

# KBP CONSULTING, INC.

June 30, 2022

Ms. Anthea Gianniotis, AICP  
Development Services Director  
City of Delray Beach  
100 NW 1<sup>st</sup> Avenue  
Delray Beach, FL 33444

**Re: Proposed Automotive Site – Delray Beach, Florida  
Traffic Statement for Rezoning Application – REVISED**

Dear Anthea:

There are seven (7) vacant parcels of land located on the east side of N. Federal Highway (US 1 / State Road 5) approximately 900 feet south of Gulfstream Boulevard in Delray Beach, Palm Beach County, Florida. More specifically, the subject parcels are located at 2419 through 2613 N. Federal Highway and the Parcel Control Numbers are:

- 12-43-46-04-08-000-0351
- 12-43-46-04-08-000-0352
- 12-43-46-04-08-000-0300
- 12-43-46-04-08-000-0310
- 12-43-46-04-08-000-0320
- 12-43-46-04-08-000-0330
- 12-43-46-04-08-000-0340

The total land area of these parcels is approximately 191,150 square feet (+/- 4.39 acres) and the current zoning of these parcels is General Commercial (GC). There is a conceptual plan to develop an automobile dealership on this site which will necessitate a zoning change to Automotive Commercial (AC). The maximum allowable Floor Area Ratio (FAR) for the GC land use is 3.0 which yields 573,450 square feet. The maximum allowable FAR for the AC land use is also 3.0 (573,450 square feet). The purpose of this technical memorandum (i.e. traffic statement) is to document the trip generation characteristics of the current and proposed zoning designations. A project location map is presented in Attachment A to this memorandum and the site surveys are presented in Attachment B.

## **Trip Generation Analysis**

Consistent with the foregoing description of the current and the proposed zoning designations for the subject site, a trip generation analysis has been conducted utilizing the trip generation rates and equations contained in Palm Beach County's Trip Generation Rates table which is based upon the Institute of Transportation Engineer's (ITE) *Trip Generation Manual (10<sup>th</sup> Edition)*. According to the subject Palm Beach County table and ITE manual, the most appropriate land use categories for this analysis are Land Use #820 – General Commercial and Land Use #840 – Automobile Sales (New). The trip generation rates / equations used to determine the number daily vehicle trips associated with this analysis are presented on the following page.

## General Commercial (Shopping Center) – ITE Land Use #820

- Daily:  $\ln(T) = 0.68 \ln(X) + 5.57$   
where  $T$  = number of trips and  $X$  = 1,000 square feet of gross leasable area
- Pass-By:  $83.18 - 9.30 \ln(A)$

## Automobile Sales (New) – ITE Land Use #840

- Daily:  $T = 27.84 (X)$   
where  $T$  = number of trips and  $X$  = 1,000 square feet of gross floor area
- Pass-By: 15%

Table 1 below summarizes the trip generation characteristics for the current and proposed zoning designations associated with the subject site in Delray Beach, Florida. Palm Beach County trip generation rates and relevant excerpts from the referenced ITE manual are presented in Attachment C to this memorandum.

<b>Table 1</b> <b>Trip Generation Summary</b> <b>Automotive Site - Delray Beach, Florida</b>		
<b>Zoning</b>	<b>Size</b>	<b>Daily Trips</b>
<b>Current</b>		
General Commercial	573,450 SF	19,715
Pass-By (-24.11%)		(4,753)
<b>Sub Total</b>		<b>14,962</b>
<b>Proposed</b>		
Automotive Sales (New)	573,450 SF	15,965
Pass-By (-15%)		(2,395)
<b>Sub Total</b>		<b>13,570</b>
<b>Difference (Proposed - Current)</b>		<b>(1,392)</b>

Compiled by: KBP Consulting, Inc. (June 2022).

Source: Palm Beach County Traffic Division & ITE Trip Generation Manual (10th Edition).

