

# Bowman

## Memorandum

**To:** Jayson R. Harrison, P.E.  
Senior Project Manager | Engineering Division  
Engineering Design & Construction, Inc.

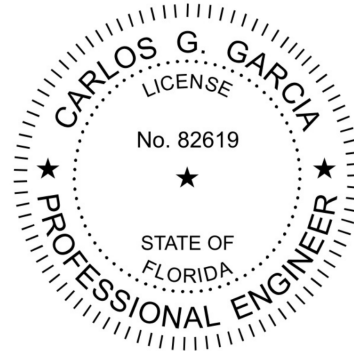
**CC:**

**From:** Carlos G. Garcia, P.E.

**Date:** 4/28/2021

**Re:** Baron Shoppes – Revised Traffic Assessment

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As requested, Bowman has revised the traffic assessment originally prepared on July 17, 2020 for the proposed Baron Shoppes. This traffic assessment has been revised based on the new site plan for the proposed site prepared on April 21, 2021.

The revised traffic assessment describes the analysis for the following items:

- Right turn lane warrant assessment at RIRO Access Driveway on Tradition Parkway.
- Stacking analysis (one drive-through restaurant and one car wash).
- Concurrency analysis (Tradition Parkway between Community Blvd and Village Parkway).

### Background Information

The proposed Baron Shoppes development is located between Community Boulevard and Village Pointe, just to the south of Tradition Parkway.

The Baron Shoppes can be accessed via a full access opening on Tradition Parkway onto Village Pointe and then into the site, and also via Village Parkway to Village Court and straight into the site. Additionally, a right-in/right-out (RIRO) access driveway connecting to Tradition Parkway between Community Boulevard and Village Pointe is also proposed. This driveway will provide access to vehicles traveling east on Tradition Parkway.

Tradition Parkway currently has a posted speed limit of 35 mph and carries approximately 7,200 vehicles per day.

### Right Turn Lane Warrant Assessment

The proposed RIRO access driveway on Tradition Parkway will provide access to vehicles traveling east on Tradition Parkway. As previously mentioned, Tradition Parkway currently has a posted speed limit of 35 mph and carries approximately 7,200 vehicles per day.

For the preparation of the turn lane assessment, a site trip distribution evaluation was prepared to determine the Arrival/Departure distribution based on the existing roadway network. Average Daily Traffic (ADT) Volumes were obtained from the Florida Department of Transportation (FDOT) as follows:

- Tradition Parkway has an ADT of 7,200 (vehicles traveling to/from the West)
- I-95 has an ADT of 80,500 (vehicles traveling to/from the North/South)
- Gatlin Boulevard has an ADT of 38,000 (vehicles traveling to/from the East)

Based on the ADTs described above, the trip distribution associated with the proposed site was projected to be as follows (**Figure 1** depicts the Site Trip Distribution Rates):

- Tradition Parkway = 6% (vehicles traveling to/from the West)
- I-95 = 64% (vehicles traveling to from the North/South)
- Gatlin Boulevard = 30% (vehicles traveling to/from the East)

For the purposes of this assessment and as a conservative approach, **10%** of the trips associated with the proposed site are projected to/from the West.

The proposed Baron Shoppes is now expected to consist of the following land uses based on the April 21, 2021 site plan:

- Chipotle Restaurant with Drive Thru (Land Use 934) (2,583 GSF)
- Fast Food Restaurant without Drive Thru (Land Use 933) (2,000 GSF)
- Subway (Fast Food Restaurant) (Land Use 933) (1,500 GSF)
- Medical Office (Land Use 720) (2,020 GSF)
- Hair Salon (Land Use 918) (1,200 GSF)
- Paradise Car Wash (Land Use 948) (6,699 GSF)
- Fast Food Restaurant without Drive Thru (Land Use 933) (1,620 GSF)
- Fast Food Restaurant without Drive Thru (Land Use 933) (2,115 GSF)
- Medical Office (Land Use 720) (2,115 GSF)

The Institute of Transportation Engineers (ITE) *Trip Generation Manual, 10<sup>th</sup> Edition* was used to determine the number of trips generated by the proposed land uses within Baron Shoppes. **Table 1** summarizes the projected trip generation for the overall Baron Shoppes. Please note that **Figure 1** and **Table 1** are also included as attachments to this document.

**Table 1. Trip Generation**

Land Use	Size	Units	Land Use Code	Weekday <sup>(1)</sup>							Saturday <sup>(1)</sup>						Sunday <sup>(1)</sup>					
				AM Peak Hour			PM Peak Hour			Daily Trips	Saturday Peak Hour			Saturday daily			Sunday Peak Hour			Sunday Daily		
				In	Out	Total	In	Out	Total		In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
Chipotle Restaurant with Drive Thru	2,583	GSF	934	53	51	104	44	40	84	1215	72	70	142	795	795	1590	68	74	142	609	610	1219
Subway (Fast Food Restaurant) <sup>(2)</sup>	1,500	GSF	933	23	15	38	21	22	43	519	40	42	82	522	522	1044	40	42	82	375	375	750
Fast Food Restaurant without Drive Thru <sup>(2)</sup>	2,000	GSF	933	12	9	21	28	29	57	692	53	56	109	696	696	1392	53	56	109	500	500	1000
Medical Office	2,020	GSF	720	5	2	7	2	7	9	70	3	3	6	8	9	17	0	1	1	1	2	3
Hair Salon	1,200	GSF	918	1	0	1	1	1	2	30	2	4	6	15	15	30	2	4	6	15	15	30
Paradise Car Wash <sup>(2) (3)</sup>	6,699	GSF	948	16	16	32	39	39	78	975	102	102	204	488	488	975	102	102	204	488	488	975
Fast Food Restaurant without Drive Thru <sup>(2)</sup>	1,620	GSF	933	24	17	41	23	23	46	561	43	45	88	564	564	1128	43	45	88	405	405	810
Fast Food Restaurant without Drive Thru <sup>(2)</sup>	2,115	GSF	933	18	13	31	30	30	60	734	57	59	116	738	738	1476	57	59	116	530	530	1060
Medical Office	2,115	GSF	720	5	2	7	2	7	9	74	4	3	7	9	9	18	0	1	1	1	2	3
<b>TOTAL</b>				<b>157</b>	125	282	<b>190</b>	198	388	4,870	<b>376</b>	384	760	3,835	3,836	7,670	<b>365</b>	384	749	2,924	2,927	5,850

