back of Queue (Q), veh/ln (95 th percentile)					4.5	13.5		1.4	13.1		3.9	10.7	10.5	0.3	7.4	7.2
Queue Storage Ratio (RQ) (95 th percentile)					0.90	0.00		0.23	0.71		0.33	0.00	0.00	0.03	0.00	0.00
Uniform Delay (d ₁), s/veh					19.8	24.3		20.6	27.5		23.2	28.0	28.0	27.0	30.8	30.9
Incremental Delay (d ₂), s/veh					2.0	7.9		0.6	10.1		1.5	3.7	3.9	0.3	3.0	3.3
Initial Queue Delay (d ₃), s/veh					0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh					21.8	32.2		21.2	37.6		24.8	31.7	31.9	27.3	33.8	34.2
Level of Service (LOS)					C	C		C	D		C	C	C	C	C	C
Approach Delay, s/veh / LOS					29.1		C	35.6		D	30.6		C	33.8		C
Intersection Delay, s/veh / LOS					31.7			C								
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS																
Bicycle LOS Score / LOS																

PM PEAK HOUR

HCS Signalized Intersection Results Summary

General Information					Intersection Information																															
Agency	BUCKHOLZ TRAFFIC				Duration, h	0.250																														
Analyst	J. Buckholz	Analysis Date	Jan 11, 2023		Area Type	Other																														
Jurisdiction	Columbia County		Time Period	PM Peak Hour	PHF	0.83																														
Urban Street	SR 47		Analysis Year	2023	Analysis Period	1> 16:30																														
Intersection	SW Bascom Norris Drive		File Name	2023_PM_SR47_SWBascomNorris.xus																																
Project Description	2023 PM Peak Hr Traffic																																			
Demand Information					EB			WB			NB			SB																						
Approach Movement	L			T			R			L			T			R																				
Demand (v), veh/h	82			175			38			74			271			1			162			271			33			8			548			126		
Signal Information					Green			Yellow			Red			1			2			3			4													
Cycle, s	85.7	Reference Phase	2		1.2			0.6			23.8			5.3			1.0			19.2			1			2			3			4				
Offset, s	110	Reference Point	End		4.8			4.8			4.8			4.0			0.0			4.0			1			2			3			4				
Uncoordinated	Yes	Simult. Gap E/W	Off		2.0			2.0			2.0			2.4			0.0			3.6			1			2			3			4				
Force Mode	Fixed	Simult. Gap N/S	Off																																	
Timer Results					EBL			EBT			WBL			WBT			NBL			NBT			SBL			SBT										
Assigned Phase	3			8			7			4			1			6			5			2														
Case Number	1.1			4.0			1.1			4.0			1.1			4.0			1.1			4.0														
Phase Duration, s	12.7			27.9			11.7			26.8			15.5			38.1			8.0			30.6														
Change Period, (Y+R _c), s	7.3			7.6			6.4			7.6			6.8			6.8			6.8			6.8														
