MEMORANDUM

To: The City of Panama City Beach

From: Kimley-Horn and Associates

Date: November 15, 2022

Subject: Hombre Apartments Traffic Analysis

Purpose and Methodology

The purpose of this memorandum is to summarize the turn lane analysis prepared for the proposed multifamily housing development located southwest of the intersection of US 98 and N Glades Trail in Panama City Beach, Florida. The proposed development has two access points; the US 98 access is a right-in/right-out driveway, and the N Glades Trail access is a full access driveway. There is an additional access driveway on Coyote Pass which is not included in the analysis because of its restriction for emergency vehicles only. This memorandum provides the methodology and analysis for evaluating the need for an eastbound right-turn lane on US 98, as well as a northbound left-turn lane and a southbound right-turn lane on N Glades Trail. A map of the project location is shown below in **Figure 1**, and a site plan for the proposed development is available in **Attachment A**.

Figure 1: Project Location

Trip Generation

The subject development is proposed to consist of 267 multifamily units. The Institute of Transportation Engineers (ITE) *Trip Generation Manual, 11th Edition* was utilized to calculate the trip generation potential of the proposed development. ITE trip generation rates for Land Use Code 220 (Multifamily Housing [Low-Rise]) were applied to calculate the daily and PM peak hour trips anticipated from the proposed development. The development is expected to generate approximately 1,787 daily net new trips and 135 PM peak hour net new trips (85 entering, 50 exiting). **Table 1** summarizes the trip generation calculations.

Table 1: Trip Generation Calculations

ITE LUC	Land Use	Density		Daily Trips	PM Peak Hour		
					Total	In	Out
220	Multifamily Housing (Low-Rise)	267	Units	1,787	135	85	50
GROSS TRIPS				**1,787**	**135**	**85**	**50**

Traffic Development

Existing traffic volumes were obtained from the Florida Department of Transportation (FDOT) *Florida Traffic Online (2021)* and from a previously submitted FDOT intersection analysis report completed at the site. The peak directional volumes for US 98 were retrieved from count station 460203, just east of the site. The seasonal factor corresponding to the week of data collection for US 98 was 0.99. Since the seasonal factor was less than 1.0, to provide for a conservative analysis, it was not applied. Historical traffic data from surrounding count stations was also obtained from the past five years to calculate the growth rate for the area during the buildout year (2023), which resulted in a 2.73% annual growth. The traffic data is provided in **Attachment B.**

Trip Distribution

The peak hour distribution was determined for the trips generated by the proposed development. The trip distribution is consistent with existing traffic patterns from FDOT *Traffic Online*. The project trip distribution is shown below in **Figure 2**. The future buildout turning movement volumes for the site driveways were assigned based on the trip generation and distribution. The future buildout volumes are shown below in **Figure 3**.

