Traffic Impact Statement

Marco Marine Patrol Substation - Site Development Plan (SDP)

Reviewed for PW
Z. Luff

08/06/2024
11:53:55 AM

City of Marco Island,
Collier County, FL
12/18/2023

Prepared for:

Peninsula Engineering
2600 Golden Gate Parkway
Naples, FL 34105
Phone: 239-403-6700

Prepared by:

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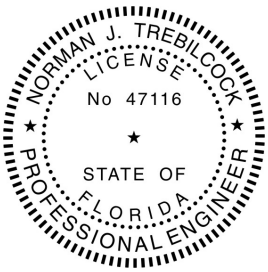
Statement of Certification

I certify that this Traffic Impact Statement has been prepared by me or under my immediate supervision and that I have experience and training in the field of Traffic and Transportation Engineering.



Digitally signed by Norman Trebilcock
DN: c=US, sn=Trebilcock, givenName=Norman, email=Ntrebilcock@trebilcock.biz, cn=Norman Trebilcock
Date: 2023.12.18 14:31:22 -05'00'

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Project Description

The proposed Marco Marine Patrol Substation project is located at 990 Barfield Drive, in the City of Marco Island. The project lies in Section 8, Township 52S, Range 26E, Collier County, Florida.

Refer to **Figure 1** and **Appendix A: Project Master Site Plan**.

Figure 1 – Project Location Map

The subject property has an existing 3,740 square foot (sf) building onsite with a similar use to the proposed project.

The Marco Marin Patrol Substation Site Development Plan (SDP) proposes to demolish the existing building and construct a new 5,288 sf building. The site will provide a boat launch and have storage for boats onsite.

Traffic generation associated with the proposed development is evaluated generally based on ITE Trip Generation Manual, 11th Edition and ITE Trip Generation Handbook, 3rd Edition. The proposed ITE land use designation is determined based on the ITE Land Use Code (LUC) descriptions and are intended to provide the highest and best use trip generation scenario with respect to the project's proposed development parameters.

For the purposes of this analysis, both the existing and proposed buildings will be considered LUC 712 – Small Office Building.

The proposed development parameters are illustrated in **Table 1**.

Table 1
Development Program

Development	Land Use	ITE Land Use Code	Total Size
Existing Development	Marine Patrol Substation	712 – Small Office Building	3,740 square feet
Proposed Site Development Plan	Marine Patrol Substation	712 – Small Office Building	5,288 square feet

For the purposes of this analysis, the traffic planning horizon year is assumed to be 2026.

A methodology meeting was held with the City of Marco Staff on December 4, 2023, via email(refer **Appendix B: Initial Meeting Checklist**).

Access to the site will be provided as a full movement access on N Barfield Drive.

Trip Generation

The software program OTISS – Online Traffic Impact Study Software (most recent version) is used to create the trip generation for the project. Traffic volumes are determined by using ITE equations or average rates, as applicable.

The ITE rates and equations are used for the trip generation calculations, as applicable. The ITE – OTISS trip generation calculation worksheets are provided in **Appendix C: ITE Trip Generation Calculations.**

Based on ITE recommendations, no reductions for internal capture or pass-by trips have been taken into consideration for this analysis.

The estimated trip generation associated with the proposed SDP development scenario is illustrated in **Table 2A**. The estimated trip generation associated with the existing development is illustrated in **Table 2B**. The estimated net new trips for the proposed SDP development is illustrated in **Table 2C**.

Table 2A
Proposed SDP – Trip Generation – Average Weekday

		24 Hour Two-Way Volume	AM Peak Hour			PM Peak Hour		
ITE Land Use	**Size**		**Enter**	**Exit**	**Total**	**Enter**	**Exit**	**Total**
Small Office Building	5,288 sf	**76**	7	2	**9**	4	7	**11**

Note: 1) sf = square feet

Table 2B
Proposed SDP – Trip Generation – Average Weekday

		24 Hour Two-Way Volume	AM Peak Hour			PM Peak Hour		
ITE Land Use	**Size**		**Enter**	**Exit**	**Total**	**Enter**	**Exit**	**Total**
Small Office Building	3,740 sf	**54**	5	1	**6**	3	5	**8**

Note: 1) sf = square feet

Consistent with the City's Comprehensive Plan (page VIII – 5) the evaluation for Level of Service (LOS) standards for roads within the city limits are to be measured at PM peak hour. The transportation concurrency is evaluated based on the proposed SDP traffic generated by the site as illustrated in **Table 2C**.

Table 2C
Proposed SDP – Trip Generation – Average Weekday

	24 Hour Two-Way Volume	AM Peak Hour			PM Peak Hour		
ITE Land Use		**Enter**	**Exit**	**Total**	**Enter**	**Exit**	**Total**
Proposed SDP	**76**	7	2	**9**	4	7	**11**
Existing Development	**54**	5	1	**6**	3	5	**8**
Net New Trips	**22**	**2**	**1**	**3**	**1**	**2**	**3**

Note: 1) sf = square feet

The site access turn lane analysis is evaluated based on the estimated SDP buildout total external traffic – AM and PM peak hour average weekday, as illustrated in **Table 2A.**

Trip Distribution and Assignment

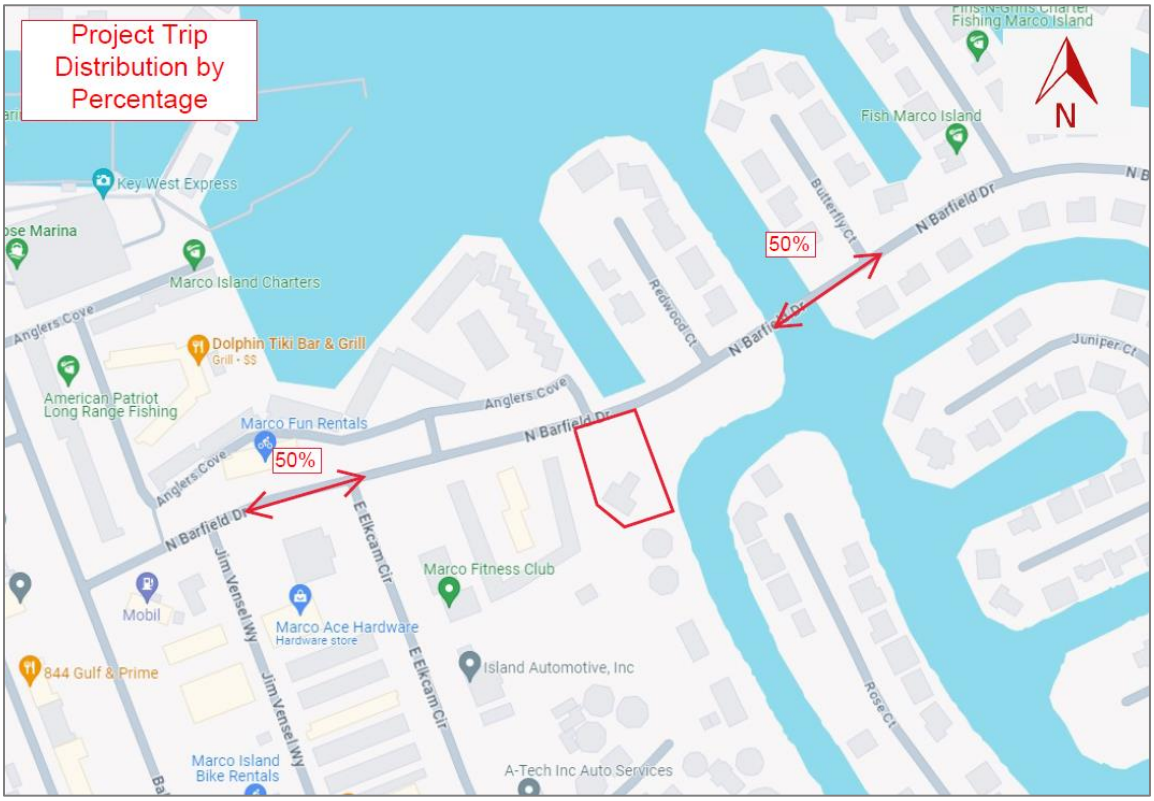
The estimated net new traffic generated by the development is assigned to the surrounding roadway system based on the knowledge of the area and anticipated routes drivers will utilize to access the site. The site-generated trip distribution is shown in **Table 3, Project Traffic Distribution** and is graphically depicted on **Figure 2 – Project Distribution by Percentage and by PM Peak Hour**.