Max Allow Headway (MAH), s	4.9			6.9			4.9			6.8			4.9			4.4			4.9			4.5														
Queue Clearance Time (g _s), s	5.5			12.9			5.3			16.1			8.3			8.5			2.3			20.1														
Green Extension Time (g _e), s	0.2			2.2			0.2			3.0			0.5			1.5			0.0			3.7														
Phase Call Probability	0.90			1.00			0.88			1.00			0.99			1.00			0.21			1.00														
Max Out Probability	0.03			0.06			0.02			0.07			0.35			0.00			0.00			0.04														
Movement Group Results					EB			WB			NB			SB																						
Approach Movement	L			T			R			L			T			R			L			T			R											
Assigned Movement	3			8			18			7			4			14			1			6			16			5			2			12		
Adjusted Flow Rate (v), veh/h	99			257						89			328						195			185			181			10			419			393		
Adjusted Saturation Flow Rate (s), veh/h/ln	1810			1798						1767			1869						1781			1767			1699			1810			1856			1735		
Queue Service Time (g _s), s	3.5			10.9						3.3			14.1						6.3			6.4			6.5			0.3			18.1			18.1		
Cycle Queue Clearance Time (g _c), s	3.5			10.9						3.3			14.1						6.3			6.4			6.5			0.3			18.1			18.1		
Green Ratio (g/C)	0.29			0.24						0.29			0.22						0.40			0.37			0.37			0.29			0.28			0.28		
Capacity (c), veh/h	262			425						289			419						310			646			621			386			517			483		
Volume-to-Capacity Ratio (X)	0.376			0.603						0.308			0.781						0.630			0.287			0.291			0.025			0.811			0.813		
Back of Queue (Q), ft/ln (95 th percentile)	69.1			225.2						63.1			300.4						118.4			118.2			114.9			6.2			332.1			321.2		
Back of Queue (Q), veh/ln (95 th percentile)	2.8			8.8						2.5			11.8						4.7			4.4			4.3			0.2			13.0			12.4		
Queue Storage Ratio (RQ) (95 th percentile)	0.55			0.00						0.42			0.63						0.39			0.00			0.00			0.02			0.00			0.00		
Uniform Delay (d ₁), s/veh	24.3			29.1						23.9			31.3						20.4			19.3			19.3			21.6			28.8			28.8		
Incremental Delay (d ₂), s/veh	1.3			4.9						0.9			10.9						3.0			0.3			0.4			0.0			4.4			4.7		
Initial Queue Delay (d ₃), s/veh	0.0			0.0						0.0			0.0						0.0			0.0			0.0			0.0			0.0			0.0		
Control Delay (d), s/veh	25.6			34.1						24.7			42.1						23.4			19.6			19.7			21.6			33.2			33.6		
Level of Service (LOS)	C			C						C			D						C			B			B			C			C			C		
Approach Delay, s/veh / LOS	31.7			C						38.4			D						21.0			C						33.2			C					
Intersection Delay, s/veh / LOS				30.8															C																	
Multimodal Results					EB			WB			NB			SB																						
Pedestrian LOS Score / LOS																																				
Bicycle LOS Score / LOS																																				

