Independent Review of Stantec Planned Unit Development Amendment Traffic Study

Venetian Golf and River Club

June 15, 2023

Presentation Outline

- About Me
- Scope of Work
- Background Information
- 2023 FDOT Multimodal QLOS Handbook
- Jacaranda Blvd
- Service Volume Calculation

About Me

- **Michael Fury, PE**
  - **Licensed Professional Engineer in the State of Florida**
    - Over nine years of experience
    - Reviewed / Composed over 400 Traffic Impacts Studies / Traffic Analyses
    - Worked with public clients such as:
      - Florida Department of Transportation
      - Manatee County
      - City of Plant City
    - My experience also includes design of:
      - Signalization
      - Signing and Pavement Marking
      - Lighting
      - Intelligent Transportation Systems

Scope of Work

- **Patel, Greene and Associates, LLC was hired by Venetian Golf and River Club on January 30, 2023**
  - The initial scope of work this contract was to provide an independent review of the Stantec PUD Amendment Traffic Study
  - An initial review of was completed of the October 2021 report
  - A follow up review was completed of the February 2023 report
  - Comments included in this presentation are based on the updated February 2023 report

Background Information

- **In accordance with the 2019 FDOT Traffic Forecasting Handbook, four time periods are utilized for roadway planning and traffic modelling.**
  - **Existing Year**
    - Typically the year the study is conducted or one year before the study is conducted.
  - **Opening Year**
    - One year after a project is scheduled to be open to the public and when the new traffic pattern stabilizes.
  - **Interim Year**
    - A year between the Opening Year and the Design Year, typically ten (10) years after the opening year.
  - **Design Year**
    - The year for which a roadway is designed. It is usually twenty years from the opening year.

Background Information

- **Level of Service**
  - **A quantitative stratification of a performance measure or measures that represent quality of service, measured on an A-F scale, with LOS A representing the best operating conditions from the traveler's perspective and LOS F the worst. (HCM Sixth Edition)**
  - **In accordance with the Sarasota County Comprehensive Plan (Updated 5/22/23) Tran Policy 1.3.2**
    - Sarasota County, within the Urban Service Boundary, shall adopt and maintain a Level of Service (LOS) standard of "D" peak hour, based on a 100th hour design criteria (hereafter referred to as LOS "D"), for all county-maintained arterials and collectors.
  - **Common Misconceptions**
    - Misconception: LOS A–F grades are comparable to American school letter grades.
    - … "For motorized vehicles, LOS A is most likely not a desirable goal from a transportation or societal perspective. LOS A in a peak travel hour could indicate inefficient use of limited funding." … "LOS F means either travel demand exceeds capacity during the analysis period and the roadway is operating in oversaturated conditions or that another undesirable condition exists."