Notes: (1) Based on the Institute of Transportation Engineers Trip Generation, 10th Edition.  
 (2) For planning purposes, the Sunday peak hour trips are assumed to be the same as Saturday peak hour trips. The ITE does not report Sunday peak hour trips.  
 (3) For planning purposes, the weekday daily trips were derived from the Percent of Daily Traffic provided in the ITE Trip Generation Manual, 10th Edition. The Saturday and Sunday daily trips were assumed to be the same as the weekday daily trips

To determine the number of vehicles using the proposed RIRO Access Driveway, a three-step process was completed:

1. As a conservative approach, it was assumed that the peak hour was the same for all the proposed land uses.
2. The highest number of entering peak hour trips from the weekday morning, weekday afternoon, Saturday and Sunday were used for the turn lane assessment. In this case, the Saturday peak hour was chosen as 376 trips are expected to enter the site during the peak hour.
3. Using the trip distribution associated with the traffic on Tradition Parkway (10%) established in this document, the number of site trips expected to enter the site via the proposed RIRO driveway is **38**.

Right Turn Lane Warrant Evaluation

A right turn lane warrant evaluation was completed for the eastbound approach at the intersection of Tradition Parkway and the proposed RIRO Access Driveway. The analysis was completed per the criteria set in the Driveway Information Guide (Chapter 7) published by the Florida Department of Transportation.

**Figure 2** presents the volume threshold extracted from the FDOT Driveway Information Guide (Chapter 7), *Right Turn Lanes (Exhibit 44)*.

<p><b>Exhibit 44</b> Recommended Guidelines for Exclusive Right Turn Lanes to Unsignalized* Driveway</p>	<b>Roadway Posted Speed Limit</b>	<b>Number of Right Turns Per Hour</b>
	45 mph or less	<b>80-125</b> (see note 1)
	Over 45 mph	<b>35-55</b> (see note 2)

\*May not be appropriate for signalized locations where signal phasing plays an important role in determining the need for right turn lanes.

1. The lower threshold of 80 right turn vehicles per hour would be most used for higher volume (greater than 600 vehicles per hour, per lane in one direction on the major roadway) or two-lane roads where lateral movement is restricted. The 125 right turn vehicles per hour upper threshold would be most appropriate on lower volume roadways, multilane highways, or driveways with a large entry radius (50 feet or greater).

**Figure 2.** FDOT Driveway Information Guide Exhibit 44

As shown on **Figure 2**, the installation of a right turn lane is warranted when the number of right turns per hour exceeds 125 vehicles on a roadway with a posted speed limit of less than 45 mph for lower volume roadways, multilane highways, or driveways with large entry radius (50 feet or greater).

As previously mentioned, the maximum number of site trips expected to enter the site via the proposed RIRO driveway is 38 trips. This projected volume does not meet the threshold established for a 35 mph roadway by the FDOT for the installation of a right turn lane.

The FDOT Driveway Information Guide (Chapter 7) also outlines additional criteria required to meet the installation of an auxiliary right turning lane. **Table 2** outlines this criteria.

**Table 2.** Right Turn Lane Warrant Criteria Results at RIRO Driveway.

Criteria	Source	Tradition Parkway and Proposed RIRO Driveway
		Criteria Met?
45 MPH or less more than 80-125 Right turns per hour	(1)	No
Over 45 MPH more than 35 to 55 right turns per hour	(1)	N/A
Facilities having a high volume of buses, trucks or trailers (2 or 3 per hour)	(2)	No
Poor internal design of a driveway facility causing potential backups in the through lanes	(2)	No
Heavier than normal peak flows on the main roadway*	(2)	No
Very high operating speeds (such as 55 MPH or above) and in rural areas where turns are not expected by through drivers.	(2)	No
Highways with curves or hills where sight distance is impacted.	(2)	No
Gated entrances.	(2)	No
Crash experience, especially rear end collisions.	(2)	No
Intersections or driveways just after signalized intersections where acceleration or driver expectancy would make a separate right turn lane desirable, (this would also be the case downstream soon after a dual left turn lane onto a four-lane road)	(2)	No
Severe skewed angle of intersection requiring right turn vehicle to slow greatly.	(2)	No

(1) *FDOT Driveway Information Guide*

(2) *FDOT Driveway Information Guide additional criteria*

\*The criteria, "heavier than normal peak flows on the main roadway," was evaluated to confirm that a right turn lane would not be warranted at this location. A review of the traffic volumes contained in the St. Lucie Transportation Planning Organization *Traffic Counts and Level of Service Report, Fall/Winter 2019/2020* yielded the following information for this roadway segment:

- AM Peak Hour
  - Peak Hour Service Capacity – 1,710
  - Existing AM Peak Hour Volume – 996
  - Available AM Peak Hour Capacity – 714
  
- PM Peak Hour
  - Peak Hour Service Capacity – 1,710
  - Existing PM Peak Hour Volume – 1,144
  - Available PM Peak Hour Capacity – 566

As outlined above, the roadway segment is not currently experiencing heavier than normal peak flows on the main roadway, as there is currently available capacity on the roadway segment.

As shown in **Table 2**, the proposed RIRO Driveway along Tradition Parkway does not meet any of the criteria for the installation of a right turn lane.

Based on the analysis outlined above, the installation of a right turn lane from Tradition Parkway into the proposed RIRO Driveway is not warranted.

## Drive-Thru Stacking Analysis

A stacking analysis of the following developments located within the Baron Shoppes was conducted to evaluate the drive-thru operations of the proposed sites:

- Chipotle Restaurant with Drive Thru (2,583 SF)
- Paradise Car Wash (6,699 SF)

The drive-thru stacking analysis was based on the information contained in the Institute of Transportation Engineers (ITE) *Transportation and Land Development (2<sup>nd</sup> Edition)* by Vergil G. Stover and Frank J. Koepke. The relevant excerpts from this document are attached to this assessment.

### Chipotle Restaurant with Drive-Thru

The proposed Chipotle Restaurant with drive-thru is expected to generate a maximum of 142 trips (72 in and 70 out) during the Saturday peak hour. As a conservative approach, it is anticipated that 50% of the projected site trips will utilize the drive-thru for the proposed site.