HCS signalized Intersection Results Summary

General Information				Intersection Information			
Agency	BUCKHOLZ TRAFFIC			Duration, h	0.250		
Analyst	J. Buckholz	Analysis Date	Jan 17, 2023	Area Type	Other		
Jurisdiction	Columbia County	Time Period	PM Peak Hour	PHF	0.83		
Urban Street	SR 47	Analysis Year	2026	Analysis Period	1> 16:30		
Intersection	SW Bascom Norris Drive	File Name	2026_B_PM_SR47_SWBascomNorris.xus				
Project Description	2026 BUILD PM Peak Hr Traffic						

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	89	189	40	76	292	1	172	279	34	8	564	136

Signal Information																								
Cycle, s	91.3	Reference Phase	2	Green	1.3	1.4	25.9	5.4	1.4	21.4	Yellow	4.8	4.8	4.8	4.0	0.0	4.0	Red	2.0	2.0	2.0	2.4	0.0	3.6
Offset, s	110	Reference Point	End	Uncoordinated	Yes	Simult. Gap E/W	Off	Force Mode	Fixed	Simult. Gap N/S	Off													

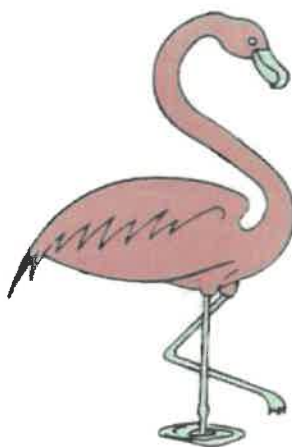
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	3	8	7	4	1	6	5	2
Case Number	1.1	4.0	1.1	4.0	1.1	4.0	1.1	4.0
Phase Duration, s	13.2	30.4	11.8	29.0	16.3	40.9	8.1	32.7
Change Period, (Y+R _c), s	7.3	7.6	6.4	7.6	6.8	6.8	6.8	6.8
Max Allow Headway (MAH), s	4.9	6.9	4.9	6.8	4.9	4.4	4.9	4.5
Queue Clearance Time (g _s), s	6.0	14.4	5.5	18.3	9.1	9.0	2.3	22.1
Green Extension Time (g _e), s	0.2	2.3	0.2	3.1	0.4	1.6	0.0	3.8
Phase Call Probability	0.93	1.00	0.90	1.00	0.99	1.00	0.22	1.00
Max-Out Probability	0.05	0.11	0.03	0.12	0.56	0.00	0.00	0.07

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	107	276		92	353		207	191	186	10	436	407
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1799		1767	1869		1781	1767	1699	1810	1856	1730
Queue Service Time (g _s), s	4.0	12.4		3.5	16.3		7.1	6.9	7.0	0.3	20.1	20.1
Cycle Queue Clearance Time (g _c), s	4.0	12.4		3.5	16.3		7.1	6.9	7.0	0.3	20.1	20.1
Green Ratio (g/C)	0.30	0.25		0.29	0.23		0.41	0.37	0.37	0.30	0.28	0.28
Capacity (c), veh/h	255	450		285	439		306	661	636	387	528	492
Volume-to-Capacity Ratio (X)	0.420	0.613		0.321	0.803		0.677	0.289	0.293	0.025	0.827	0.828
Back of Queue (Q), ft/ln (95 th percentile)	80.1	249.4		69.1	337.6		136.3	129.9	126.2	6.6	368.7	355.7
Back of Queue (Q), veh/ln (95 th percentile)	3.2	9.7		2.7	13.3		5.4	4.8	4.7	0.3	14.4	13.7
Queue Storage Ratio (RQ) (95 th percentile)	0.64	0.00		0.46	0.71		0.45	0.00	0.00	0.02	0.00	0.00
Uniform Delay (d ₁), s/veh	25.4	30.3		25.0	32.9		21.7	20.1	20.1	22.6	30.6	30.6
Incremental Delay (d ₂), s/veh	1.6	4.9		0.9	11.6		3.7	0.3	0.4	0.0	5.5	5.9
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	27.0	35.2		25.9	44.6		25.4	20.4	20.5	22.6	36.0	36.5
Level of Service (LOS)	C	D		C	D		C	C	C	C	D	D
Approach Delay, s/veh / LOS	32.9	C		40.7	D		22.2	C			36.1	D
Intersection Delay, s/veh / LOS	32.9						C					

Multimodal Results	EB	WB	NB	SB
Pedestrian LOS Score / LOS				
Bicycle LOS Score / LOS				

APPENDIX F

SIGNAL TIMINGS



STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION - DISTRICT TWO
Signal Retiming - SR 47 AND US 41
FIN 211083-2-32

Designed By:	SMP
Date:	8/10/2015
Checked By:	RAA
Date:	8/10/2015

Section		Mile Post		Node	5
Sig ID		Controller	Nahtec 970	System ID	
Maj. Street	SR 47	Orientation	N-S	SOP	10
Min. Street	Bascom Norris Dr	Orientation	E-W		