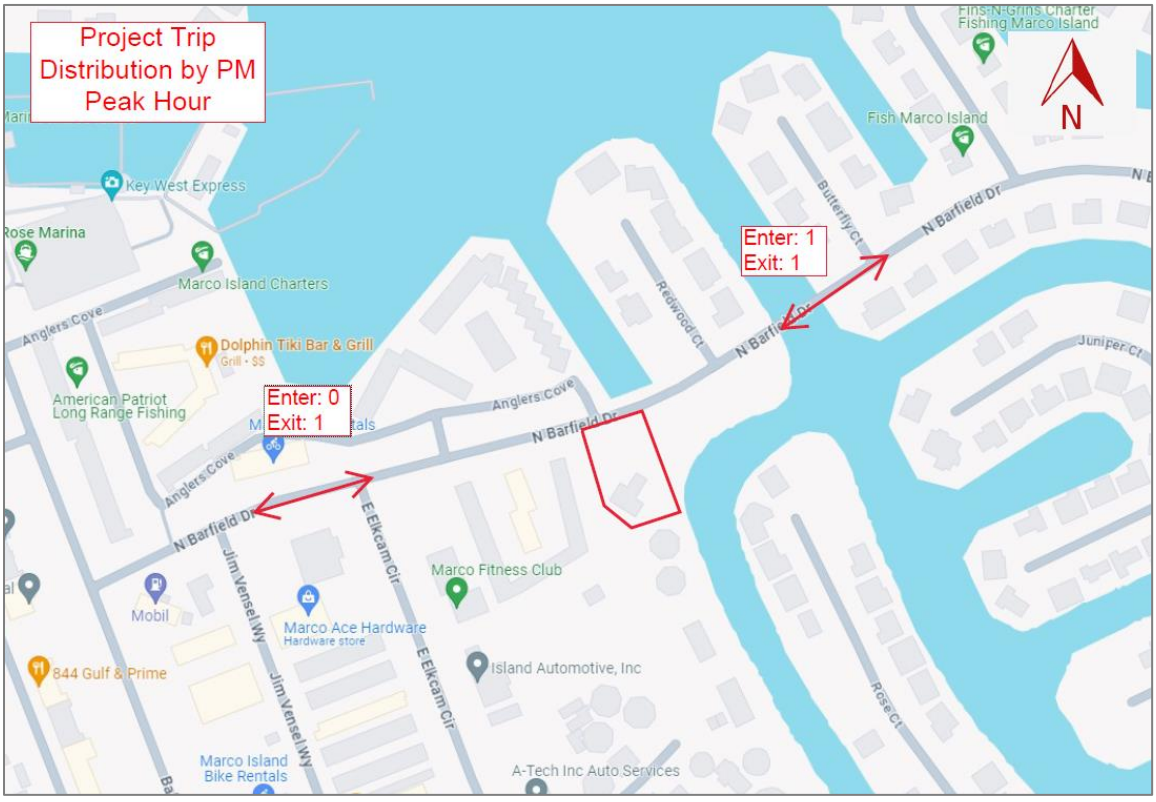
Table 3
Project Traffic Distribution

Roadway Link	Roadway Link Location	# of Lanes per Direction	Distribution of Project Traffic	PM Peak Hour Project Traffic Vol.		
				Enter	Exit	pc/h/ln[(1)]
N Barfield Drive	Project Access to Bald Eagle Dr	1	50%	EB – 0	WB – 1	1
N Barfield Drive	Project Access to Collier Blvd	1	50%	WB – 1	EB – 1	1

Note(s): 1) The highest between entering and exiting traffic; pc/h/ln = passenger car per hour per lane.

Figure 2 – Project Distribution by Percentage and by PM Peak Hour





Background Traffic

Average background traffic growth rates were estimated for the segments of the roadway network in the study area using a minimum 2% growth rate. As the most recent count data for the City of Marco is from 2012, count data from the recent Marco Island ITS Project will be used to provide more reliable numbers for background traffic. Tube counts at the intersection of Bald Eagle Dr and Barfield Dr will provide a more accurate volume of traffic for the roadway. The PM peak hour of the roadway occurs at 12:00 PM and was collected on March 29, 2023 (for details, see **Appendix D: Traffic Count Data – Bald Eagle Drive and N Barfield Drive**).

Consistent with the method illustrated in the adopted 2012 Annual Level of Service Report, the future background traffic is evaluated based on the passenger cars per hour per lane (pc/h/ln) for each analyzed roadway segment. **Table 4, Background Traffic without Project** illustrates the application of projected growth rates to generate background (without project) peak hour per lane traffic volume for the planning horizon year (2026).

Table 4
Background Traffic without Project (2023-2026)

Roadway Link	Roadway Link Location	2023 Peak Hour, Peak Dir Background Traffic Vol (trips/hr) [(1)]	2023 Peak Hour, Peak Dir Per Lane Background Traffic Vol (pc/h/ln)[2]	Projected Traffic Annual Growth Rate (%/yr)	Growth Factor	2026 Projected Peak Hour, Peak Dir Per Lane Background Traffic Volume w/out Project (pc/h/ln)
N Barfield Drive	Project Access to Bald Eagle Dr	241	241/1 = 241	2.0%	1.0612	**256**
N Barfield Drive	Project Access to Collier Blvd	241	241/1 = 241	2.0%	1.0612	**256**

Note(s): Annual Growth Rate = 2%; Growth Factor = (1 + Annual Growth Rate)^3; 2026 Projected Volume = 2023 Volume x Growth Factor.