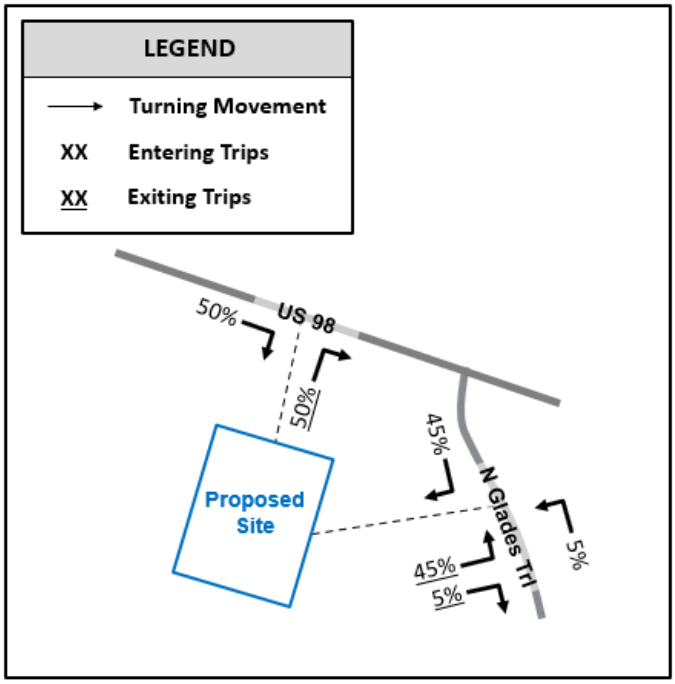


Figure 2: Project Trip Distribution

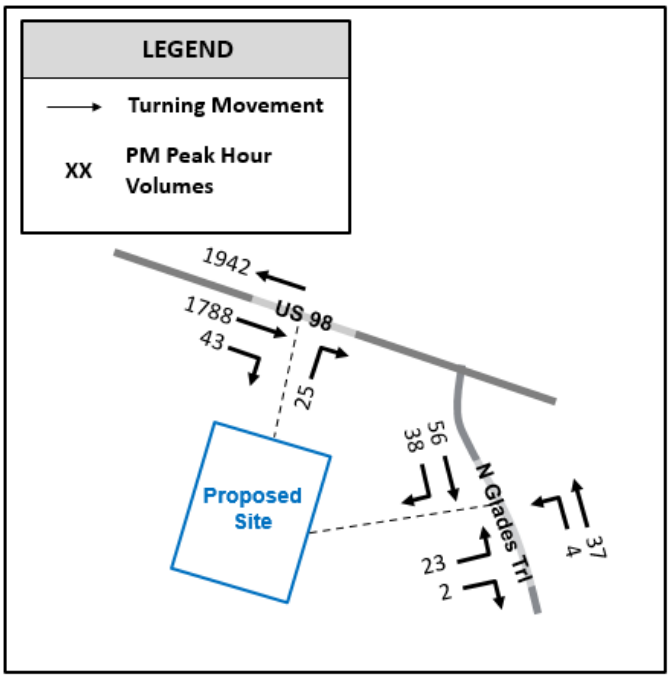
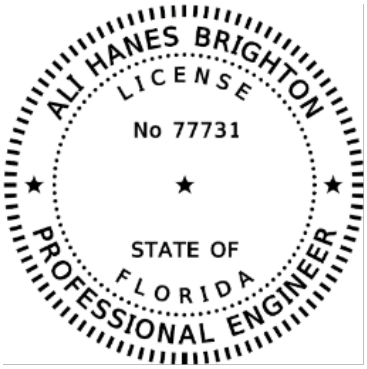


Figure 3: Future Traffic Volumes

Analysis

Guidelines provided by the *NCHRP Report 457 Evaluating Intersection Improvements – An Engineering Study Guide* were followed to evaluate the need for a northbound left-turn lane and a southbound right-turn lane on N Glades Trail. Right and left-turn lanes are not warranted on N Glades Trail. The turn lane warrant spreadsheets are included in **Attachment C**.

Guidelines provided by the *FDOT Access Management Guidebook (2019)* were followed to evaluate the need for an eastbound right-turn lane on US 98. The recommended guidelines state that for roadways with a posted speed limit of more than 45 miles per hour (mph), a threshold of 35 to 55 right-turns per hour should be met for exclusive right-turn lanes. The higher threshold of 55 right-turn movements per hour is for multilane highways. The projected eastbound right-turn volume on US 98 is expected to be 43 vehicles per hour during the PM peak hour under future buildout conditions. Therefore, the project is not anticipated to warrant an exclusive eastbound right-turn lane along US 98 based on FDOT guidelines.



This document has been digitally signed and sealed by Ali Hanes Brighton, P.E. on the date adjacent to the seal.