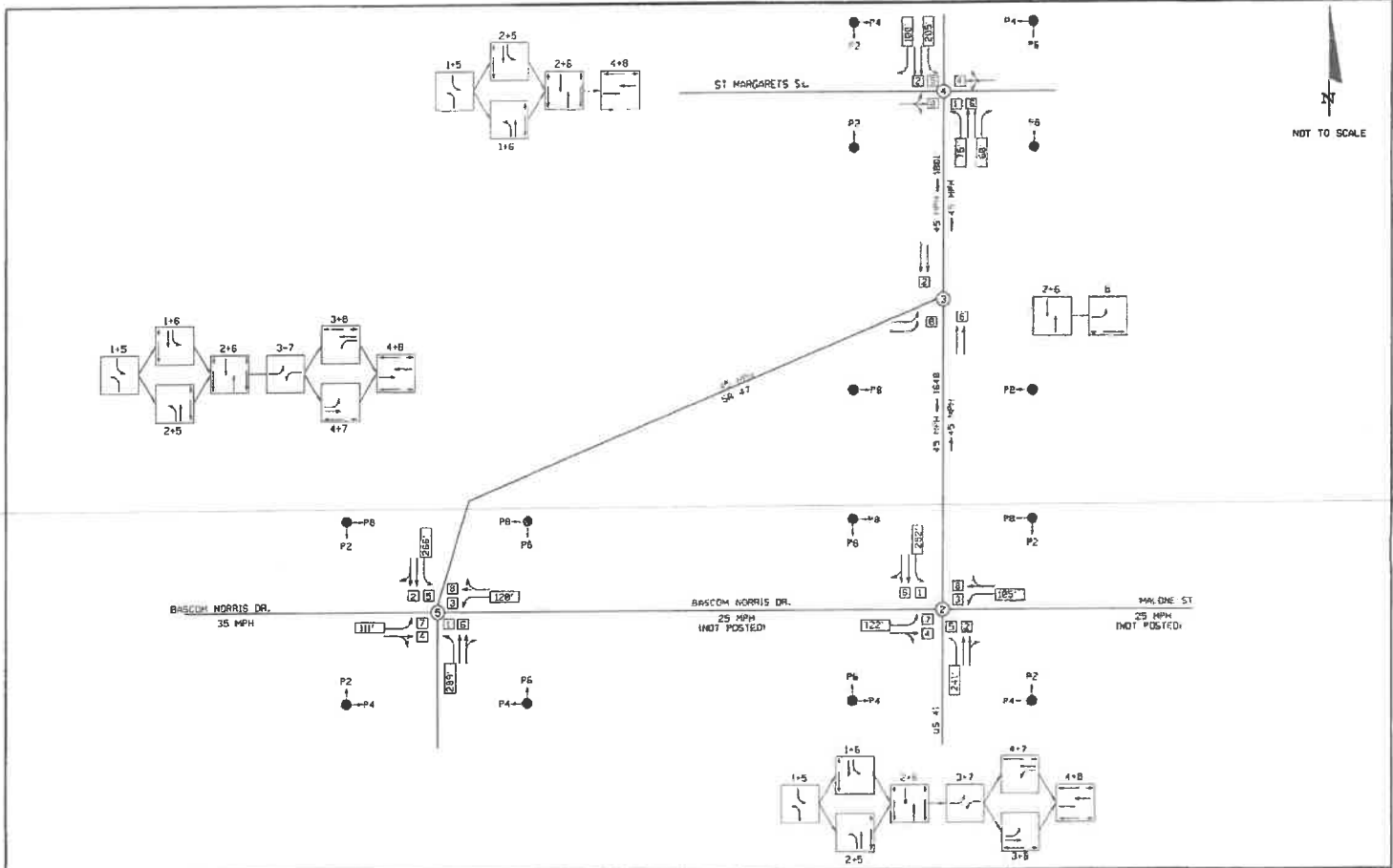
Pedestrians									
Movement # (Controller Phase Ø)	1	2	3	4	5	6	7	8	Notes
Direction	NBL	SB	EBL	WB	SBL	NB	WBL	EB	
Speed Limit (mph)	45	45	25	35	45	45	35	25	
Vehicle Traversed Width	121	142	158	148	118	140	154	148	
Slope of Approach Grade	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
Ped-X (curb to curb)		82		123		76		113	
Crossing Time		24		36		22		33	
Max Ped-X (max ped det to curb)		33		22		45		33	
Crossing Time	/	39	/	49	/	41	/	49	
Slope of Approach (smart level)	0.00%	0.00%	-1.60%	0.00%	0.00%	0.00%	0.00%	-1.60%	