1) From counts collected on March 29, 2023, at the intersection of Bald Eagle Dr and Barfield Dr.
2) Number of lanes per direction – see Table 3

Roadway Network Conditions

In agreement with the information contained within the "City of Marco Island – 2012 Annual Level of Service Report", dated July, 2012 the adopted level of service (LOS) for Marco Island roadways is LOS "D", with the exception of North Collier Boulevard (from San Marco Road to the Jolley Bridge), which is required to operate at LOS "C".

Consistent with the method illustrated in the adopted 2012 Annual Level of Service Report, the LOS standard is evaluated based on the posted speed limit for each analyzed roadway segment.

N Barfield Drive is a two-lane undivided local collector roadway and has a posted legal speed of 30 mph in the vicinity of project with a design speed of 30 mph.

The LOS standard for the analyzed roadways is determined based on the flow rate method presented in the City's 2012 Annual Level of Service Report. As such, the maximum flow rate for a LOS D roadway facility with a posted speed limit of 30 mph is 1,050 pc/h/ln. For more details refer to **Appendix E: LOS Standard – Evaluation.**

Table 5
Roadway Network Conditions

Roadway Link	Roadway Link Location	Adopted LOS Standard (1)	Service Flow Rate (pc/h/ln) (2)
N Barfield Drive	Project Access to Bald Eagle Dr	D	1,050
N Barfield Drive	Project Access to Collier Blvd	D	1,050

Note(s): 1) Refer to **Appendix D**.
2) Refer to **Appendix E**.

Project Impacts to Area Roadway Network – Roadway Link Analysis

Transportation concurrency evaluation is performed to ensure that the adopted LOS standard is not exceeded for the analyzed roadway segments.

Based on our analysis, none of the analyzed roadway segments are projected to exceed the adopted LOS standard with or without the project at 2026 future build-out conditions. **Table 6, Roadway Link Level of Service** illustrates the LOS impacts of the project on the analyzed roadway network.

Based on the method illustrated in the 2012 Annual LOS Report, the LOS determination for the analyzed roadway segments is depicted in **Appendix F**.

Table 6
Roadway Link Level of Service (LOS) – With Project in the Year 2026

Roadway Link	Roadway Link Location	LOS Standard – Peak Hour, Peak Dir Service Flow Rate (pc/h/ln) (1)	2026 Background LOS – Peak Hour, Peak Dir Flow Rate (pc/h/ln) (2)	LOS Standard exceeded without Project? Yes/No	Peak Hour, Peak Dir Per Lane (Pj Traffic Added) (3)	2026 LOS – Peak Hour, Peak Dir Flow Rate w/ Pj (pc/h/ln) (4)	LOS Standard exceeded with Project? Yes/No
N Barfield Drive	Project Access to Bald Eagle Dr	**D – 1,050**	**A – 256**	No	**1**	**A – 257**	No
N Barfield Drive	Project Access to Collier Blvd	**D – 1,050**	**A – 256**	No	**1**	**A – 257**	No

Note(s): 1) Refer to **Table 5** from this report.
2) Refer to **Table 4** from this report.
3) Refer to **Table 3** from this report.
4) 2026 Projected Volume = 2026 background + Project Volume added.

Site Access Turn Lane Analysis

The subject site has one full movement access on N Barfield Drive. For more details refer to **Appendix A: Project Master Site Plan**.

Project accesses were evaluated for turn lane warrants based on the criteria illustrated in the Collier County Construction Standards Handbook: (a) two-lane roadways – 40vph for right-turn lane/20vph for left-turn lane; and (b) multi-lane divided roadways – right-turn lanes shall always be provided; and (c) when new median openings are permitted, they shall always include left-turn lanes. **Appendix G** contains exhibits of project traffic turning movements consistent with the peak hour trip generation in **Table 2A** and the project traffic distribution pattern shown in **Figure 2**.

Turn lane lengths required at build-out conditions are analyzed based on the number of turning vehicles in an average one-minute period for right-turning movements, and two-minute period for left-turning movements, within the peak hour traffic. The minimum queue length is 25 feet and the queue/vehicle is 25 feet.

N Barfield Drive – The project is expected to generate 4vph and 2vph westbound left-turns during the AM and PM peak hour, respectively, which is below the 20vph threshold. As such, a left-turn lane is not warranted at this location.

The project is expected to generate 3vph and 2vph eastbound right-turns during the AM and PM peak hour, respectively, which is below the 40vph threshold value. As such, a right-turn lane is not warranted at this location.

Improvement Analysis

Based on the concurrency evaluation results, there is adequate and sufficient roadway capacity to accommodate projected traffic at buildout conditions. The analyzed roadway network is projected to perform within the adopted level of service standard.

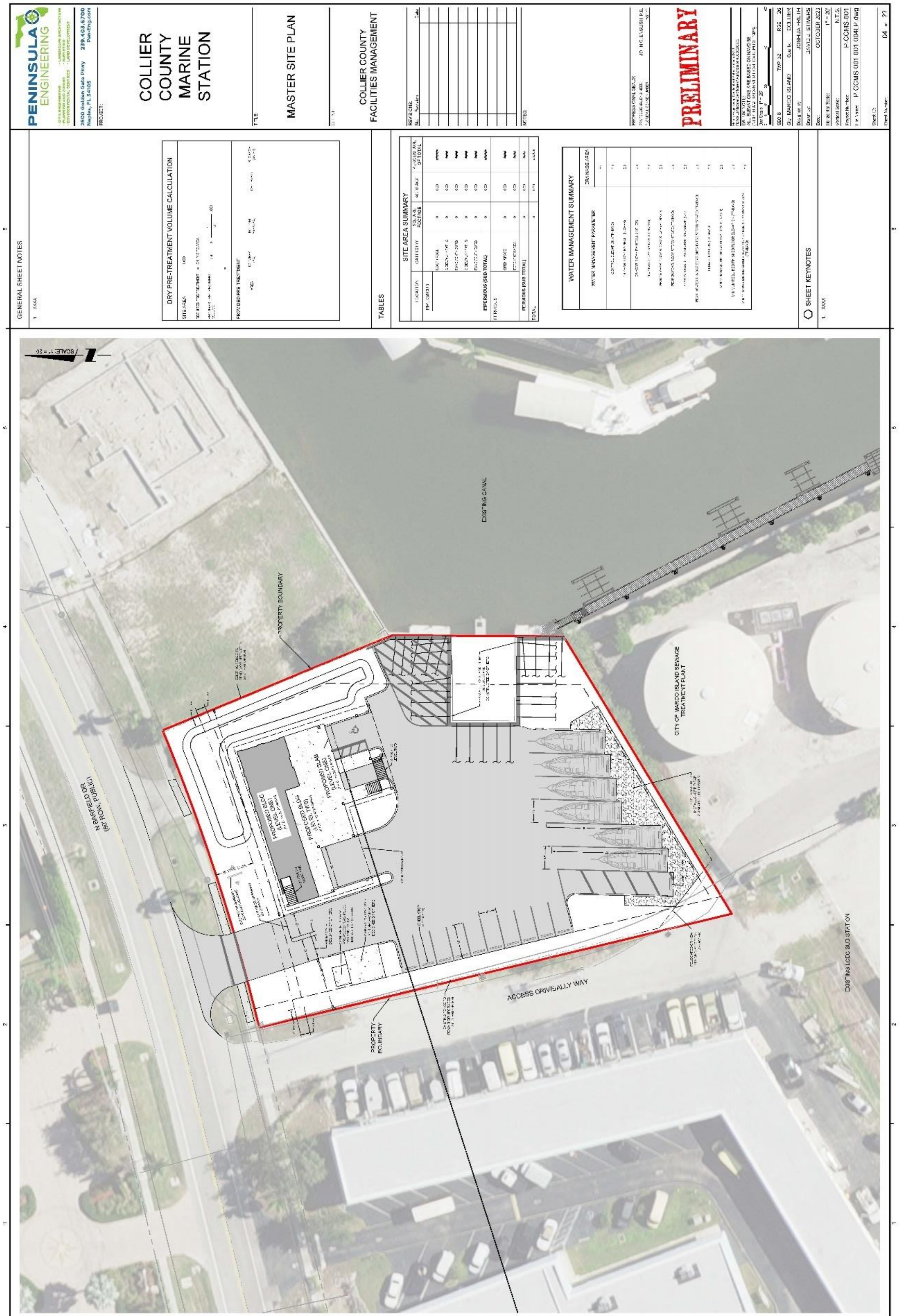
Based on the site access turn lane analysis, no turn lane improvements are warranted at this location.