Additionally, an approximate service time of three (3) minutes per vehicle was assumed for use in the stacking analysis. It should be noted that the drive-thru for the proposed Chipotle restaurant will exclusively service mobile and online orders – thus eliminating the need for patrons to place their order at the drive-thru. This process should increase the efficiency of the drive-thru.

The calculations to determine the projected maximum queue at the drive-thru are as follows:

- Peak Hour Drive-Thru Entering Volume = 72 trips \* 50% = 36 trips
- 36 trips/hour \* 1 hour/60 minutes = 0.6 vehicles per minute
- 0.6 vehicles/minute \* 3 minute service time = 2 vehicles stacked
- 2 vehicles \* 25 feet/vehicle = 50 ft maximum queue

As shown in the attached proposed site plan, the site is designed to provide queue storage in excess of 50 feet, allowing for 9 vehicles (225 feet) in the drive-thru stacking lane.

According to the ITE *Transportation and Land Development (2<sup>nd</sup> Edition)*, drive-thru lane queue lengths for fast food restaurants with a primary food type of "Mexican" exhibit an average maximum queue length of seven (7) vehicles. Additionally, the document outlines that general fast-food restaurants require stacking space for eight (8) to nine (9) vehicles.

As previously mentioned, the site is designed to provide queue storage in excess of seven (7) vehicles, allowing for nine (9) vehicles in the drive-thru stacking lane.

### Paradise Car Wash

The proposed Paradise Car Wash is expected to generate a maximum of 204 trips (102 in and 102 out) during the Saturday peak hour.

Car wash facilities such as the Paradise Car Wash can typically process 60 to 70 vehicles per hour. In order to perform a conservative approach, it was assumed that the proposed car wash will process 60 vehicles per hour during the peak hour.

This particular site also has the ability to increase the operations to process approximately 90 vehicles during high peak hour demands if needed.

The calculation for anticipated maximum stacking is as follows:

- Peak Hour Drive-Thru Entering Volume: 102 trips
- $102 \text{ trips/hour} * 1 \text{ hour}/60 \text{ minutes} = 1.7 \text{ vehicles per minute}$
- $1.7 \text{ vehicles/minute} * 5 \text{ minute service time} = 9 \text{ vehicles stacked}$
- $9 \text{ vehicles} * 25 \text{ feet/vehicle} = 225 \text{ ft maximum queue}$

As shown in the attached proposed site plan, the site is designed to provide queue storage in excess of 225 feet, allowing for 23 vehicles (580 feet) in the drive-thru stacking lanes.

### Summary

Based on the analysis outlined above, the two (2) proposed sites are designed to provide adequate queue/stacking storage to ensure that the drive-thru operations will not spill back beyond the footprint of the proposed sites.

## **Concurrency Analysis**

A concurrency analysis was performed in order to further evaluate the projected impact of the proposed development on the roadway network immediately adjacent to the proposed RIRO driveway. The concurrency analysis was performed based on the following:

- St. Lucie Transportation Planning Organization *Traffic Counts and Level of Service Report, Fall/Winter 2019/2020*, and
- The Institute of Transportation Engineers (ITE) Trip Generation manual, 10<sup>th</sup> Edition.

The concurrency analysis for the proposed site was developed based on the number of primary trips (trips new to the roadway network) that the development would generate during the morning and evening peak hours. The projected peak hour site trips for the roadway segment of

Tradition Parkway from Community Blvd to Village Pkwy were developed by projecting 75% of all site traffic to use this segment. As there are various access points to the proposed development on both Tradition Parkway and Village Parkway, this is a conservative approach.

Additionally, the projected peak hour site trips for the roadway segment of Tradition Parkway from Village Parkway to the West of I-95 were developed based on the site trip distribution rates from **Figure 1** (94% of all site traffic). The concurrency analysis results are presented in **Table 3**.

**Table 3.** Concurrency Analysis Results

Roadway Segment	Peak Hour Service Capacity <sup>(1)</sup>	Existing Peak Hour Traffic Volume <sup>(1)</sup>	Existing Available Capacity	Projected Peak Hour Site Trips <sup>(2)(3)</sup>	Projected Remaining Available Capacity with Development
Tradition Parkway from Community Blvd to Village Pkwy	<b>AM Peak Hour</b>				
	1,710	996	714	212	502
	<b>PM Peak Hour</b>				
	1,710	1,144	566	291	275
Tradition Parkway from Village Pkwy to W of I-95	<b>AM Peak Hour</b>				
	3,170	2,021	1,149	265	884
	<b>PM Peak Hour</b>				
	3,170	1,924	1,246	365	881

(1) Source: St. Lucie Transportation Planning Organization *Traffic Counts and Level of Service Report, Fall/Winter 2019/2020*

(2) Projected peak hour site trips from Community Blvd to Village Pkwy were developed by projecting 75% of all site traffic to use this roadway segment. As there are various access points to the proposed development, this is a conservative approach.

(3) Projected peak hour site trips from Village Pkwy to W of I-95 were developed based on the site trip distribution rates (94% of all site traffic).

As shown in **Table 3**, there is ample capacity available for Tradition Parkway both before and after the introduction of the new site traffic associated with the proposed development.



## **Conclusions**

As outlined in the analysis above, the installation of a right turn lane from Tradition Parkway into the proposed RIRO Driveway is not warranted. Additionally, the three (3) proposed sites with drive-thru operations are all designed to provide adequate queue/stacking storage to ensure that the drive-thru operations will not spill back beyond the footprint of the proposed sites.

Finally, the results of the concurrency analysis yielded that there is ample capacity available for Tradition parkway both before and after the introduction of the new site traffic associated with the proposed development.