Controller Timings (seconds)									
Movement # (Controller Phase Ø)	1	2	3	4	5	6	7	8	Notes
Direction	NBL	SB	EBL	WB	SBL	NB	WBL	EB	
Turn Type	Prot/Perm		Prot/Perm		Prot/Perm		Prot/Perm		
Min Green	6	15	6	10	6	15	6	7	
Ext	4.0	4.0	4.0	6.0	4.0	4.0	4.0	6.0	
Yellow	4.8	4.8	3.4	4.0	4.8	4.8	4.0	3.4	
All Red	2.0	2.0	3.9	3.6	2.0	2.0	2.4	3.6	
Max I	15	40	15	36	15	40	15	30	
Max II	15	70	18	44	15	70	18	44	
Walk		7		7		7		7	
Fashing Don't Walk		24		36		22		33	
Min Splits	13.0	38.0	14.0	51.0	13.0	38.0	13.0	47.0	
Detector Memory		On				On			
Det. Cross Switch.	Yes				Yes				
Recall		Min				Min			
CNA									
Coord Phase		Yes				Yes			

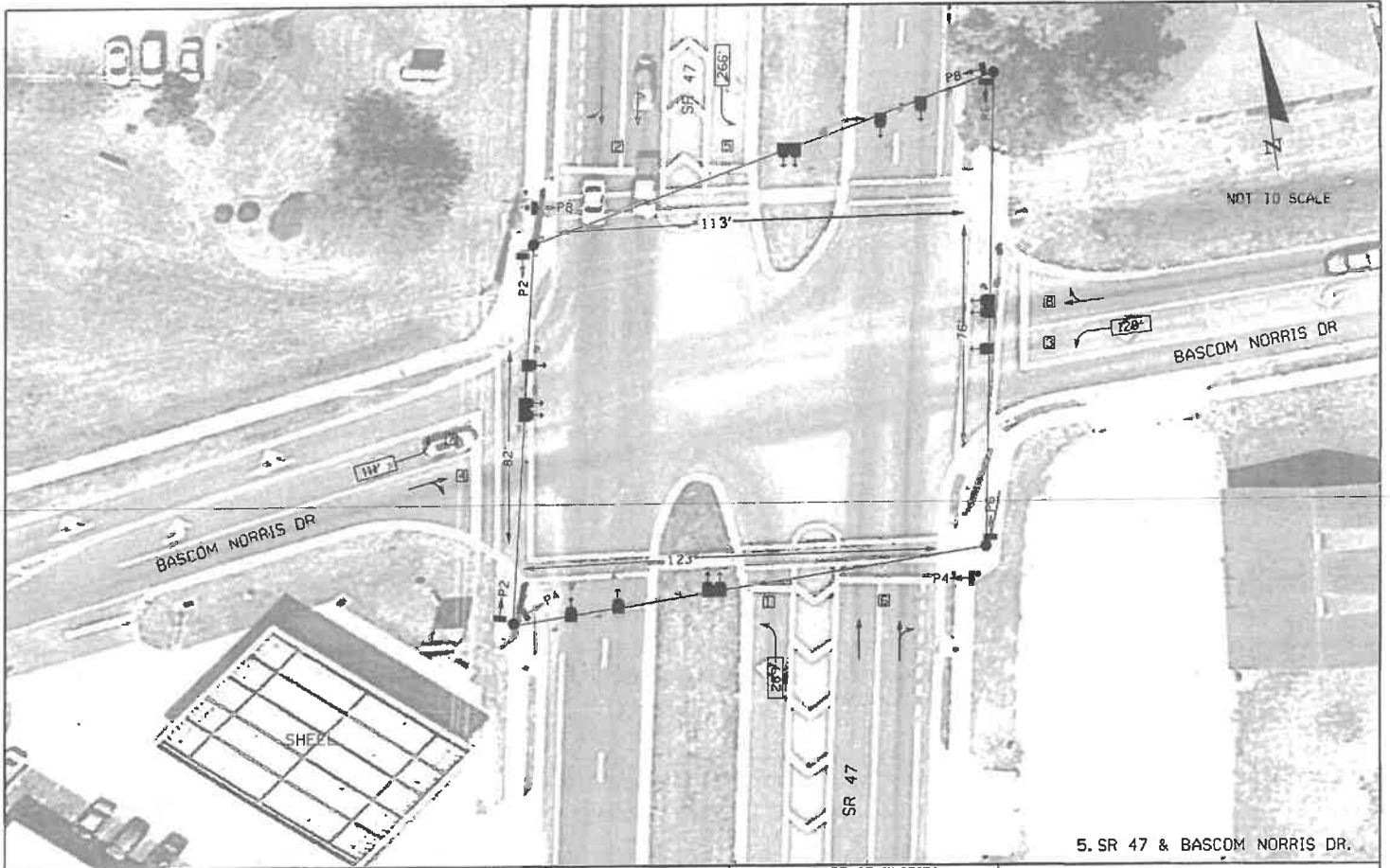
Coordination Timings (seconds)												
Plan	Pattern	C-O-S	Splits						Cycle Length	Offset A		
AM	1	566	44	38	45	69	45	37	75	33	100	24
MIDDAY	2	277	77	44	77	32	70	46	76	32	110	5
PM	3	377	76	56	76	36	75	44	76	65	110	66
PM School	6	544	74	38	44	44	74	36	77	47	110	85
All School	8	677	74	56	75	39	45	37	75	33	100	24