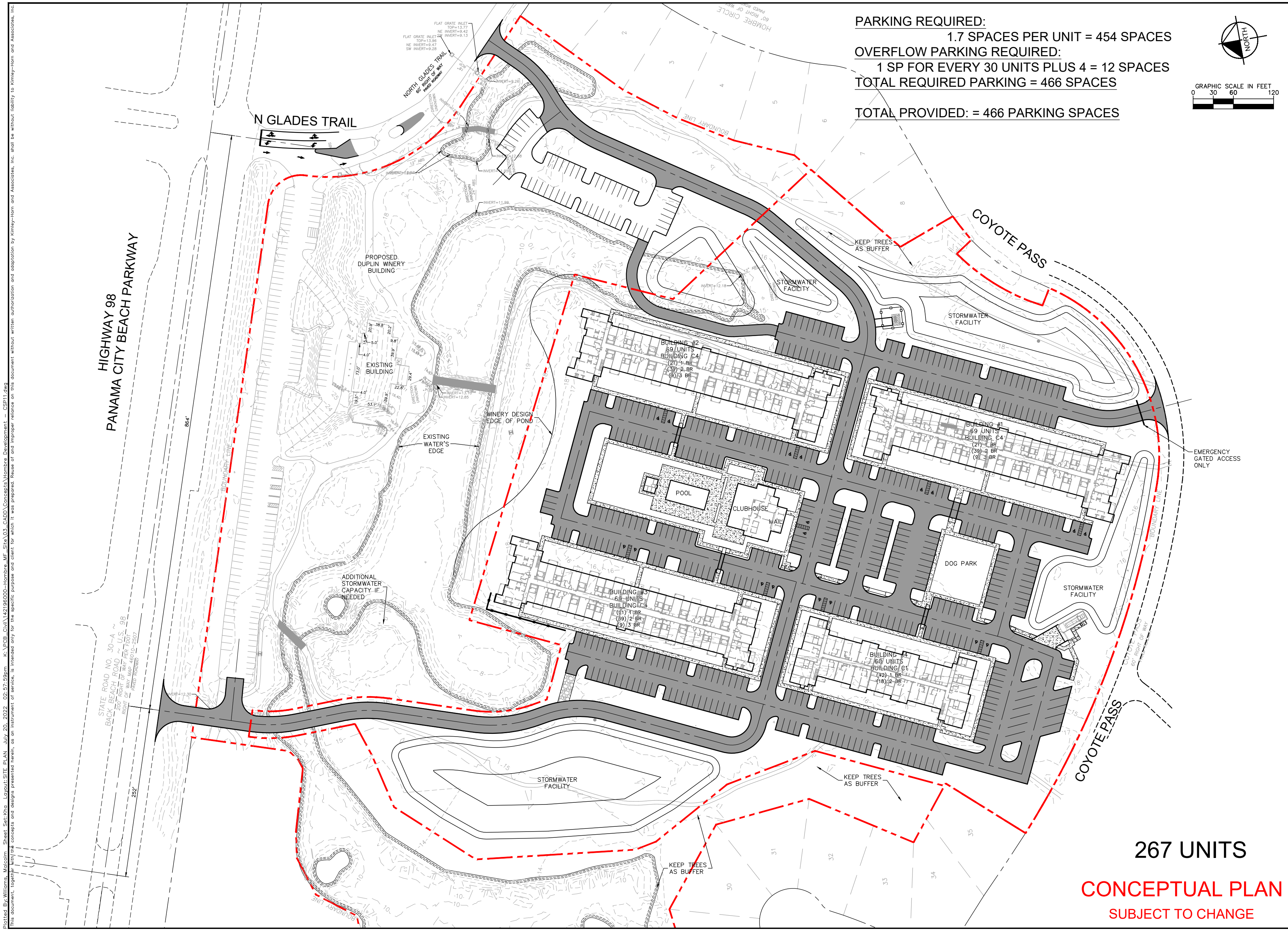
Ali H Brighton
2022.11.15
13:47:54-05'00'

Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

Ali H. Brighton, P.E.
Florida Registration Number 77731
Kimley-Horn and Associates, Inc.
2619 Centennial Boulevard, Suite 200
Tallahassee, Florida 32308
Registry 35106