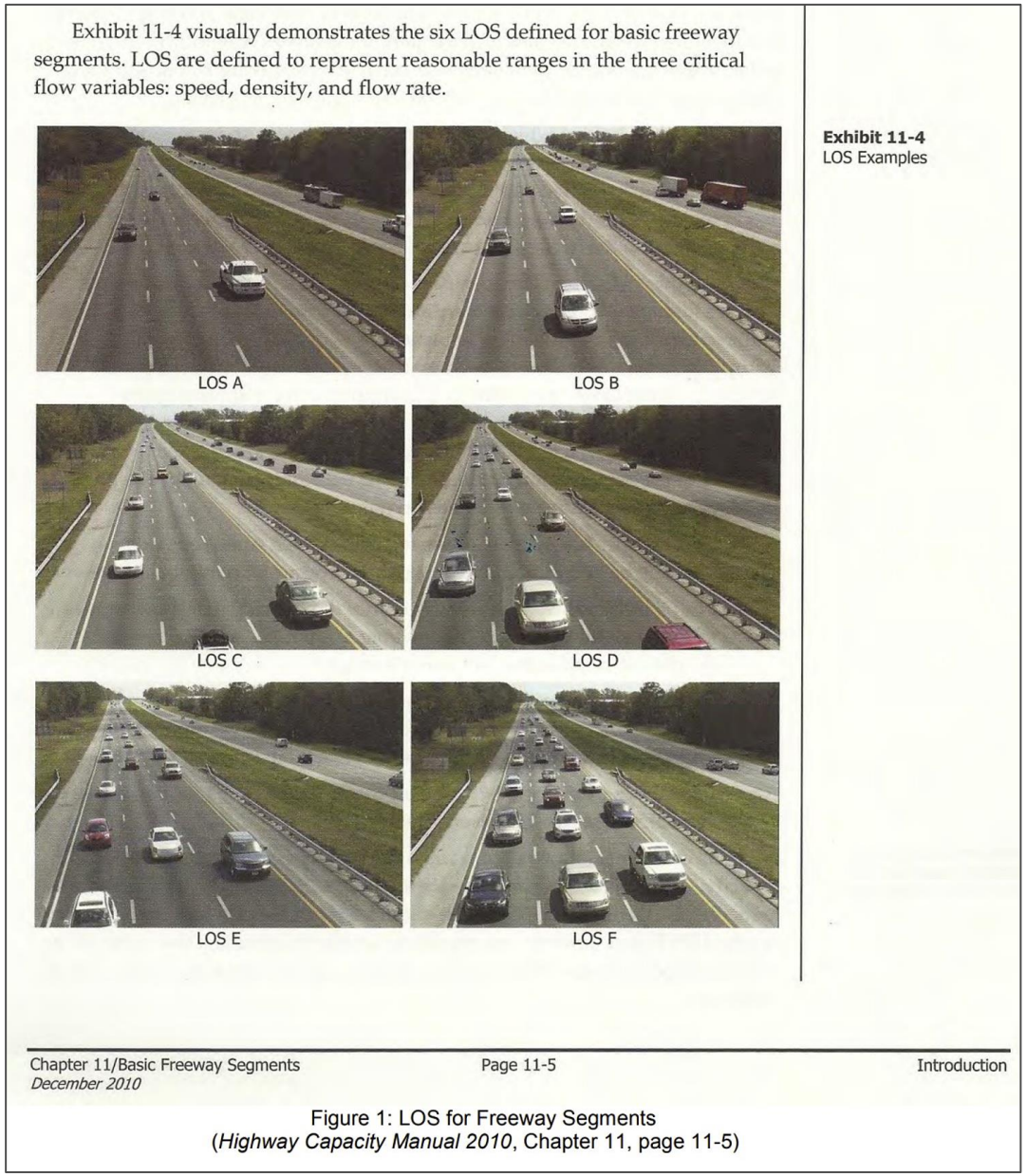


Exhibit 11-4 visually demonstrates the six LOS defined for basic freeway segments. LOS are defined to represent reasonable ranges in the three critical flow variables: speed, density, and flow rate.

Exhibit 11-4
LOS Examples

LOS A

LOS B

LOS C

LOS D

LOS E

LOS F

Chapter 11/Basic Freeway Segments
December 2010

Page 11-5

Introduction

Figure 1: LOS for Freeway Segments
(*Highway Capacity Manual 2010*, Chapter 11, page 11-5)

Background Information

- **Level of Service at intersections**
  - **Signalized Intersections**
    - Average total vehicle delay of all movements through an intersection

Table 1. Level of Service Criteria for Signalized Intersections

Level of Service	Average Control Delay (sec/veh)	General Description (Signalized Intersections)
A	≤10	Free Flow
B	>10 - 20	Stable Flow (slight delays)
C	>20 - 35	Stable flow (acceptable delays)
D	>35 - 55	Approaching unstable flow (tolerable delay, occasionally wait through more than one signal cycle before proceeding)
E	>55 - 80	Unstable flow (intolerable delay)
F	>80	Forced flow (jammed)

  - **Unsignalized Intersections**
    - Two methods (All-Way Stop Control & Two-Way Stop Control)
      1. For All-Way Stop Control it is the average vehicle delay of all of the movements (like signaled intersections)
      2. For Two-Way Stop Control it is the average vehicle delay of each individual movement (i.e. worst case scenario)

Table 2. Level of Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay (sec/veh)
A	0 - 10
B	>10 - 15
C	>15 - 25
D	>25 - 35
E	>35 - 50
F	>50