# ATTACHMENTS

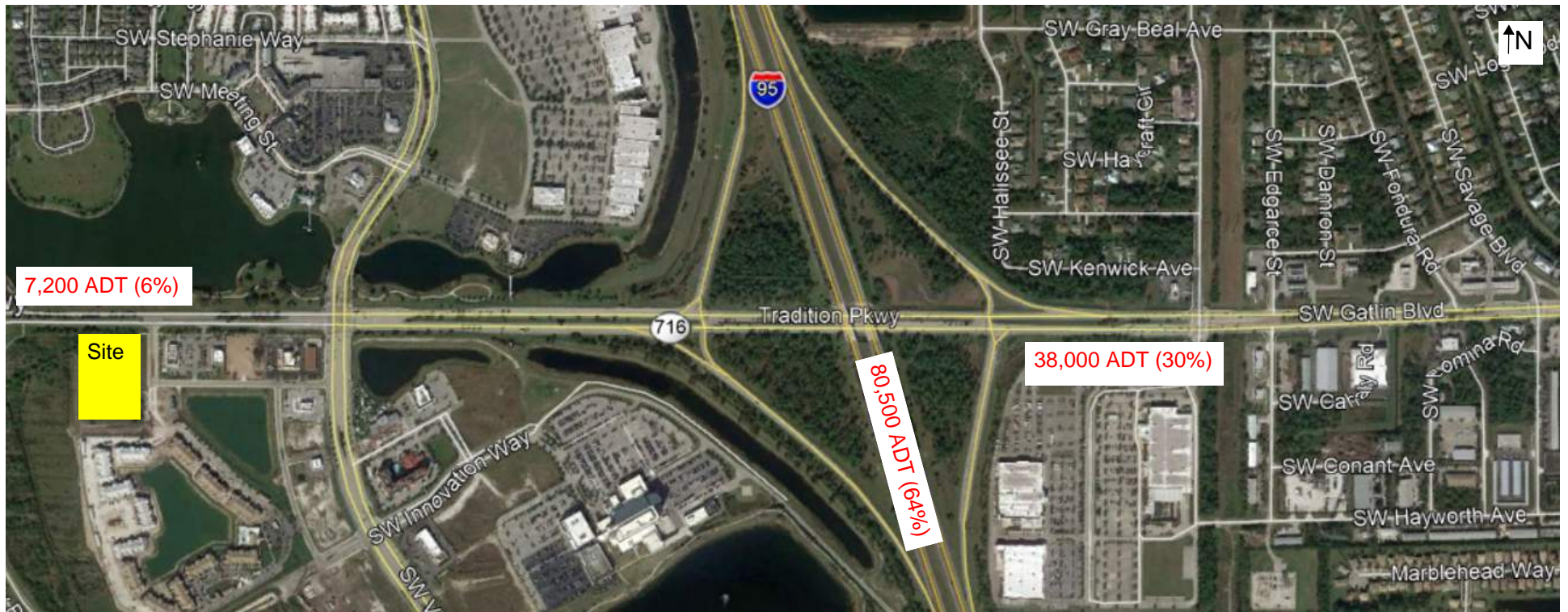


Figure 1. Site Trip Distribution Rates.

**Table 1 - ITE Site Trip Generation Analysis<sup>(1)</sup>**

Land Use	Size	Units	Land Use Code	Weekday <sup>(1)</sup>									Saturday <sup>(1)</sup>						Sunday <sup>(1)</sup>					
				AM Peak Hour			PM Peak Hour			Daily Trips	Saturday Peak Hour			Saturday daily			Sunday Peak Hour			Sunday Daily				
				In	Out	Total	In	Out	Total		In	Out	Total	In	Out	Total	In	Out	Total					
Chipotle Restaurant with Drive Thru	2,583	GSF	934	53	51	104	44	40	84	1215	72	70	142	795	795	1590	68	74	142	609	610	1219		
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Fast Food Restaurant without Drive Thru <sup>(2)</sup>	2,000	GSF	933	12	9	21	28	29	57	692	53	56	109	696	696	1392	53	56	109	500	500	1000		
Medical Office	2,020	GSF	720	5	2	7	2	7	9	70	3	3	6	8	9	17	0	1	1	1	2	3		
Hair Salon	1,200	GSF	918	1	0	1	1	1	2	30	2	4	6	15	15	30	2	4	6	15	15	30		
Paradise Car Wash <sup>(2)(3)</sup>	6,699	GSF	948	16	16	32	39	39	78	975	102	102	204	488	488	975	102	102	204	488	488	975		
Fast Food Restaurant without Drive Thru <sup>(2)</sup>	1,620	GSF	933	24	17	41	23	23	46	561	43	45	88	564	564	1128	43	45	88	405	405	810		
Fast Food Restaurant without Drive Thru <sup>(2)</sup>	2,115	GSF	933	18	13	31	30	30	60	734	57	59	116	738	738	1476	57	59	116	530	530	1060		
Medical Office	2,115	GSF	720	5	2	7	2	7	9	74	4	3	7	9	9	18	0	1	1	1	2	3		
<b>TOTAL</b>				<b>157</b>	125	282	<b>190</b>	198	388	4,870	<b>376</b>	384	760	3,835	3,836	7,670	<b>365</b>	384	749	2,924	2,927	5,850		