As indicated in Table 1 above, the proposed zoning designation (Automotive Commercial) is estimated to generate 13,570 net daily vehicle trips and the current zoning designation (General Commercial) is estimated to generate 14,962 net daily vehicle trips. As such, the proposed zoning designation is projected to generate 1,392 fewer daily vehicle trips when compared with the current zoning designation.

## Current ADT Volumes

Consistent with the City's Code relative to traffic statements for rezoning applications, the current (latest) daily traffic volumes have been obtained from Palm Beach County. According to the latest (2020) approved traffic volume report, US 1 / N. Federal Highway in the immediate vicinity of the subject site has a daily traffic volume of 25,281 vehicles.

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## Conclusions

The trip generation analysis for the proposed rezoning (from GC to AC) of property located at 2419 through 2613 N. Federal Highway in Delray Beach, Florida indicates that the proposed zoning designation will generate 1,392 fewer daily vehicle trips when compared with the current zoning designation.

If you have any questions or require additional information, please do not hesitate to contact me.

Sincerely,

**KBP CONSULTING, INC.**

A handwritten signature in blue ink, appearing to read 'Karl B. Peterson', with a stylized flourish extending to the right.

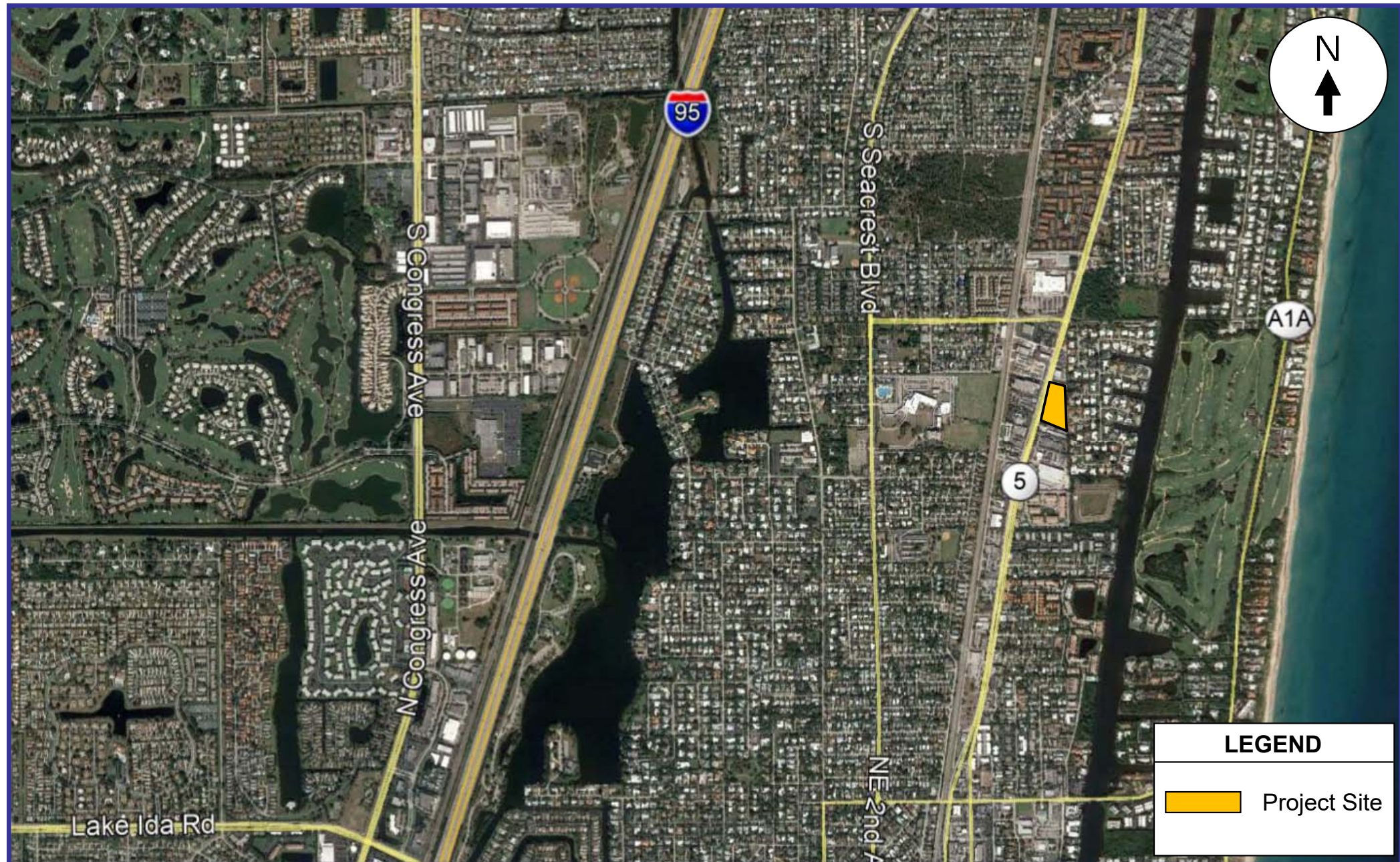
Karl B. Peterson, P.E.  
Florida Registration Number 49897  
Engineering Business Number 29939