Kimley»Horn

Attachment A: Site Plan


PARKING REQUIRED:
1.7 SPACES PER UNIT = 454 SPACES
OVERFLOW PARKING REQUIRED:
1 SP FOR EVERY 30 UNITS PLUS 4 = 12 SPACES
TOTAL REQUIRED PARKING = 466 SPACES
TOTAL PROVIDED: = 466 PARKING SPACES
NORTH
GRAPHIC SCALE IN FEET
0 30 60 120
N GLADES TRAIL
NORTH GLADES TRAIL 60' RIGHT OF WAY
HIGHWAY 98
PANAMA CITY BEACH PARKWAY
STATE ROAD NO. 30-A ~ U.S. 98
BACK BEACH ROAD
PROPOSED DUPLIN WINERY BUILDING
EXISTING BUILDING
EXISTING WATER'S EDGE
WINERY DESIGN EDGE OF POND
ADDITIONAL STORMWATER CAPACITY IF NEEDED
BUILDING #2
69 UNITS
BUILDING C4
(21) 1 BR
(39) 2 BR
(9) 3 BR
BUILDING #1
69 UNITS
BUILDING C4
(21) 1 BR
(39) 2 BR
(9) 3 BR
BUILDING #3
69 UNITS
BUILDING C4
(21) 1 BR
(39) 2 BR
(9) 3 BR
BUILDING #4
60 UNITS
BUILDING C1
(42) 1 BR
(18) 2 BR
POOL
CLUBHOUSE
MAIL
DOG PARK
STORMWATER FACILITY
STORMWATER FACILITY
STORMWATER FACILITY
STORMWATER FACILITY
KEEP TREES AS BUFFER
KEEP TREES AS BUFFER
KEEP TREES AS BUFFER
COYOTE PASS
COYOTE PASS
HOMBRE CIRCLE
BOUNDARY LINE
EMERGENCY GATED ACCESS ONLY
864'
252'
267 UNITS
CONCEPTUAL PLAN
SUBJECT TO CHANGE

PRELIMINARY
NOT FOR CONSTRUCTION

No.	REVISIONS	DATE	BY

Kimley»Horn

120 RICHARD JACKSON BOULEVARD SUITE 230
PANAMA CITY BEACH, FL 32407 PHONE: 850-553-3522
WWW.KIMLEY-HORN.COM

DATE: 3-11-2022

KHA PROJECT	
DATE	JULY 2022
SCALE	AS SHOWN
DESIGNED BY	JMB
DRAWN BY	MDW
CHECKED BY	JMB

CONCEPTUAL SITE PLAN

HOMBRE APARTMENTS

PREPARED FOR
RULE JOY TRAMMELL & RUBIO

CITY OF PANAMA CITY BEACH FLORIDA

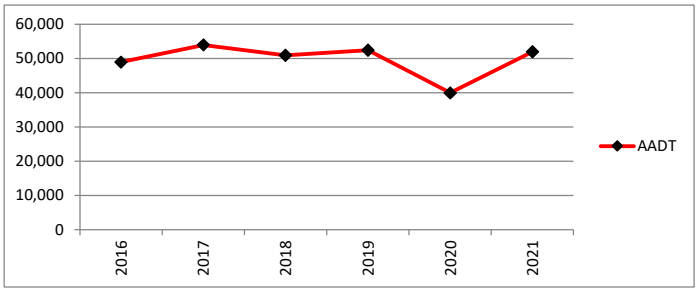
SHEET NUMBER
C100

Kimley»Horn

Attachment B: Traffic Data

Historic Traffic Data (Source: FDOT)

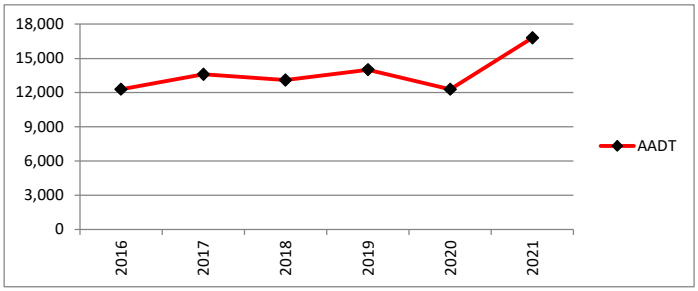
Station	460277	AAGR
Route	US 98 W	
Location	A	
2016	49,000	
2017	54,000	10.20%
2018	51,000	-5.56%
2019	52,500	2.94%
2020	40,000	-23.81%
2021	52,000	30.00%
		2.76%