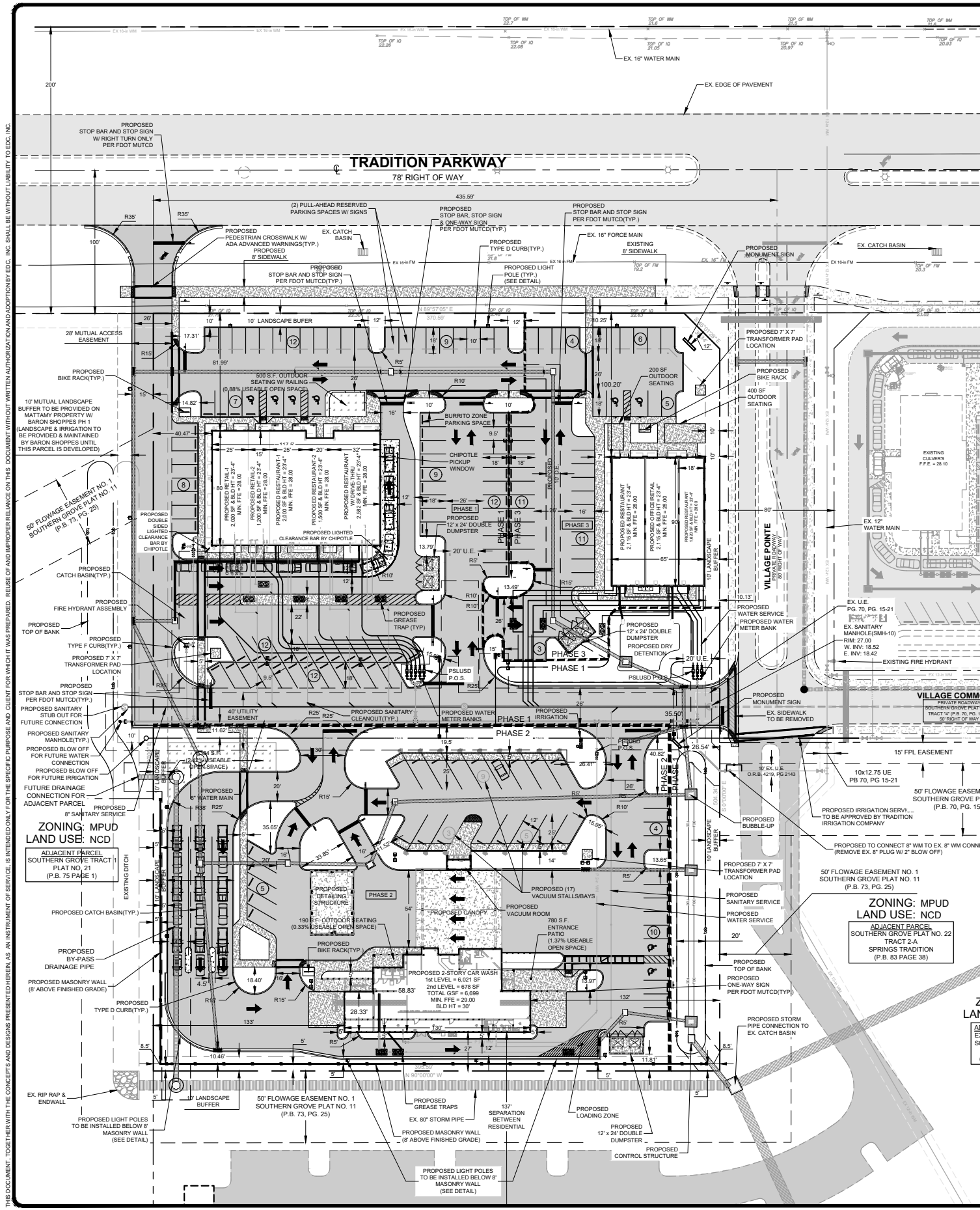
Notes: (1) Based on the Institute of Transportation Engineers Trip Generation, 10th Edition.

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(3) For planning purposes, the weekday daily trips were derived from the Percent of Daily Traffic provided in the ITE Trip Generation Manual, 10th Edition. The Saturday and Sunday daily trips were assumed to be the same as the weekday daily trips.

**Table 1. Baron Shoppes Trip Generation.**

Z:\EDC-2019\19-370 - Baron Shoppes - Tradition\ENGINEERING\AutoCAD\DWG\19-370 Site Plan.dwg SITE PLAN 4/21/2021 12:40:22 PM, Arisdo, EDC, INC.



**LEGEND**

- EXISTING SPOT ELEVATION
- PROPOSED FLOW ARROW
- LIGHT POLE
- PARKING STALL COUNT
- PROPOSED CATCH BASIN
- PROPOSED SANITARY MANHOLE
- EXISTING CONCRETE
- PROPOSED CONCRETE
- EXISTING ASPHALT
- PROPOSED ASPHALT

**PARKING INFORMATION: NOTE: ALL PARKING SHARED W/ CROSS ACCESS EASEMENT**

**PHASE 1:**  
 PROPOSED RESTAURANT W/ DRIVE THRU - PHASE 1  
 (2,000 GSF @ 400 SPACE PER 100 GSF)  
 TOTAL PARKING REQUIRED 31 STALLS

**PHASE 2:**  
 PROPOSED RESTAURANT-1 - PHASE 1  
 (2,000 GSF @ 1 SPACE PER 100 GSF)  
 TOTAL PARKING REQUIRED 20 STALLS

**PHASE 3:**  
 PROPOSED RESTAURANT-2 - PHASE 1  
 (1,500 GSF @ 1 SPACE PER 100 GSF)  
 TOTAL PARKING REQUIRED 15 STALLS

**PHASE 4:**  
 PROPOSED RETAIL-1 - PHASE 1  
 (2,020 GSF @ 4 SPACE PER 1,000 GSF)  
 TOTAL PARKING REQUIRED 8 STALLS

**PHASE 5:**  
 PROPOSED RETAIL-2 - PHASE 1  
 (1,200 GSF @ 4 SPACE PER 1,000 GSF)  
 TOTAL PARKING REQUIRED 5 STALLS

**TOTAL PH 1 PARKING REQUIRED 79 STALLS**  
**TOTAL PH 1 PARKING PROVIDED 81 STALLS**  
 LOCATION PROVIDED HANDICAP 4 STALL

**PHASE 6:**  
 PROPOSED CAR WASH - PHASE 2  
 (6,699 GSF INCLUDES 900 SF OFFICE) & 189 GSF OUTDOOR SEATING  
 (900 GSF @ 1 SPACE PER 200 GSF OFFICE AREA)  
 TOTAL PH 2 PARKING REQUIRED 5 STALLS  
 TOTAL PH 2 PARKING PROVIDED 19 STALLS  
 REQUIRED HANDICAP 1 STALL  
 PROVIDED HANDICAP 2 STALLS

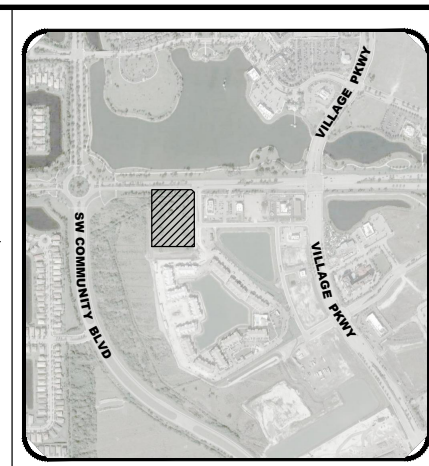
**PHASE 7:**  
 PROPOSED RESTAURANT - PHASE 3  
 (1,620 GSF W/ 400 SF OUTDOOR SEATING @ 1 SPACE PER 100 GSF)  
 TOTAL PARKING REQUIRED 20 STALLS

**PHASE 8:**  
 PROPOSED RESTAURANT - PHASE 3  
 (2,115 GSF W/ 200 SF OUTDOOR SEATING @ 1 SPACE PER 100 GSF)  
 TOTAL PARKING REQUIRED 23 STALLS