# **Attachment A**

**Proposed Automotive Site – Delray Beach, Florida**

**Project Location Map**





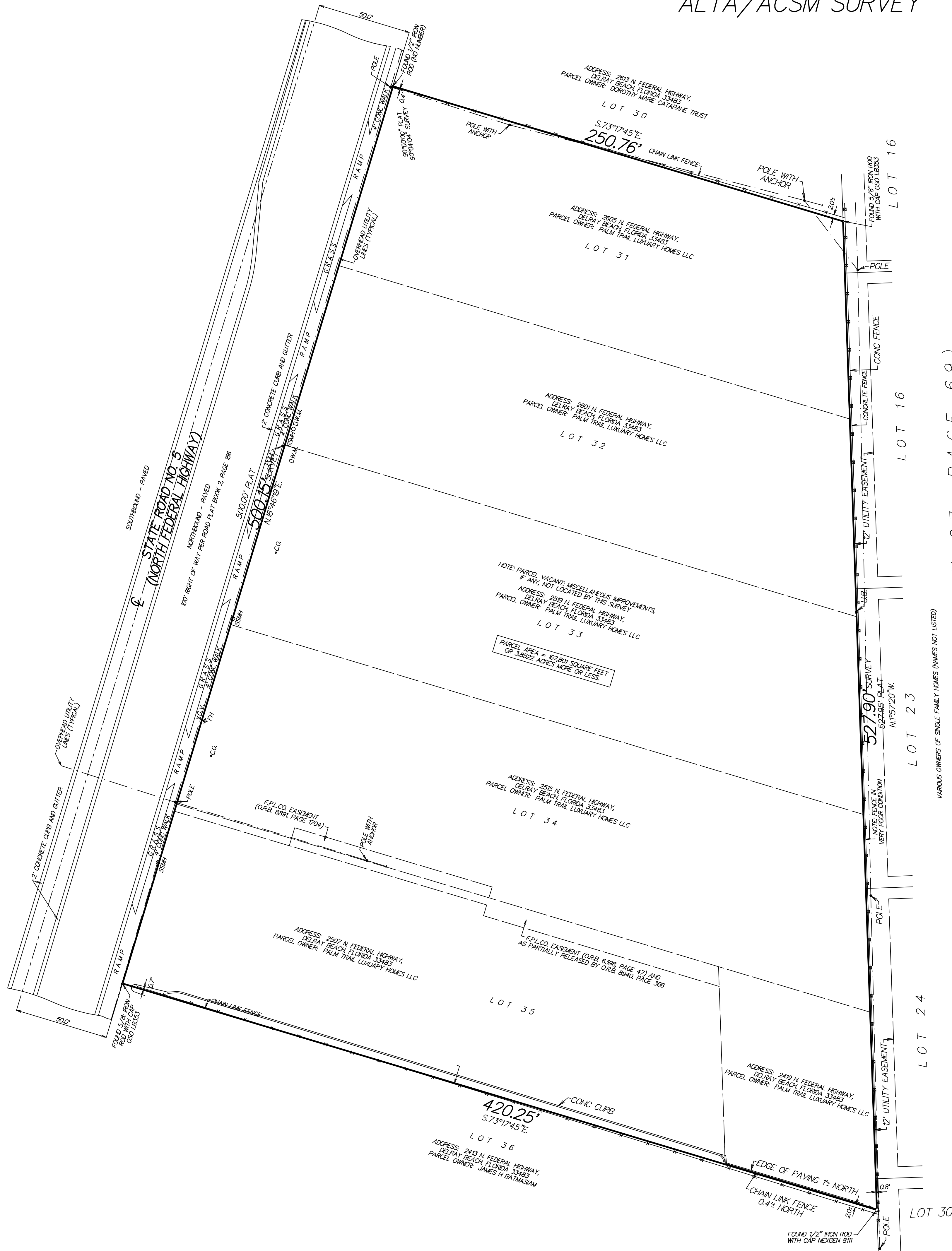
# **Attachment B**

**Proposed Automotive Site – Delray Beach, Florida**

**Site Surveys**



ALTA/ACSM SURVEY



**LEGEND:**

C = CENTERLINE  
W.M. = WATER METER  
F.H. = FIRE HYDRANT  
G.V. = GATE VALVE  
SSMH = SANITARY SEWER MANHOLE  
CONC = CONCRETE  
C.O. = SANITARY SEWER CLEAN OUT

FLOOD ZONE: X  
COMMUNITY PANEL NO. 125102  
MAP NO.: 12099C0977F  
EFFECTIVE DATE: OCTOBER 5, 2017

NOTE: ALL BOUNDARY LINES AND ANGULAR DIMENSIONS ARE PLAT AND SURVEY UNLESS STATED OTHERWISE.

ALL DIMENSIONS SHOWN HEREON ARE BASED ON THE STANDARD U.S. FOOT.

THIS SURVEY HAS ACHIEVED A MINIMUM LEVEL OF CLOSURE OF 1 FOOT IN 10,000 FEET AS REQUIRED FOR COMMERCIAL/HIGH RISK PROPERTY CLOSURE WAS ACHIEVED BASED ON A REDUNDANCY OF MEASUREMENTS FOR VERTICAL, HORIZONTAL AND ANGULAR DIMENSIONS.