Tables from the Highway Capacity Manual, 2010 Edition

2023 FDOT Multimodal QLOS Handbook

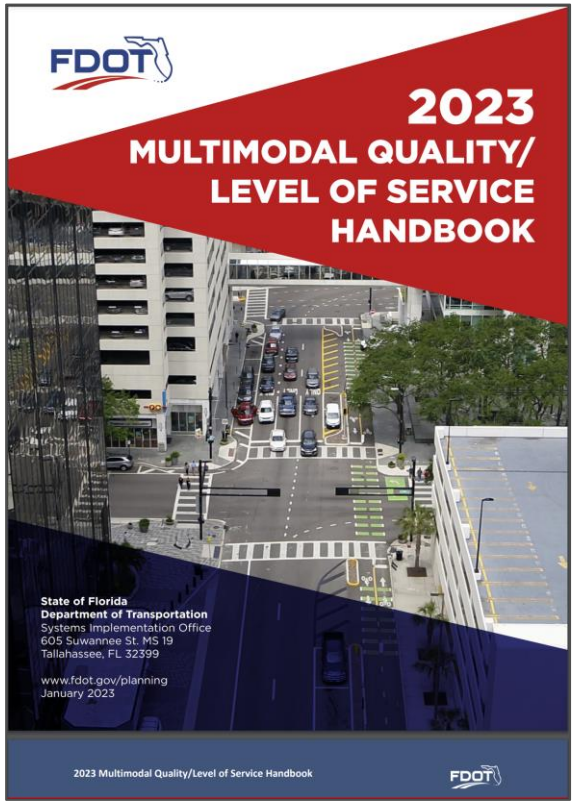
- **Why was it used?**
  - **Comments were issued to Stantec as a result of a review by City of Venice consultant Wade Trim.**

    Comment #5 from the email of comments dated February 7, 2023 states,

    "The Sarasota County Generalized Level of Service Analysis was published in January of 2023. The adopted service volume for Jacaranda Boulevard from Laurel Road to Border Road is 1,330. This is a county roadway and should follow the County's Generalized LOS Analysis service volumes that were recently published."

  - **In response to this comment dated February 14, 2023 Stantec responded,**

    "The Sarasota County Generalized Level of Service Analysis Table was prepared prior to the publication of the 2023 FDOT Generalized Service Volume Tables and are based on the 2020 FDOT Generalized Service Volume Tables. The 1,330 was used as the initial maximum service volume since it is published in the County's Generalized Level of Service Analysis Table. However, once the two-lane generalized maximum service volume from the 2020 FDOT Generalized Service Volume Tables was exceeded, the two-lane generalized maximum service volume from the 2023 FDOT Generalized Service Volume Tables was used to demonstrate that there is not a level-of-service deficiency. This is consistent with using the 2023 FDOT Generalized Service Volume Tables for Laurel Road as suggested in Comment #4.