**PHASE 9:**  
 PROPOSED OFFICE/RETAIL BUILDING - PHASE 3  
 (2,115 GSF @ 1 SPACE PER 200 GSF)  
 TOTAL PARKING REQUIRED 11 STALLS

**TOTAL PH 3 PARKING REQUIRED 54 STALLS**  
**TOTAL PH 3 PARKING PROVIDED 40 STALLS**  
 REQUIRED HANDICAP 2 STALLS  
 PROVIDED HANDICAP 2 STALLS

**TOTAL PROJECT PARKING REQUIRED 138 STALLS**  
**TOTAL PROJECT PARKING PROVIDED 140 STALLS**  
 REQUIRED HANDICAP 7 STALLS  
 PROVIDED HANDICAP 8 STALLS



**OWNERSHIP:**  
 BARON SHOPPES TRADITION, LLC.  
 49 FLAGLER AVE, SUITE 301  
 STUART, FL 34994

**BUILDING SETBACKS:**  
 FRONT SETBACK = 25'  
 SIDE SETBACK = 10'  
 REAR SETBACK = 10'

**SITE DATA:**

PARCEL 1:	4316-504-0001-000-6
PARCEL 2:	4316-504-0002-000-3
PARCEL 3:	4316-504-0003-000-0
SECTION:	16
TOWNSHIP:	37S
RANGE:	39E
ZONING:	MPLUD
FUTURE LAND USE:	NEW COMMUNITY DEVELOPMENT
LAND USE:	MIXED USE AREA
MAX. BUILDING HEIGHT:	32'-6"

**NEAREST FIRE HYDRANTS LOCATED WITHIN 1,000 FT.:**  
 (APPROX. DISTANCE PER GOOGLE MAPS)

- WEST SIDE OF SITE ALONG SW COMMUNITY BLVD. 600 FT.
- EAST SIDE OF SITE ACROSS VILLAGE POINT 80 FT.
- EAST SIDE OF SITE ALONG VILLAGE COURT 380 FT.
- EAST SIDE OF SITE ALONG VILLAGE COURT 780 FT.

**LEGAL DESCRIPTION:**

PARCEL 1, SOUTHERN GROVE PLAT NO. 28 (CORRECTIVE PLAT), ACCORDING TO THE PLAT THEREOF, AS RECORDED IN PLAT BOOK 93, PAGE 22, OF THE PUBLIC RECORDS OF ST. LUCIE COUNTY, FLORIDA, CONTAINING ±0.97 ACRES, MORE OR LESS

PARCEL 2, SOUTHERN GROVE PLAT NO. 28 (CORRECTIVE PLAT), ACCORDING TO THE PLAT THEREOF, AS RECORDED IN PLAT BOOK 93, PAGE 22, OF THE PUBLIC RECORDS OF ST. LUCIE COUNTY, FLORIDA, CONTAINING ±1.52 ACRES, MORE OR LESS

PARCEL 3, SOUTHERN GROVE PLAT NO. 28 (CORRECTIVE PLAT), ACCORDING TO THE PLAT THEREOF, AS RECORDED IN PLAT BOOK 93, PAGE 22, OF THE PUBLIC RECORDS OF ST. LUCIE COUNTY, FLORIDA, CONTAINING ±2.31 ACRES, MORE OR LESS

**WATER AND SEWER:**  
 WATER SERVICE AND SEWER SERVICE WILL BE UTILIZED TO SERVE THE PROPOSED BUILDING. PROPOSED TO CONNECT TO EXISTING WATER AND SEWER SERVICE PROVIDED BY PSLUSD.

**DRAINAGE:**  
 THE SURFACE WATER MANAGEMENT SYSTEM FOR THE PROJECT WILL COLLECT SITE RUNOFF IN A SERIES OF INLETS WHICH WILL ROUTE THE RUNOFF TO PROPOSED DRY DETENTION AREAS. ALL DRAINAGE INFRASTRUCTURE WILL BE COMPLETED DURING PHASE 1.

**SOLID WASTE:**  
 BASED ON THE INTENDED USE OF THE BUILDINGS, THIS PROJECT WILL UTILIZE THREE PROPOSED DUMPSTER AREAS FOR SOLID WASTE AND RECYCLABLE ITEMS

**HAZARDOUS WASTE:**  
 ALL HAZARDOUS WASTES DISPOSAL SHALL COMPLY WITH ALL FEDERAL, STATE AND LOCAL REGULATIONS.

**FIRE PROTECTION:**  
 ALL HYDRANTS WITHIN 1000' ARE SHOWN.

**WELL FIELD PROTECTION:**  
 THE SUBJECT PARCEL IS NOT LOCATED WITHIN 1000 FEET OF A PUBLIC WATER SUPPLY WELL.

**LIGHTING NOTES:**  
 ALL LIGHTING, TO INCLUDE POLE HEIGHTS SHALL BE IN CONFORMANCE WITH THE CITY OF PORT ST LUCIE CODE OF ORDINANCES SEC. 158.221.7.

**LANDSCAPE:**  
 LANDSCAPE TO BE PROVIDED BY OTHERS.

**ACCESSIBILITY AND ADA COMPLIANCE:**  
 ALL SIDEWALKS AND RAMPS WILL MEET FOOT AND ADA REQUIREMENTS.

**ENVIRONMENTAL:**  
 PLEASE REFER TO ENVIRONMENTAL ASSESSMENT COMPLETED BY EDC, INC. ON FEBRUARY 24, 2020.

**EDC**  
 ENGINEERS & SURVEYORS  
 ENVIRONMENTAL

10250 VILLAGE PARKWAY  
 SUITE 201  
 PORT ST. LUCIE, FL 34987  
 772-462-2455  
 www.edc-inc.com

F.B.P.E. CERTIFICATE OF AUTHORIZATION 9935  
 I.B. CERTIFICATE OF AUTHORIZATION 8088

DESIGNED BY: [ ]  
 CHECKED BY: [ ]  
 DRAWN BY: [ ]  
 FILE NAME: [ ]  
 DATE: [ ]  
 LAYOUT: [ ]  
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NO.	REVISION	DATE	REVISION COMMENTS
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**BUILDING BREAKDOWN:**