Mitigation of Impact

The developer proposes to pay the appropriate City of Marco Island Road Impact Fees as building permits are issued for the project, as applicable.

Appendix A:

Project Master Site Plan


PENINSULA ENGINEERING
COLLIER COUNTY MARINE STATION
MASTER SITE PLAN
COLLIER COUNTY FACILITIES MANAGEMENT
PRELIMINARY
GENERAL SHEET NOTES
DRY PRE-TREATMENT VOLUME CALCULATION
TABLES
SITE AREA SUMMARY
WATER MANAGEMENT SUMMARY
SHEET KEYNOTES
EXISTING CANAL
PROPERTY BOUNDARY
CITY OF MARCO ISLAND SEWAGE TREATMENT PLANT
ACCESS DRIVE/ALLY WAY
N BARFIELD DR
EXISTING LCEC SUB STATION

Appendix B:

Initial Meeting Checklist (Methodology Meeting)

INITIAL MEETING CHECKLIST

Suggestion: Use this Appendix as a worksheet to ensure that no important elements are overlooked. Cross out the items that do not apply, or N/A (not applicable).

Date: December 4, 2023 Time: N/A

Location: N/A – Via Email

People Attending:
Name, Organization, and Telephone Numbers

1) Justin Martin, City of Marco Island
2) Norman Trebilcock, TCS
3) Bailey Martin, TCS

Study Preparer:
Preparer's Name and Title: Norman Trebilcock, AICP, PTOE, PE
Organization: Trebilcock Consulting Solutions, PA
Address & Telephone Number: 2800 Davis Boulevard, Suite 200, Naples, Fl. 34104; Ph 239-566-9551

Reviewer(s):
Reviewer's Name & Title: Justin Martin, Director of Public Works
Organization & Telephone Number: City of Marco Island
Ph: 239-389-5184

Applicant:
Applicant's Name: Peninsula Engineering
Address: 2600 Golden Gate Pkwy, Naples, FL 34105
Telephone Number: 239-403-6700

Proposed Development:
Name: Marco Marine Patrol Substation – Site Development Plan (SDP)
Location: 990 Barfield Drive – Refer to **Figure 1**.
Land Use Type: Marine Patrol Substation
ITE Code #: LUC 712 – Small Office Building
Description: Marco Marine Patrol Substation is a proposed marine substation for the use of Collier County. See **Figure 1 – Project Location Map.** The subject site will operate most closely to LUC 712 – Small Office Building with a square footage of 5,288 sf. Access to the subject site is proposed via one full movement access onto N Barfield Drive.

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Zoning:
Existing: C4 commercial zoning
Comprehensive plan recommendation: N/A
Requested: To allow proposed development

Figure 1 – Project Location Map

Findings of the Preliminary Study:
Study type: Study qualifies for a Minor study TIS based on a total area of less than 10 acres.
TIS will be consistent with City of Marco Island Traffic Impact Study Requirements (as illustrated in the City of Marco Island Construction Standard Handbook for Work within the Public ROW – Appendix B).
TIS will include daily, AM and PM peak hour trip generation (ITE 11th Edition), traffic distribution and assignments, LOS/capacity analysis and site access operational evaluation.
Transportation Concurrency Analysis – Roadway Network LOS/Capacity – Reflect net new projected traffic impact.
Operational site access – turn lane analysis based on proposed build-out conditions (external traffic AM/PM peak hour trip generation).
TIS assumptions: No internal capture or pass-by traffic reductions are considered for this study.
N Barfield Drive – 2 lane undivided minor collector in the vicinity of project; Posted speed limit – 30 mph; Design speed – 30 mph.

Traffic Counts – 2023 traffic count data collected on March 29, 2023 will be provided for N Barfield Dr for LOS and capacity analysis.
No intersection analysis is part of this TIS

Study Type: (if not net increase, operational study)
Minor TIS ☒ Major TIS ☐

Study Area:
Boundaries: North – N Barfield Dr
Additional intersections to be analyzed: N/A
Build Out Year: N/A
Planning Horizon Year: 2026
Analysis Time Period(s): Concurrency PM Peak Hour; Operational AM/PM Peak Hour
Future Off-Site Developments: N/A
Source of Trip Generation Rates: ITE 11th Edition;

Reductions in Trip Generation Rates:
None: N/A
Pass-by trips: N/A
Internal trips: N/A
Transit use: N/A
Other: N/A

Horizon Year Roadway Network Improvements: 2026

Methodology & Assumptions:
Non-site traffic estimates: 2023 Count Data for N Barfield Dr: collected 03-29-2023
Site-trip generation: OTISS – ITE 11th Edition
Trip distribution method: Engineer's Estimate – refer to **Figure 2**
Traffic assignment method: project trip generation with background growth
Traffic growth rate: historical growth rate or 2% minimum
Turning movement assignment: Engineer's Estimate – refer to **Figure 3**