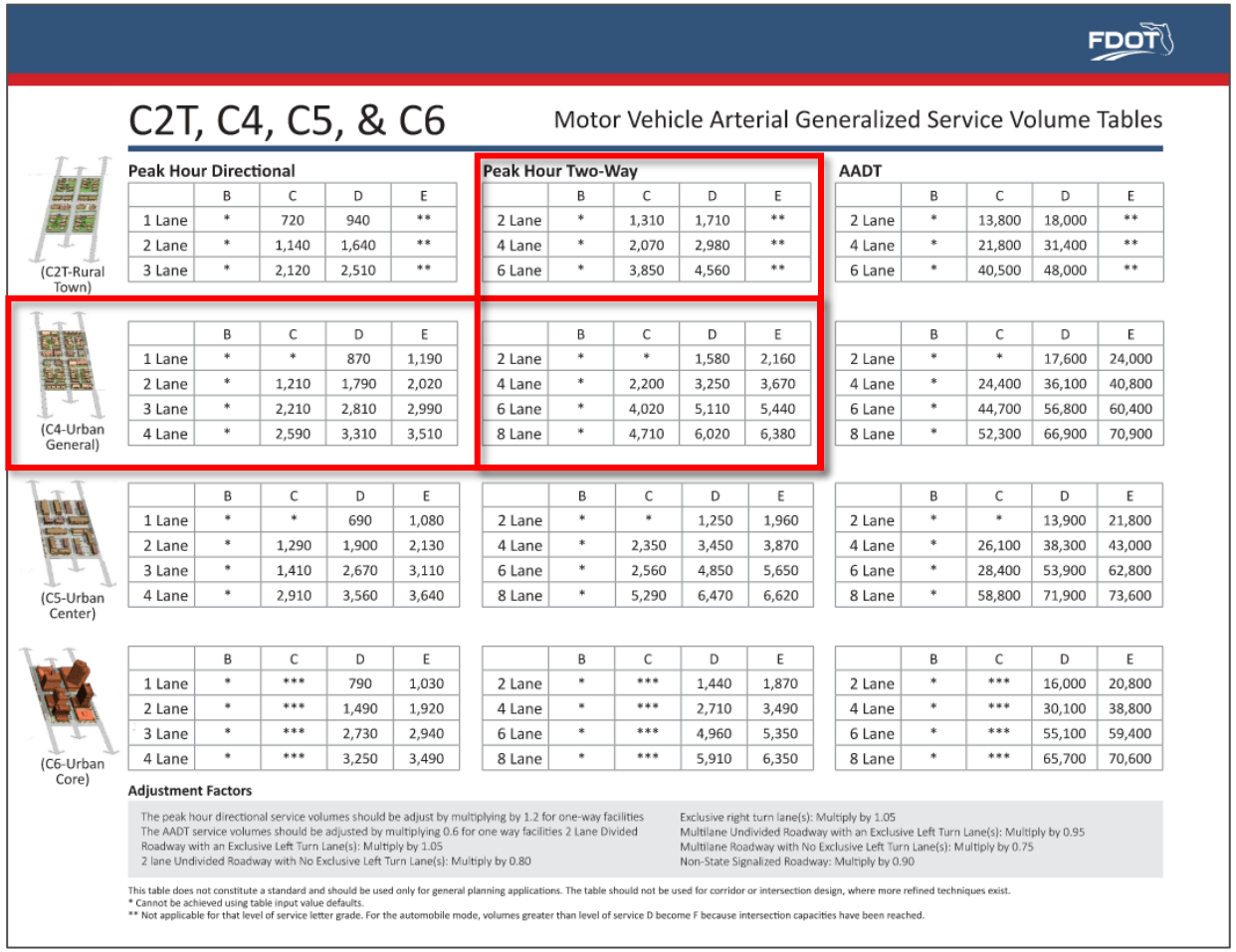


2023 FDOT Multimodal QLOS Handbook

- **What are the generalized service volume tables (GSVT)?**

"FDOT's GSVTs"... "are the primary analysis tools for conducting a generalized-planning analysis. Each GSVT provides generalized peak hour directional, peak hour two-way, and annual average daily traffic (AADT) maximum service volumes for a given LOS by roadway type and land use or context classification."

- **How are they used?**
  - To identify which table on the sheet to use first you identify the roadway context, then you look at what kind of traffic data you have available. In this case we are looking at a C4 context and using Peak Hour Two-Way volumes.



FDOT

C2T, C4, C5, & C6 — Motor Vehicle Arterial Generalized Service Volume Tables

(C2T-Rural Town)

Peak Hour Directional

	B	C	D	E
1 Lane	*	720	940	**
2 Lane	*	1,140	1,640	**
3 Lane	*	2,120	2,510	**

Peak Hour Two-Way

	B	C	D	E
2 Lane	*	1,310	1,710	**
4 Lane	*	2,070	2,980	**
6 Lane	*	3,850	4,560	**

AADT

	B	C	D	E
2 Lane	*	13,800	18,000	**
4 Lane	*	21,800	31,400	**
6 Lane	*	40,500	48,000	**

(C4-Urban General)

	B	C	D	E
1 Lane	*	*	870	1,190
2 Lane	*	1,210	1,790	2,020
3 Lane	*	2,210	2,810	2,990
4 Lane	*	2,590	3,310	3,510

	B	C	D	E
2 Lane	*	*	1,580	2,160
4 Lane	*	2,200	3,250	3,670
6 Lane	*	4,020	5,110	5,440
8 Lane	*	4,710	6,020	6,380

	B	C	D	E
2 Lane	*	*	17,600	24,000
4 Lane	*	24,400	36,100	40,800
6 Lane	*	44,700	56,800	60,400
8 Lane	*	52,300	66,900	70,900

(C5-Urban Center)

	B	C	D	E
1 Lane	*	*	690	1,080
2 Lane	*	1,290	1,900	2,130
3 Lane	*	1,410	2,670	3,110
4 Lane	*	2,910	3,560	3,640

	B	C	D	E
2 Lane	*	*	1,250	1,960
4 Lane	*	2,350	3,450	3,870
6 Lane	*	2,560	4,850	5,650
8 Lane	*	5,290	6,470	6,620

	B	C	D	E
2 Lane	*	*	13,900	21,800
4 Lane	*	26,100	38,300	43,000
6 Lane	*	28,400	53,900	62,800
8 Lane	*	58,800	71,900	73,600

(C6-Urban Core)

	B	C	D	E
1 Lane	*	***	790	1,030
2 Lane	*	***	1,490	1,920
3 Lane	*	***	2,730	2,940
4 Lane	*	***	3,250	3,490

	B	C	D	E
2 Lane	*	***	1,440	1,870
4 Lane	*	***	2,710	3,490
6 Lane	*	***	4,960	5,350
8 Lane	*	***	5,910	6,350

	B	C	D	E
2 Lane	*	***	16,000	20,800
4 Lane	*	***	30,100	38,800
6 Lane	*	***	55,100	59,400
8 Lane	*	***	65,700	70,600