PHASE 1:	BUILDING (GSF)	OUTDOOR SEATING (GSF)
RESTAURANT W/ DRIVE-THRU	2,583	500
RESTAURANT-1	2,000	---
RESTAURANT-2	1,500	---
RETAIL-1	2,020	---
RETAIL-2	1,200	---
<b>TOTAL PH 1 GSF:</b>	<b>9,303</b>	<b>500</b>

PHASE 2:	BUILDING (GSF)	OUTDOOR SEATING (GSF)
CARWASH	6,699	189
<b>TOTAL PH 2 GSF:</b>	<b>6,699</b>	<b>189</b>

PHASE 3:	BUILDING (GSF)	OUTDOOR SEATING (GSF)
RESTAURANT	1,620	400
RESTAURANT	2,115	200
OFFICE / RETAIL	2,115	0
<b>TOTAL PH 3 GSF:</b>	<b>5,850</b>	<b>600</b>
<b>TOTAL BUILDOUT GSF:</b>	<b>21,852</b>	<b>1289</b>

**LAND USE - LOT 3**

PARCEL SIZE 209,088 S.F. 4.80 AC. 100.00%

**PHASE 1 - IMPERVIOUS:**

TOTAL BUILDING FOOTPRINT	9,303 S.F.	0.21 AC.	4.45%
PAVED AREA	53,923.62 S.F.	1.24 AC.	25.79%
CONCRETE AREA	3,478.60 S.F.	0.08 AC.	1.66%
TOTAL PH 1 - IMPERVIOUS	66,703.22 S.F.	1.53 AC.	31.90%

**PHASE 2 - IMPERVIOUS:**

TOTAL BUILDING FOOTPRINT	6,021 S.F.	0.14 AC.	2.88%
PAVED AREA	48,738.93 S.F.	1.12 AC.	23.31%
CONCRETE AREA	5,096.61 S.F.	0.12 AC.	2.44%
TOTAL PH 2 - IMPERVIOUS	59,856.54 S.F.	1.38 AC.	28.63%

**PHASE 3 - IMPERVIOUS:**

TOTAL BUILDING FOOTPRINT	5,850 S.F.	0.13 AC.	2.67%
PAVED AREA	16,089.93 S.F.	0.37 AC.	7.70%
CONCRETE AREA	3,550 S.F.	0.08 AC.	1.70%
TOTAL PH 3 - IMPERVIOUS	25,489.93 S.F.	0.58 AC.	12.19%

**TOTAL IMPERVIOUS / PERVIOUS AT BUILDOUT:**

TOTAL IMPERVIOUS	152,049.69 S.F.	3.49 AC.	72.72%
PERVIOUS AREA*	57,038.31 S.F.	1.31 AC.	27.28%
DRY DETENTION AREA	7,699 S.F.	0.18 AC.	3.68%
5% USEABLE OPEN SPACE	2,851.92 S.F.	0.07 AC.	(5.00%)

\*NOTE: PERVIOUS AREA INCLUDES DRY DETENTION & 5% USEABLE OPEN SPACE

**ENVIRONMENTAL SITE ASSESSMENT TABLE**

DESCRIPTION	FOUND (YES/NO)	AGENCY CONTACT INFORMATION	MANAGEMENT PLAN (YES OR NO)	RELOCATION PLAN (YES OR NO)
WETLANDS	NO	NO	NO	NO
RARE SPECIES	NO	N/A	NO	NO
THREATENED SPECIES	NO	N/A	NO	NO
ENDANGERED SPECIES	NO	N/A	NO	NO
LISTED SPECIES	NO	N/A	NO	NO
INVASIVE/EXOTIC VEGETATION	YES	N/A	NO	NO

NOTE: THE PROPERTY OWNER, CONTRACTOR, AND AUTHORIZED REPRESENTATIVES SHALL PROVIDE PICKUP, REMOVAL AND DISPOSAL OF LITTER WITHIN THE PROJECT LIMITS AND SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE AREA FROM THE EDGE OF PAVEMENT TO THE PROPERTY LINE WITHIN THE CITY'S RIGHT-OF-WAY IN ACCORDANCE WITH CITY CODE, SECTION 41.08(g).

**BARON SHOPPES - TRADITION**

**SITE PLAN AMENDMENT**

19-370

1 OF 2

FLORIDA

PORT SAINT LUCIE

PSLUSD FILE#5359  
 PLANNING & ZONING DEPT.  
 SITE PLAN REVIEW #PP20-004-A1



# Transportation and Land Development

2nd Edition

by Vergil G. Stover  
and Frank J. Koepke



Institute of Transportation Engineers

The Institute of Transportation Engineers (ITE) is an international educational and scientific association of transportation and traffic engineers and other professionals who are responsible for meeting mobility and safety needs. ITE facilitates the application of technology and scientific principles to research, planning, functional design, implementation, operation, policy development and management for any mode of transportation by promoting professional development of members, supporting and encouraging education, stimulating research, developing public awareness, exchanging professional information, and maintaining a central point of reference and action.

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## Internal Queuing

Providing an adequate and well-defined storage area for drive-through traffic is particularly critical, especially at fast food restaurants and drive-through bank facilities where queues can, and do, become quite long. Waiting vehicles should be stored on private property clear of driveways and circulation paths so that any traffic back-up does not interfere with movement on the arterial street. A well-defined storage area for the waiting traffic should be located so that the waiting vehicles do not block or impede the movement of driveway traffic. At fast food restaurants, the menu board is commonly installed upstream of the service window to permit drive-through customers to place their orders before they arrive at the service window. Preparation of their order can then begin before they reach the service window, thus minimizing their time at the service window. Some fast food drive-throughs use three stations: 1) the order board, 2) the pay window, and 3) where the order is picked up.

Where a single service position is involved, the situation is referred to as single-channel. Multiple channels are when two or more service positions are available. Multiple channels commonly arise with banks and exits to large parking lots and garages where a fee is charged for parking. They also can be found at some high-volume fast food restaurants that have two pick-up windows.

Customers arriving randomly at a drive-through facility might be served immediately or might have to enter the queue until they can be served. Waiting lines occur whenever the immediate demand for services exceeds the current capacity of the facility providing that service. Adequate internal storage area(s) must be provided to ensure that any site-generated queue does not extend into the adjacent street.