Annual Growth for Last Five Years is -0.9%

-0.90%

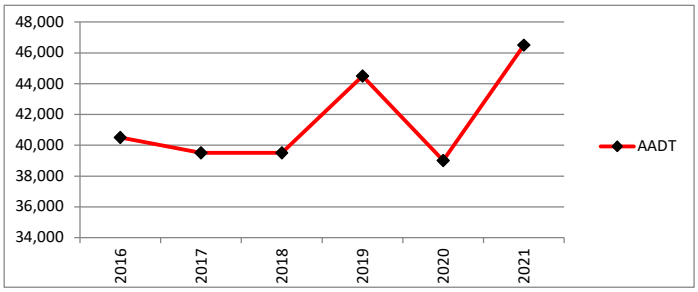
Station	460207	AAGR
Route	R Jackson Blvd	
Location	B	
2016	12,300	
2017	13,600	10.57%
2018	13,100	-3.68%
2019	14,000	6.87%
2020	12,300	-12.14%
2021	16,800	36.59%
		7.64%



Annual Growth for Last Five Years is 5.4%

5.40%

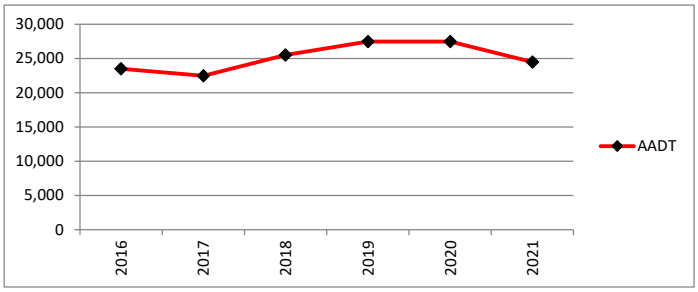
Station	460203	AAGR
Route	US 98 E	
Location	C	
2016	40,500	
2017	39,500	-2.47%
2018	39,500	0.00%
2019	44,500	12.66%
2020	39,000	-12.36%
2021	46,500	19.23%
		3.41%



Annual Growth for Last Five Years is 4.2%

4.20%

Station	460280	AAGR
Route	SR 392A	
Location	D	
2016	23,500	
2017	22,500	-4.26%
2018	25,500	13.33%
2019	27,500	7.84%
2020	27,500	0.00%
2021	24,500	-10.91%
		1.20%



Annual Growth for Last Five Years is 2.2%

2.20%

AAGR 2.73%

COUNTY: 46
STATION: 0203
DESCRIPTION: US 98 (BACK BCH) - 425' E OF CAULEY AVE (W OF RAMP
START DATE: 09/02/2021
START TIME: 1400