Adjustment Factors

The peak hour directional service volumes should be adjust by multiplying by 1.2 for one-way facilities
The AADT service volumes should be adjusted by multiplying 0.6 for one way facilities 2 Lane Divided Roadway with an Exclusive Left Turn Lane(s): Multiply by 1.05
2 lane Undivided Roadway with No Exclusive Left Turn Lane(s): Multiply by 0.80
Exclusive right turn lane(s): Multiply by 1.05
Multilane Undivided Roadway with an Exclusive Left Turn Lane(s): Multiply by 0.95
Multilane Roadway with No Exclusive Left Turn Lane(s): Multiply by 0.75
Non-State Signalized Roadway: Multiply by 0.90

This table does not constitute a standard and should be used only for general planning applications. The table should not be used for corridor or intersection design, where more refined techniques exist.
* Cannot be achieved using table input value defaults.
** Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached.

2023 FDOT Multimodal QLOS Handbook

- **What are the adjustment factors?**
  - These are factors that represent a change from the baseline roadway analyzed in the Handbook.
  - These are multiplicative and are meant to represent the general roadway characteristics

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2023 FDOT Multimodal QLOS Handbook

- **How does this apply to this presentation?**
  - First let us take a look at the appropriate service table from the handbook and the information found Tables 6 and 7 of the February 2023 Stantec PUD Amendment.

Table 6: Total Traffic PM Peak-Hour Roadway Operations

Road Name and Segment	Adopted LOS			2028 Bkgd Traffic	PUD Amendment Traffic	2028 Total Traffic	Exceeds LOS?
	LOS Standard	Number of Lanes	Service Volume				
Jacaranda Boulevard							
Laurel Rd to Border Rd	D	2	1,330	1,248	248	1,496	Yes
Border Rd to I-75 NB	D	2	1,600	1,344	132	1,476	No
Laurel Road							
Knights Trail Rd to Jacaranda Blvd	D	4	3,088	1,688	103	1,791	No

Table 7: Updated MSV Total Traffic PM Peak-Hour Roadway Operations

Road Name and Segment	Adopted LOS			2028 Bkgd Traffic	PUD Amendment Traffic	2028 Total Traffic	Exceeds LOS?
	LOS Standard	Number of Lanes	Service Volume				
Jacaranda Boulevard							
Laurel Rd to Border Rd[1]	D	2	1,580	1,248	248	1,496	No

1. Required service volume obtained from FDOT's 2023 Multimodal Quality/Level of Service Handbook for a C4 Context Classification with non-state roadway, divided roadway, and exclusive right turn lane adjustments.

- Based on this we can see that Stantec intended to use the service volume for a 2 lane C4 non-state roadway with exclusive right turn lane adjustments.

- Here is the appropriate QLOS table for C4 with Two-Way Peak Hour volumes:

	B	C	D	E
2 Lane	*	*	1,580	2,160
4 Lane	*	2,200	3,250	3,670
6 Lane	*	4,020	5,110	5,440
8 Lane	*	4,710	6,020	6,380

- However, what we don't see are any adjustment factors being applied to this number.
- Based on the footnote we need adjustments for:
  - Non-State Roadway: 0.90
  - Exclusive Right Turn Lane Adjustment: 1.05
- Let's double check these just to make sure they apply

Jacaranda Blvd.

- Median Openings – 3
- Left turn lanes - 5
- Right turn lanes - 1
- Adjustment factors:
  - Non-State Roadway: Correct
  - Exclusive Right Turn Lane Adjustment: Incorrect
  - Exclusive Left Turn Lane Adjustment: Correct

Service Volume Comparison

- **Stantec table volume**

Table 7: Updated MSV Total Traffic PM Peak-Hour Roadway Operations

Road Name and Segment	Adopted LOS			2028 Bkgd Traffic	PUD Amendment Traffic	2028 Total Traffic	Exceeds LOS?
	LOS Standard	Number of Lanes	Service Volume				
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1. Required service volume obtained from FDOT's 2023 Multimodal Quality/Level of Service Handbook for a C4 Context Classification with non-state roadway, divided roadway, and exclusive right turn lane adjustments.

- **Adjustment factors**
  - Non-State Roadway: 0.90
  - Exclusive Left Turn Lane Adjustment: 1.05
- **Adjusted Service Volume**
  - 1580 x 0.90 x 1.05 = 1,493 Vehicles Per Hour < 1,496 Vehicles Per Hour based on Table 7

This is the opening year volume for the proposed commercial development

- **What does this mean?**
  - If this PUD Amendment is approved and the commercial development constructed as shown in the Stantec report, Jacaranda Blvd from Laurel Rd to Border Rd would begin to operate at unacceptable levels as soon as the commercial development is opened for business.

Thank you for your time and consideration.