An ITE Technical Council Committee [4] analyzed data that were collected to estimate the length of automobile queues at drive-through facilities. Table 11-9 lists the range in queue length (the number of vehicles in line including the vehicle at the service position) for fast food restaurants. The upper number in the range for fast food restaurants serving hamburgers is probably an indication of high, short-term surges in demand as the average of seven vehicles in the system compares with maximum queues of other high-use restaurants.

The report also indicates there was a 95 percent probability that the maximum queue would not be more than ten vehicles and that there was an 80 percent probability that the maximum queue will not exceed eight vehicles.



**Table 11-9. Ranges of Fast Food Queue Lengths by Food Type**

Food Type	Maximum Queue Range (# in system)	Average Maximum Queue (# in system)	Studies
Donuts	4	4	2
Steak	4	4	2
Chicken	2-9	5	5
Fish	5	5	1
Sandwiches	5	5	1
Mexican	7	7	1
Roast Beef	6-8	7	2
Hamburgers	4-13	7	27

Source: Adapted from *Queing Areas for Drive-Thru Facilities* [4].

With respect to financial institutions, the report states that there was an 80 percent probability that the maximum queue for a drive-through lane would be six vehicles. At two of the eight study sites, it was observed that a queue length that exceeded eight vehicles was not tolerated by bank customers. When the queue became excessive, customers would park and use walk-in facilities.

Other land uses were also surveyed. Although the database was not as extensive as fast food and banks, the data will provide some indication of anticipated queues. The study recommends a front bumper-to-front bumper distance of 22 ft. be used to determine the occupied length. Table 11-10 provides a summary of observed queue lengths for the studied land uses.

**Table 11-10. Summary of Observed Queues at Drive-Throughs**

Land Use	Range	Near Maximum Queue Observed
Fast Food (Hamburger)	4-13	9
Fast Food (Others)	2-9	7
Bank	1-8	7
Car Wash (Self-service)	1-3	2
Dry Cleaners	1-3	2

Source: Adapted from *Queing Areas for Drive-Thru Facilities* [4].



**Traffic Counts and Level of Service Report  
Fall/Winter 2019/2020**

Roadway Name	Location	STATION ID	AADT	Last Count Year	Pk Hr Service Capacity	AM Pk Hr Pk Dir			PM Pk Hr Pk Dir		
						Volume	LOS	V/C	Volume	LOS	V/C
ST LUCIE WEST BLVD	CASHMERE BLVD to BAYSHORE BLVD	316	46,000	2019	3,170	2,446	C	0.792	2,308	C	0.747
SUNRISE BLVD	MIDWAY RD to BELL AVE	155	3,590	2016	540	249	C	0.922	233	C	0.863
SUNRISE BLVD	BELL AVE to EDWARDS RD	153	3,814	2016	750	253	C	0.684	286	C	0.773
SUNRISE BLVD	EDWARDS RD to CORTEZ BLVD	511	7,300	2020	600	647	F	1.011	515	D	0.858
SUNRISE BLVD	CORTEZ BLVD to VIRGINIA AVE	511	7,300	2020	750	647	D	0.863	515	D	0.687
SUNRISE BLVD	VIRGINIA AVE to OLEANDER AVE	509	5,300	2020	750	417	D	0.556	411	D	0.548
SUNRISE BLVD	OLEANDER AVE to 7TH ST	708	3,900	2017	1,540	243	C	0.352	282	C	0.409
SUNRISE BLVD	7TH ST to US 1	708	3,900	2017	1,710	243	C	0.316	282	C	0.366
TIFFANY AVE	US 1 to HILLMOOR DR	322	15,000	2019	2,100	855	C	0.425	862	C	0.429
TIFFANY AVE	HILLMOOR DR to VILLAGE GREEN DR	322	15,000	2019	2,100	855	C	0.425	862	C	0.429
TIFFANY AVE	VILLAGE GREEN DR to LENNARD RD	320	4,666	2017	2,100	242	C	0.120	261	C	0.130
TORINO PKWY	CASHMERE BLVD to CALIFORNIA BLVD	709	7,800	2018	630	404	C	0.673	443	C	0.738
TORINO PKWY	CALIFORNIA BLVD to EAST TORINO PKWY	238	4,314	2018	630	255	C	0.425	223	C	0.372
TRADITION PKWY	COMMUNITY BLVD to VILLAGE PKWY	711	8,367	2018	1,710	996	D	0.582	1,144	D	0.669
TRADITION PKWY	VILLAGE PKWY to W OF I-95	712	36,500	2019	3,170	2,021	C	0.654	1,924	C	0.623
TULIP BLVD	DARWIN BLVD to PORT ST LUCIE BLVD	713	8,200	2019	790	524	D	0.663	456	D	0.577
TULIP BLVD	PORT ST LUCIE BLVD to PAAR DR	714	9,133	2018	790	639	D	0.809	493	D	0.624
TULIP BLVD	PAAR DR to DARWIN BLVD	714	9,133	2018	790	639	D	0.809	493	D	0.624
TURNPIKE FEEDER RD	TURNPIKE FEEDER RD SB RAMP to US 1	940078	4,989	2015	660	653	C	0.989	653	C	0.989
TURNPIKE FEEDER RD	INDIAN PINES BLVD to TURNPIKE FEEDER RD SB R...	940269	10,253	2017	870	676	C	0.777	620	C	0.713
TURNPIKE FEEDER RD	INDRIO RD to INDIAN PINES BLVD	940745	12,876	2017	870	696	C	0.800	732	C	0.841
US 1	MARTIN C.L. to LENNARD RD	945071	41,817	2017	4,240	1,904	C	0.457	2,239	C	0.537
US 1	LENNARD RD to PORT ST LUCIE BLVD	945071	41,817	2017	4,040	1,904	C	0.480	2,239	C	0.564
US 1	PORT ST LUCIE BLVD to JENNINGS RD	945070	31,458	2017	3,020	1,510	C	0.514	1,603	C	0.545
US 1	JENNINGS RD to TIFFANY AVE	945070	31,458	2017	3,020	1,510	C	0.514	1,603	C	0.545

- \* Note: A six digit number in the "STATION ID" column identifies segment counted by FDOT
- \* Volumes shown were adjusted using FDOT Seasonal Factors
- \* AADT = Annual Average Daily Traffic (volumes for both directions where applicable)
- \* Counts with an ID format of 6 digits have data extracted from FDOT count stations.