NO SUBSURFACE SEARCH WAS MADE FOR UTILITIES OR UNDERGROUND FOOTERS

**DESCRIPTION:**

LOTS 31, 32, 33, 34 AND 35, DELRAY BEACH ESTATES, ACCORDING TO THE PLAT THEREOF AS RECORDED IN PLAT BOOK 21, PAGE 13, PUBLIC RECORDS OF PALM BEACH COUNTY, FLORIDA.

**TITLE NOTES:**

THIS SURVEY SHOWS ALL EASEMENTS AND RIGHTS OF WAY AS SHOWN ON SCHEDULE B-III OF THE AMERICAN LAND TITLE ASSOCIATION TITLE COMMITMENT NO. 1173803, DATED OCTOBER 29, 2021.

PARCEL SUBJECT TO DEDICATIONS AND RESERVATION AS SHOWN ON PLAT BOOK 21, PAGE 13.

PARCEL SUBJECT TO AGREEMENT FOR WATER SERVICE AS RECORDED IN O.R.B. 3926, PAGE 1748 (LOT 33) AND O.R.B. 3380, PAGE 1397 (LOT 34).

PARCEL SUBJECT TO CONDITIONS AS CONTAINED IN RESOLUTION FIXING SETBACKS REQUIREMENTS AS RECORDED IN DEED BOOK 1157, PAGE 618.