Figure 2 – Project Trip Distribution by Percentage

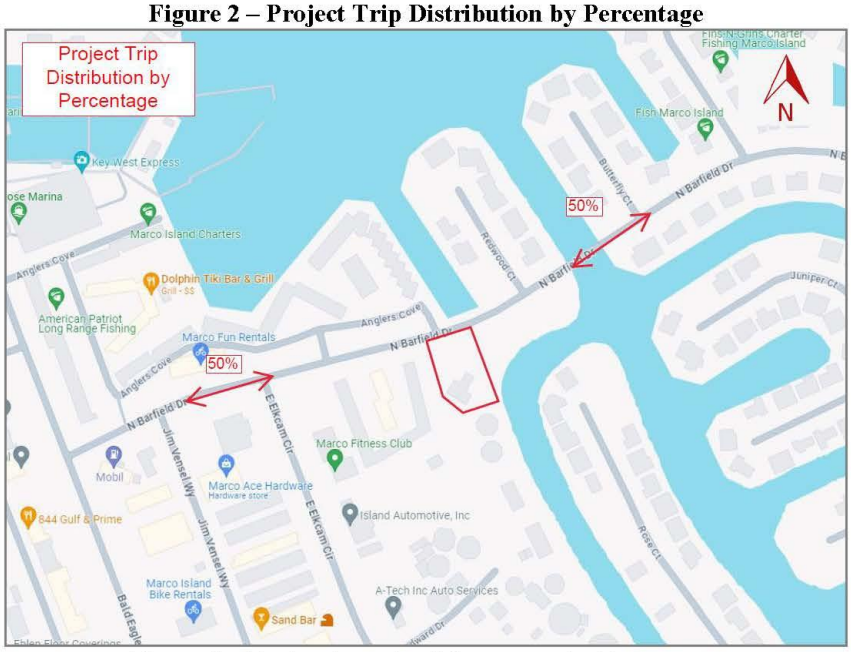

Figure 3 – Project Turning Movements by Percentage

Special Features: (from preliminary study or prior experience)
Accident locations: N/A
Sight distance: N/A
Queuing: N/A
Access location & configuration: N/A
Traffic control: MUTCD
Signal system location & progression needs: N/A
On-site parking needs: N/A
Data Sources: City of Marco Annual Level of Service Report; Traffic Counts
Base maps: N/A
Prior study reports: N/A
Access policy and jurisdiction: N/A
Review process: N/A
Requirements: N/A
Miscellaneous: N/A

SIGNATURES

Norman Trebilcock
Study Preparer—Norman Trebilcock

_____
Reviewer(s)

_____
Applicant

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Appendix C:

ITE Trip Generation Calculations

Land Use: 712
Small Office Building

Description

A small office building is the same as a general office building (Land Use 710) but with less than or equal to 10,000 square feet of gross floor area. The building typically houses a single tenant. It is a location where affairs of a business, commercial or industrial organization, or professional person or firm are conducted. General office building (Land Use 710) is a related use.

Additional Data

Attorney office, mortgage company, financial advisor, insurance agency, home health care provider, and real estate company are examples of tenants included in the small office building database. The diversity of employer types results in a wide range in employee density in the database. Densities range from a high of 1,300 to a low of 240 square feet per employee with an overall average of nearly 600 square feet per employee (a value much larger than the average observed in a general office building study sites).

In addition to the significant difference in employee density, small office buildings tend to be dominated by a single tenant (or very few) that are more service-oriented than a typical general office building. The result is more frequent and regular visitors and higher trip generation rates.

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (https://www.ite.org/technical-resources/topics/trip-and-parking-generation/).

The sites were surveyed in the 1980s and the 2010s in Alberta (CAN), California, Texas, and Wisconsin.

Source Numbers

418, 890, 891, 959, 976

Proposed Development Trip Generation

Project Information	
Project Name:	Marco Marine Patrol Substation - Small Office
No:	
Date:	12/4/2023
City:	
State/Province:	
Zip/Postal Code:	
Country:	
Client Name:	
Analyst's Name:	
Edition:	Trip Generation Manual, 11th Ed

Land Use	Size	Weekday		AM Peak Hour		PM Peak Hour	
		Entry	Exit	Entry	Exit	Entry	Exit
712 - Small Office Building (General Urban/Suburban)	5.29 1000 Sq. Ft. GFA	38	38	7	2	4	7
Reduction		0	0	0	0	0	0
Internal		0	0	0	0	0	0
Pass-by		0	0	0	0	0	0
Non-pass-by		38	38	7	2	4	7
Total		38	38	7	2	4	7
Total Reduction		0	0	0	0	0	0
Total Internal		0	0	0	0	0	0
Total Pass-by		0	0	0	0	0	0
Total Non-pass-by		38	38	7	2	4	7

PERIOD SETTING

Analysis Name : Weekday

Project Name : Marco Marine Patrol Substation - Small Office

No :

Date: 12/4/2023

City:

State/Province:

Zip/Postal Code:

Country:

Client Name:

Analyst's Name:

Edition: Trip Generation Manual, 11th Ed

Land Use	Independent Variable	Size	Time Period	Method	Entry	Exit	Total
712 - Small Office Building (General Urban/Suburban)	1000 Sq. Ft. GFA	5.29	Weekday	Average 14.39	38 50%	38 50%	76

PERIOD SETTING

Analysis Name : AM Peak Hour

Project Name : Marco Marine Patrol Substation - Small Office

No :

Date: 12/4/2023

City:

State/Province:

Zip/Postal Code:

Country:

Client Name:

Analyst's Name:

Edition: Trip Generation Manual, 11th Ed

Land Use	Independent Variable	Size	Time Period	Method	Entry	Exit	Total
712 - Small Office Building (General Urban/Suburban)	1000 Sq. Ft. GFA	5.29	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.	Average 1.67	7 78%	2 22%	9

PERIOD SETTING

Analysis Name :	PM Peak Hour		
Project Name :	Marco Marine Patrol Substation - Small Office	**No :**	
Date:	12/4/2023	**City:**	
State/Province:		**Zip/Postal Code:**	
Country:		**Client Name:**	
Analyst's Name:		**Edition:**	Trip Generation Manual, 11th Ed

Land Use	Independent Variable	Size	Time Period	Method	Entry	Exit	Total
712 - Small Office Building (General Urban/Suburban)	1000 Sq. Ft. GFA	5.29	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	Average 2.16	4 36%	7 64%	11

Existing Development Trip Generation

Project Information	
Project Name:	Marco Marine Patrol Substation - Existing
No:	
Date:	12/12/2023
City:	
State/Province:	
Zip/Postal Code:	
Country:	
Client Name:	
Analyst's Name:	
Edition:	Trip Generation Manual, 11th Ed

Land Use	Size	Weekday		AM Peak Hour		PM Peak Hour	
		Entry	Exit	Entry	Exit	Entry	Exit
712 - Small Office Building (General Urban/Suburban)	3.74 1000 Sq. Ft. GFA	27	27	5	1	3	5
Reduction		0	0	0	0	0	0
Internal		0	0	0	0	0	0
Pass-by		0	0	0	0	0	0
Non-pass-by		27	27	5	1	3	5
Total		27	27	5	1	3	5
Total Reduction		0	0	0	0	0	0
Total Internal		0	0	0	0	0	0
Total Pass-by		0	0	0	0	0	0
Total Non-pass-by		27	27	5	1	3	5

PERIOD SETTING

Analysis Name : Weekday
Project Name : Marco Marine Patrol Substation - Existing **No :**
Date: 12/12/2023 **City:**
State/Province: **Zip/Postal Code:**
Country: **Client Name:**
Analyst's Name: **Edition:** Trip Generation Manual, 11th Ed

Land Use	Independent Variable	Size	Time Period	Method	Entry	Exit	Total
712 - Small Office Building (General Urban/Suburban)	1000 Sq. Ft. GFA	3.74	Weekday	Average 14.39	27 50%	27 50%	54