	DIRECTION: E					DIRECTION: W					COMBINED
TIME	1ST	2ND	3RD	4TH	TOTAL	1ST	2ND	3RD	4TH	TOTAL	TOTAL
0000	44	32	45	28	149	95	68	51	41	255	404
0100	27	17	22	21	87	53	45	28	22	148	235
0200	17	19	21	16	73	28	25	26	21	100	173
0300	28	24	33	36	121	16	16	14	29	75	196
0400	40	30	72	70	212	27	27	22	39	115	327
0500	68	92	135	150	445	50	72	77	105	304	749
0600	195	260	338	363	1156	121	164	240	329	854	2010
0700	459	417	483	506	1865	290	377	465	402	1534	3399
0800	508	435	424	383	1750	337	370	320	315	1342	3092
0900	386	397	446	399	1628	304	260	317	329	1210	2838
1000	339	356	395	379	1469	325	312	313	366	1316	2785
1100	395	431	386	349	1561	326	358	324	378	1386	2947
1200	380	403	349	411	1543	336	387	350	437	1510	3053
1300	340	364	398	349	1451	367	407	377	379	1530	2981
1400	398	373	402	426	1599	391	448	375	381	1595	3194
1500	414	465	403	435	1717	359	389	438	493	1679	3396
1600	461	425	380	427	1693	469	448	469	453	1839	3532
1700	446	440	398	356	1640	459	434	449	424	1766	3406
1800	300	328	325	237	1190	353	356	341	319	1369	2559
1900	211	220	258	213	902	328	333	299	245	1205	2107
2000	191	187	168	143	689	227	191	201	202	821	1510
2100	152	130	121	101	504	157	192	149	143	641	1145
2200	94	73	98	82	347	165	151	140	124	580	927
2300	68	64	59	48	239	105	109	97	106	417	656
24-HOUR TOTALS:					24030					23591	47621

PEAK VOLUME INFORMATION

	DIRECTION: E		DIRECTION: W		COMBINED DIRECTIONS	
	HOUR	VOLUME	HOUR	VOLUME	HOUR	VOLUME
A.M.	730	1932	715	1581	730	3506
P.M.	1515	1764	1545	1879	1545	3580
DAILY	730	1932	1545	1879	1545	3580

GENERATED BY SPS 5.0.57P

HSA Consulting Group Inc.
1284 Jackson Avenue
Chipley FL, 32428

File Name : TMC_SO~2
Site Code : 00000001
Start Date : 11/18/2020
Page No : 2

Groups Printed- Cars - Trucks

	SR 30 (US 98) Eastbound					SR 30 (US 98) Westbound					N Glades Trail Northbound					N Glades Trail Southbound					
Start Time	Left	Thru	Right	UTRN	App. Total	Left	Thru	Right	UTRN	App. Total	Left	Thru	Right	UTRN	App. Total	Left	Thru	Right	UTRN	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
03:00 PM	1	425	5	1	432	3	360	10	6	379	1	0	7	0	8	3	0	2	0	5	824
03:15 PM	0	463	8	0	471	3	403	21	2	429	1	0	7	0	8	7	0	10	0	17	925
03:30 PM	1	403	1	3	408	4	410	11	4	429	0	0	6	0	6	4	0	7	0	11	854
03:45 PM	2	430	6	1	439	4	452	13	5	474	2	0	2	0	4	9	0	5	0	14	931
Total	4	1721	20	5	1750	14	1625	55	17	1711	4	0	22	0	26	23	0	24	0	47	3534
04:00 PM	2	499	5	0	506	2	478	16	7	503	1	0	6	0	7	7	1	4	0	12	1028
04:15 PM	2	478	5	0	485	7	416	19	1	443	1	0	4	0	5	9	0	8	0	17	950
04:30 PM	0	453	19	0	472	4	402	23	2	431	4	0	10	0	14	6	0	5	0	11	928
04:45 PM	1	453	3	0	457	5	401	10	5	421	3	0	5	0	8	6	1	5	0	12	898
Total	5	1883	32	0	1920	18	1697	68	15	1798	9	0	25	0	34	28	2	22	0	52	3804
05:00 PM	2	489	10	1	502	6	400	18	2	426	2	0	9	0	11	6	1	5	0	12	951
05:15 PM	2	476	3	0	481	12	417	18	5	452	1	0	2	0	3	6	0	5	0	11	947
05:30 PM	3	461	7	0	471	9	385	13	4	411	2	0	2	0	4	5	0	3	0	8	894
05:45 PM	1	431	2	1	435	8	304	14	4	330	2	0	0	0	2	4	0	2	0	6	773
Total	8	1857	22	2	1889	35	1506	63	15	1619	7	0	13	0	20	21	1	15	0	37	3565
Grand Total	57	15639	154	66	15916	173	15189	405	163	15930	76	4	210	0	290	323	13	219	0	555	32691
Apprch %	0.4	98.3	1.0	0.4		1.1	95.3	2.5	1.0		26.2	1.4	72.4	0.0		58.2	2.3	39.5	0.0		
Total %	0.2	47.8	0.5	0.2	48.7	0.5	46.5	1.2	0.5	48.7	0.2	0.0	0.6	0.0	0.9	1.0	0.0	0.7	0.0	1.7	