PARCEL SUBJECT TO METAL, MINERAL AND PETROLEUM RESERVATIONS AS CONTAINED IN O.R.B. 6398, PAGE 48.

NOTE: ALL DOCUMENTS REFERENCED AS RECORDED IN THE PUBLIC RECORDS OF PALM BEACH COUNTY, FLORIDA.

MAP OF BOUNDARY SURVEY

I HEREBY CERTIFY THAT THIS SURVEY WAS MADE UNDER MY RESPONSIBLE CHARGE AND MEETS THE STANDARDS OF PRACTICE AS SET FORTH BY THE FLORIDA BOARD OF PROFESSIONAL SURVEYORS AND MAPPERS IN CHAPTER 5J-17, FLORIDA ADMINISTRATIVE CODE, PURSUANT TO SECTION 472.027, FLORIDA STATUTES.

NOT VALID WITHOUT THE SIGNATURE AND THE ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.

PAUL D. ENGLE  
SURVEYOR & MAPPER #5708

ENGLE LAND SURVEYING LLC  
LAND SURVEYORS  
CERTIFICATE OF AUTHORIZATION #LB8447  
SURVEYOR AND MAPPER IN RESPONSIBLE CHARGE: PAUL D. ENGLE  
955 N.W. 17TH AVENUE, SUITE K-1, DELRAY BEACH, FLORIDA 33445  
(561) 276-4501 732-3279 FAX 276-2390

DATE OF SURVEY: DECEMBER 10, 2021  
FIELD BOOK: ELS D-1  
PAGE NO.: 6

SCALE: 1" = 30'  
ORDER NO.: 21-18db







# **Attachment C**

**Proposed Automotive Site – Delray Beach, Florida**

**Palm Beach County Trip Generation Rates**

**ITE Trip Generation Manual (10<sup>th</sup> Edition) – Relevant Excerpts**

## Palm Beach County Trip Generation Rates

(Effective with traffic studies submitted to the County on or after 4/15/2019)

Gr	Landuse	ITE Code	Unit	Daily Rate/Equation	Pass-By %	In/Out	AM Peak Hour Rate/Equation	In/Out	PM Peak Hour Rate/Equation
Industrial	Light Industrial	110	1000 S.F.	4.96	10%	88/12	0.7	13/87	0.63
	Warehouse	150	1000 S.F.	1.74	10%	77/23	0.17	27/73	0.19
	Flex Space - IND FLU	PBC	1000 S.F.	7.86	10%	64/36	1.53	40/60	1.21
	Flex Space - COM FLU	PBC	1000 S.F.	29.67	45%	72/28	2.12	40/60	2.67
	Mini-Warehouse/SS	151	1000 S.F.	1.51	10%	60/40	0.1	47/53	0.17
Residential	Single Family Detached	210	Dwelling Unit	10	0%	25/75	0.74	63/37	$\ln(T) = 0.96 \ln(X) + 0.20$
	Multifamily Low-Rise Housing upto 2 story (Apartment/Condo/TH)	220	Dwelling Unit	7.32	0%	23/77	0.46	63/37	0.56
	Multifamily Mid-Rise Housing 3-10 story (Apartment/Condo/TH)	221	Dwelling Unit	5.44	0%	26/74	0.36	61/39	0.44
	55+ SF Detached	251	Dwelling Unit	4.27	0%	33/67	0.24	61/39	0.30
	55+ SF Attached	252	Dwelling Unit	3.7	0%	35/65	0.2	55/45	0.26
	Congregate Care Facility	253	Dwelling Unit	2.02	0%	60/40	0.07	53/47	0.18
	Assisted Living Facility	254	Beds	2.6	0%	63/37	0.19	38/62	0.26
Ldg	Hotel	310	Rooms	8.36	10%	59/41	0.47	51/49	0.6
Rec	Movie Theater	444	Seats	1.76	5%	N/A	0	55/45	0.09
	Health Club	492	1000 S.F.	32.93	5%	50/50	1.41	57/43	3.53
Institutional	Elementary School	520	Students	1.89	0%	54/46	0.67	48/52	0.17
	Middle/Junior School	522	Students	2.13	0%	54/46	0.58	49/51	0.17
	High School	530	Students	2.03	0%	67/33	0.52	48/52	0.14
	Private School (K-8)	534	Students	Use Private K-12 rate	0%	55/45	0.91	46/54	0.26
	Private School (K-12)*	536	Students	2.48	0%	61/39	0.80	43/57	0.17
	Church/Synagogue <sup>a</sup>	560	1000 S.F.	6.95	5%	60/40	0.33	45/55	0.49
	Day Care	565	Students	4.09	50%	53/47	0.78	47/53	0.79
	Library	590	1000 S.F.	72.05	10%	71/29	1	48/52	8.16
Med	Hospital	610	1000 S.F.	10.72	10%	68/32	0.89	32/68	0.97
	Nursing Home	620	Beds	3.06	10%	72/28	0.17	33/67	0.22
Office	General Office (>5,000 SF GFA)	710	1000 S.F.	$\ln(T) = 0.97 \ln(X) + 2.50$	10%	86/14	$T = 0.94(X) + 26.49$	16/84	1.15
	Small Office Building (<=5,000 SF GFA)	712	1000 S.F.	16.19	10%	83/18	1.92	32/68	2.45
	Medical Office	720	1000 S.F.	34.8	10%	78/22	2.78	28/72	3.46
	Medical Office (Reduced) <sup>b</sup>	PBC	1000 S.F.	17.4	10%	78/22	1.39	28/72	1.73
	Government Office	730	1000 S.F.	22.59	10%	75/25	3.34	25/75	1.71