PERIOD SETTING

Analysis Name : AM Peak Hour
Project Name : Marco Marine Patrol Substation - Existing **No :**
Date: 12/12/2023 **City:**
State/Province: **Zip/Postal Code:**
Country: **Client Name:**
Analyst's Name: **Edition:** Trip Generation Manual, 11th Ed

Land Use	Independent Variable	Size	Time Period	Method	Entry	Exit	Total
712 - Small Office Building (General Urban/Suburban)	1000 Sq. Ft. GFA	3.74	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.	Average 1.67	5 83%	1 17%	6

PERIOD SETTING

Analysis Name :	PM Peak Hour		
Project Name :	Marco Marine Patrol Substation - Existing	**No :**	
Date:	12/12/2023	**City:**	
State/Province:		**Zip/Postal Code:**	
Country:		**Client Name:**	
Analyst's Name:		**Edition:**	Trip Generation Manual, 11th Ed

Land Use	Independent Variable	Size	Time Period	Method	Entry	Exit	Total
712 - Small Office Building (General Urban/Suburban)	1000 Sq. Ft. GFA	3.74	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	Average 2.16	3 38%	5 62%	8

Appendix D:

2023 Traffic Counts – Bald Eagle Drive and N Barfield Drive

Bald Eagle Dr at N. Barfield Dr

Florida Transportation Engineering, Inc.
(FTE)
8250 Pascal Dr
Punta Gorda, Florida, United States 33950
(800) 639-4851

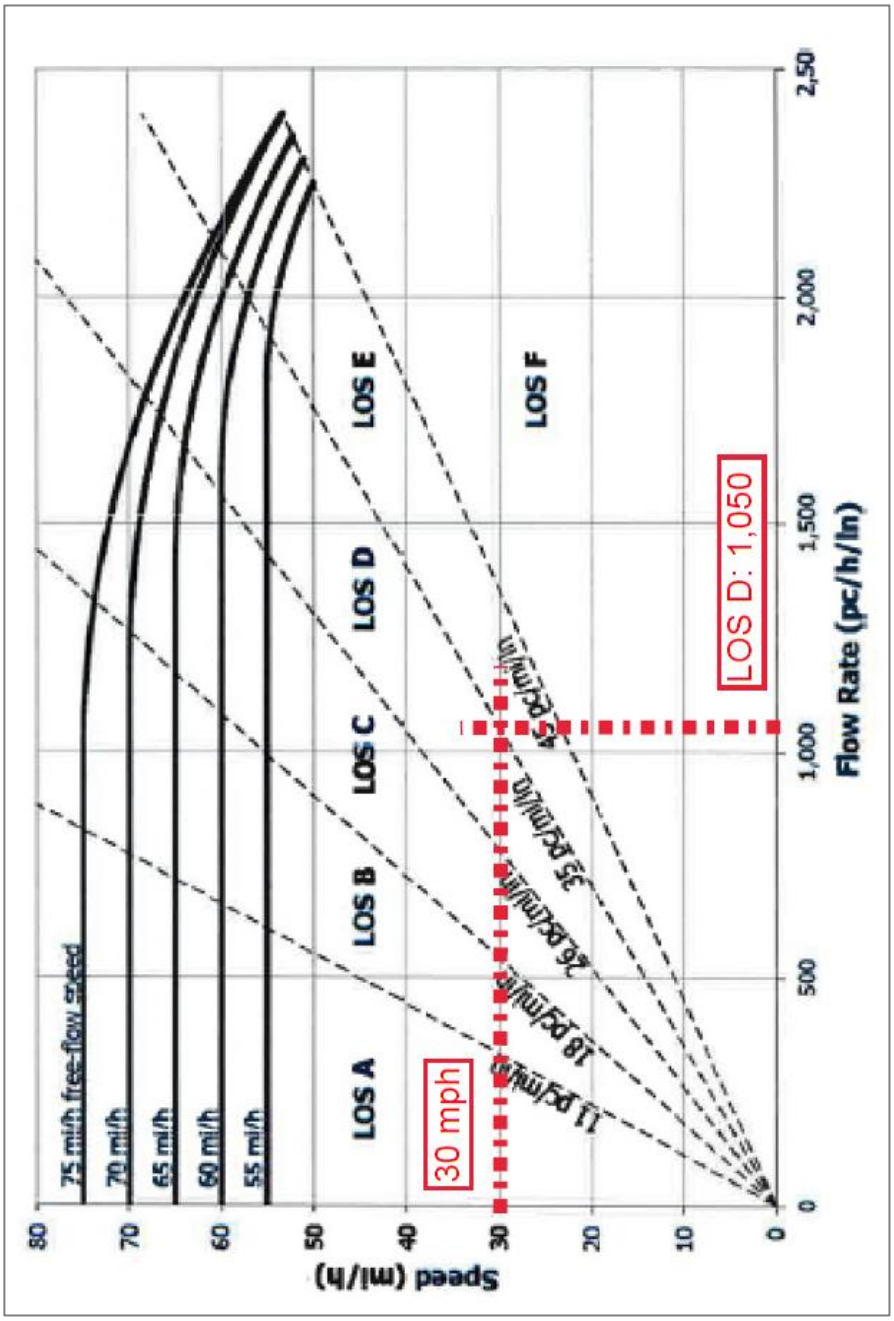
Count Name: Bald Eagle Dr @ N Barfield Dr
Site Code:
Start Date: 03/29/2023
Page No: 1