- Notes:
- 1) Offset referenced to "end of main street green"
 - 2) Max II during coordination
 - 3) Fixed force-offs
 - 4) Red revert is 2.0 for all phases
 - 5) φ4 & φ8 on min recall during patterns 1, 2, 3, & 5
 - 6) φ2 & φ6 on max recall during patterns 1, 2, 3, & 5
 - 7) φ2, φ6, & φ8 on max recall and φ4 on min recall during pattern 6

		Signal Phasing - All Plans			
Ring-1	Ring-2	1	2	3	4
		5	6	7	8



NODE NO. 1 STORAGE LENGTH 35' MOVEMENT/PHASE NO. 2 LD	SIGNAL OPERATING PLAN  PEDESTRIAN SIGNAL  LANE GEOMETRY 	HDR Engineering, Inc. 215 E. Robinson Street, Suite 400 Dania, FL 33001-1945 (407) 428-4208 www.hdr.com Certificate of Authorization No. 4213	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION <table border="1"> <tr> <td>ROAD NO.</td> <td>COUNTY</td> <td>FINANCIAL PROJECT NO.</td> </tr> <tr> <td>SR 47 & US 41</td> <td>COLUMBIA</td> <td>211083-2-32</td> </tr> </table>	ROAD NO.	COUNTY	FINANCIAL PROJECT NO.	SR 47 & US 41	COLUMBIA	211083-2-32	LINK NODE DIAGRAM DISTRICTWIDE SIGNAL RETIMING
ROAD NO.	COUNTY	FINANCIAL PROJECT NO.								
SR 47 & US 41	COLUMBIA	211083-2-32								



STORAGE LENGTH	315'	SIGNAL HEADS		MOR Engineering, Inc. 305 E. Robinson Street, Suite 400 Orlando, FL 32801-3744 (407) 428-4288 www.mor-inc.com Certificate of Authorization No. 4233	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		SIGNALIZED INTERSECTION SKETCH	
SIGNAL PHASE	2	PEDESTRIAN SIGNAL			ROAD NO.	COUNTY		FINANCIAL PROJECT ID
L.D.	LANE DROP	LANE GEOMETRY			SR 47	COLUMBIA		211083-2-32