Intersection Volume Worksheet

Hombre - Panama City Beach, Florida

US 98 and Driveway
PM PEAK HOUR

Description	Driveway Northbound			Southbound			US 98 Eastbound			US 98 Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing 2021 PM Volumes								1693			1839	
Annual Growth Rate			2.7%					2.7%	2.7%		2.7%	
Growth Factor			1.06					1.06	1.06		1.06	
Growth Trips								95			103	
Background 2023 PM Volumes								1788			1942	
Net New Trip Distribution IN									50%			
Net New Trip Distribution OUT			50%									
Net New Project Trips			25						43			
Total Project Trips			25						43			
Future 2023 PM Volumes			25					1788	43		1942	

Intersection Volume Worksheet

Hombre - Panama City Beach, Florida

N Glades and Driveway
PM PEAK HOUR

Description	N Glades Trail **Northbound**			N Glades Trail **Southbound**			Driveway **Eastbound**			**Westbound**		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing 2020 PM Volumes		34			52							
Annual Growth Rate	2.7%	2.7%			2.7%	2.7%	2.7%		2.7%			
Growth Factor	1.08	1.08			1.08	1.08	1.08		1.08			
Growth Trips		3			4							
Background 2023 PM Volumes		37			56							
Net New Trip Distribution IN	5%					45%						
Net New Trip Distribution OUT							45%		5%			
Net New Project Trips	4					38	23		2			
Total Project Trips	4					38	23		2			
Future 2023 PM Volumes	4	37			56	38	23		2			

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Attachment C: Turn Warrant Spreadsheets

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

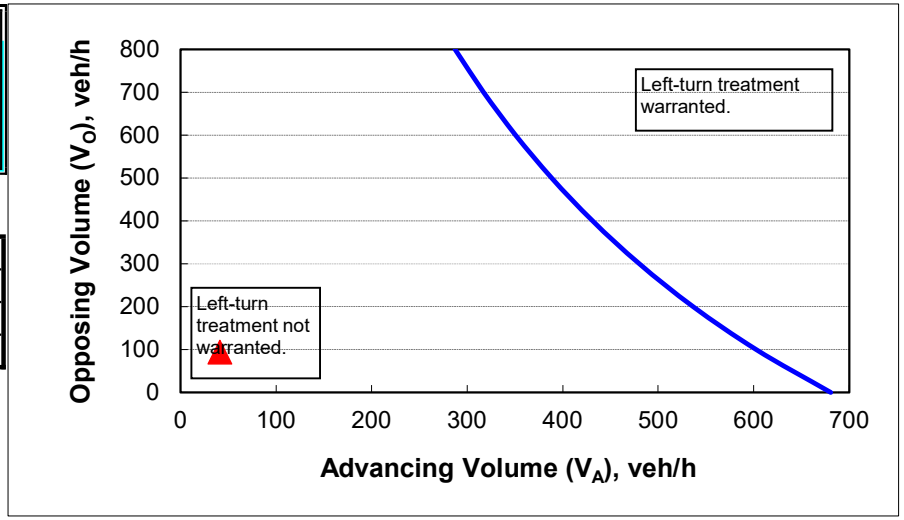
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	25
Percent of left-turns in advancing volume (V_A), %:	10%
Advancing volume (V_A), veh/h:	41
Opposing volume (V_O), veh/h:	94

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	607
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

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

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	2-lane roadw ay

Variable	Value
Major-road speed, mph:	25
Major-road volume (one direction), veh/h:	94
Right-turn volume, veh/h:	38

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	52779082
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.