Turning Movement Data

Start Time	N Barfield Dr Westbound					Bald Eagle Dr Northbound					Bald Eagle Dr Southbound					Int. Total
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	
6:00 AM	0	2	8	0	10	0	4	1	0	5	0	1	5	0	6	21
6:15 AM	0	3	4	0	7	0	5	4	0	9	0	7	3	0	10	26
6:30 AM	0	4	13	0	17	0	9	2	0	11	0	5	8	0	13	41
6:45 AM	0	14	23	0	37	0	28	4	0	32	0	13	19	0	32	101
Hourly Total	0	23	48	0	71	0	48	11	0	57	0	26	35	0	61	189
7:00 AM	0	6	18	1	24	0	22	5	0	27	0	19	20	0	39	90
7:15 AM	0	8	26	0	34	0	24	3	0	27	0	16	29	1	45	106
7:30 AM	0	12	35	1	47	0	27	7	0	34	0	13	33	0	46	127
7:45 AM	0	15	38	3	53	0	29	8	0	37	0	20	44	1	64	154
Hourly Total	0	41	117	5	158	0	102	23	0	125	0	68	126	2	194	477
8:00 AM	0	11	40	5	51	0	38	6	0	44	0	32	50	1	82	177
8:15 AM	0	7	44	8	51	0	40	12	0	52	0	21	33	1	54	157
8:30 AM	0	9	49	8	58	0	40	13	0	53	0	24	44	0	68	179
8:45 AM	0	15	49	13	64	0	49	10	0	59	0	19	60	0	79	202
Hourly Total	0	42	182	34	224	0	165	43	0	208	0	96	187	2	283	715
9:00 AM	0	21	36	3	57	0	53	7	0	60	0	27	57	2	84	201
9:15 AM	0	12	47	7	59	0	42	13	0	55	0	26	67	1	93	207
9:30 AM	0	18	30	8	46	0	54	9	0	63	0	32	59	0	91	200
9:45 AM	0	18	40	8	58	0	52	16	0	68	0	29	70	0	99	223
Hourly Total	0	65	153	24	218	0	201	45	0	246	0	114	253	3	367	831
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	0	17	39	3	56	0	67	11	0	78	0	38	78	0	116	250
11:15 AM	0	17	42	4	59	0	65	13	0	78	0	27	89	0	116	253
11:30 AM	0	12	56	5	68	0	64	12	0	76	0	29	66	0	95	239
11:45 AM	0	14	41	1	55	0	87	11	0	98	0	34	105	0	139	292
Hourly Total	0	60	178	13	238	0	283	47	0	330	0	128	338	0	466	1034
12:00 PM	0	18	39	1	57	0	89	22	0	111	0	32	97	0	129	297
12:15 PM	0	18	49	2	67	0	67	21	0	88	0	44	80	0	124	279
12:30 PM	0	12	47	5	59	0	84	17	0	101	0	26	94	0	120	280
12:45 PM	0	19	39	8	58	0	67	18	0	83	0	25	106	0	131	272
Hourly Total	0	67	174	14	241	0	307	78	0	383	0	127	377	0	504	1128
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2:00 PM	0	15	30	2	45	0	47	17	0	64	0	28	90	2	118	227
2:15 PM	0	12	35	5	47	0	57	11	0	68	0	26	76	0	102	217
2:30 PM	0	14	34	0	48	0	48	10	0	58	0	32	74	0	106	210
2:45 PM	0	15	34	1	49	0	53	22	0	75	0	30	74	0	104	228
Hourly Total	0	56	133	8	189	0	203	60	0	263	0	116	314	2	430	882
3:00 PM	0	20	44	3	64	0	62	18	0	80	0	22	63	0	85	229
3:15 PM	0	22	42	3	64	0	55	19	0	74	0	31	63	0	94	232
3:30 PM	0	15	21	3	39	0	47	22	0	69	0	24	82	0	106	211
3:45 PM	0	8	40	0	48	0	45	16	0	61	0	47	87	0	134	243
Hourly Total	0	65	147	9	212	0	209	75	0	284	0	124	295	0	419	915
4:00 PM	0	14	34	1	48	0	55	13	0	68	0	36	71	0	107	223
4:15 PM	0	14	34	5	48	0	52	20	0	72	0	32	78	1	110	230
4:30 PM	0	7	43	1	50	0	40	9	0	49	0	32	76	0	108	207
4:45 PM	0	7	34	2	41	0	52	7	0	59	0	21	80	0	101	201
Hourly Total	0	42	145	9	187	0	199	49	0	248	0	121	305	1	426	861
5:00 PM	0	12	31	10	43	0	57	23	3	80	0	32	80	0	112	235
5:15 PM	0	16	42	5	58	0	45	11	0	56	0	28	71	0	99	213
5:30 PM	0	14	24	2	38	0	65	17	0	82	0	24	57	0	81	201
5:45 PM	0	10	32	8	42	0	54	9	0	63	0	16	50	3	66	171
Hourly Total	0	52	129	25	181	0	221	60	3	281	0	100	258	3	358	820
Grand Total	0	513	1408	141	1919	0	1938	489	3	2425	0	1020	2488	13	3508	7852
Approach %	0.0	26.7	73.3	-	-	0.0	79.8	20.2	-	-	0.0	29.1	70.9	-	-	-
Total %	0.0	6.5	17.9	-	24.4	0.0	24.7	6.2	-	30.9	0.0	13.0	31.7	-	44.7	-
Lights	0	488	1370	-	1858	0	1895	473	-	2368	0	993	2438	-	3431	7657
% Lights	-	95.1	97.4	-	96.8	-	97.9	96.7	-	97.6	-	97.4	98.0	-	97.8	97.5
Other Vehicles	0	25	38	-	61	0	41	16	-	57	0	27	50	-	77	195
% Other Vehicles	-	4.9	2.6	-	3.2	-	2.1	3.3	-	2.4	-	2.6	2.0	-	2.2	2.5

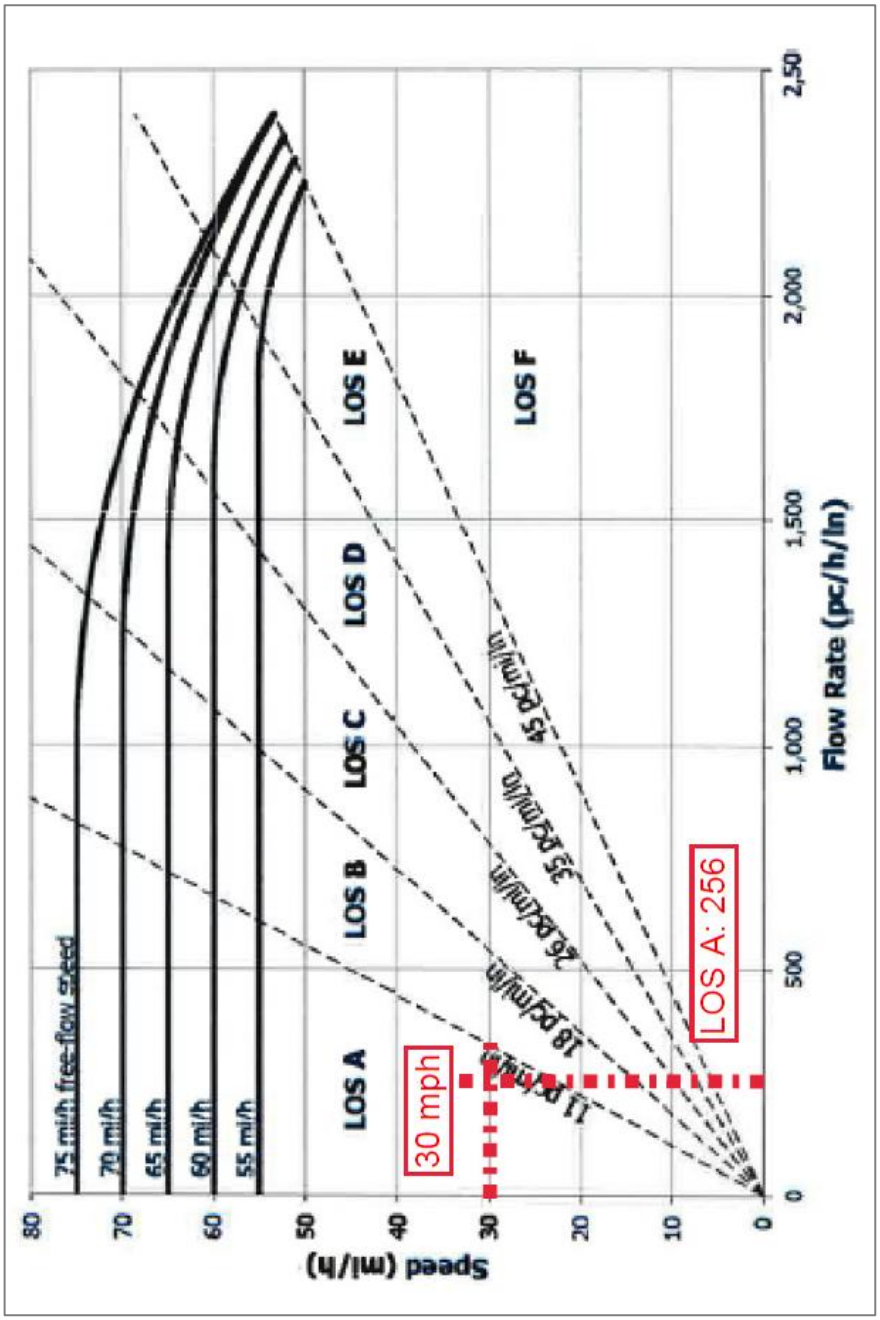
Appendix E:

LOS Standard - Evaluation


LOS A
LOS B
LOS C
LOS D
LOS E
LOS F
75 mi/h free-flow speed
70 mi/h
65 mi/h
60 mi/h
55 mi/h
11 pc/mi/ln
18 pc/mi/ln
26 pc/mi/ln
33 pc/mi/ln
45 pc/mi/ln
30 mph
LOS D: 1,050
Speed (mi/h)
Flow Rate (pc/h/ln)
80
70
60
50
40
30
20
10
0
0
500
1,000
1,500
2,000
2,500

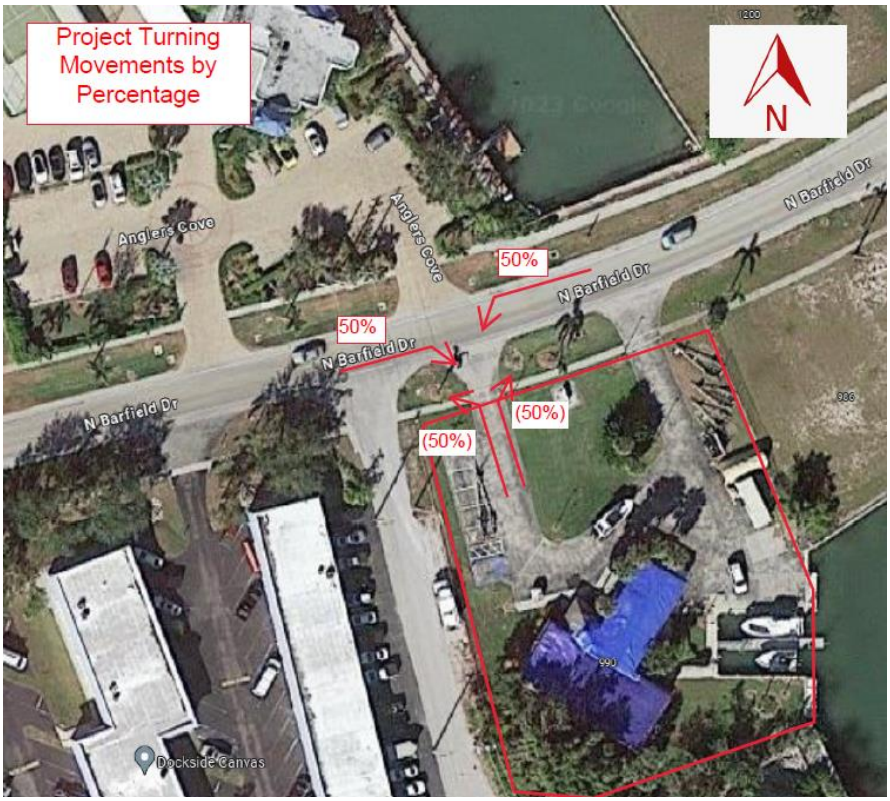
Appendix F:

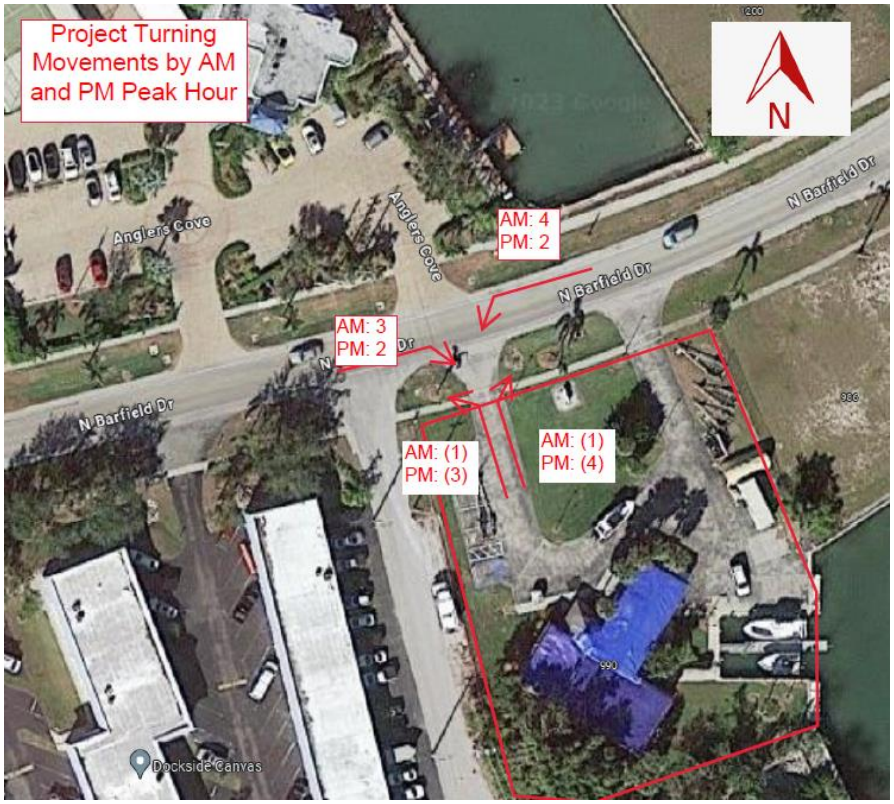
LOS Analysis Based on Traffic Counts Conducted in 2023


Speed (mi/h)
Flow Rate (pc/h/ln)
LOS A
LOS B
LOS C
LOS D
LOS E
LOS F
75 mi/h free-flow speed
70 mi/h
65 mi/h
60 mi/h
55 mi/h
45 pc/mi/ln
35 pc/mi/ln
26 pc/mi/ln
18 pc/mi/ln
11 pc/mi/ln
30 mph
LOS A: 256

Appendix G:

Turning Movement Exhibits


Project Turning Movements by Percentage
N
Anglers Cove
N Barfield Dr
50%
50%
(50%)
(50%)
Dockside Canvas


Project Turning Movements by AM and PM Peak Hour
N
Anglers Cove
N Barfield Dr
AM: 4
PM: 2
AM: 3
PM: 2
AM: (1)
PM: (3)
AM: (1)
PM: (4)
Dockside Canvas