## Palm Beach County Trip Generation Rates

(Effective with traffic studies submitted to the County on or after 4/15/2019)

Gr	Landuse	ITE Code	Unit	Daily Rate/Equation	Pass-By %	In/Out	AM Peak Hour Rate/Equation	In/Out	PM Peak Hour Rate/Equation
Retail	Nursery (Garden Center)	817	Acre	108.1	0%	N/A <sup>i</sup>	2.82	N/A <sup>i</sup>	8.06
	Nursery (Wholesale)	818	Acre	19.5 <sup>c</sup>	0%	N/A <sup>i</sup>	0.26	N/A <sup>i</sup>	0.45
	Landscape Services	PBC	Acre <sup>m</sup>	121.70	0%	40/60	34.4	58/42	15.1
	Gen. Commercial	820	1000 S.F.	$\text{Ln}(T) = 0.68 \text{Ln}(X) + 5.57^d$	Note e	62/38	0.94	48/52	$\text{Ln}(T) = 0.74 \text{Ln}(X) + 2.89^j$
	Automobile Sales (New)	840	1000 S.F.	27.84	15%	73/27	1.87	40/60	2.43
	Automobile Parts Sales	843	1000 S.F.	55.34	28%	55/45	2.59	48/52	4.91
	Tire Store	848	1000 S.F.	28.52	28%	64/36	2.72	43/57	3.98
	Pharmacy + DT	881	1000 S.F.	109.16	50%	53/47	3.84	50/50	10.29
Services	Drive-In Bank <sup>g</sup>	912	1000 S.F.	100.03	47%	58/42	9.5	50/50	20.45
	Quality Restaurant	931	1000 S.F.	83.84	44%	50/50	0.73	67/33	7.8
	High Turnover Sit-Down Rest.	932	1000 S.F.	112.18	43%	55/45	9.94	62/38	9.77
	Fast Food Restaurant w/o DT	933	1000 S.F.	346.23	45%	60/40	25.1	50/50	28.34
	Fast Food Restaurant + DT	934	1000 S.F.	470.95	49%	51/49	40.19	52/48	32.67
	Coffee/Donut Shop w/o DT	936	1000 S.F.	686.67 <sup>h</sup>	45%	51/49	101.14	50/50	36.31
	Coffee/Donut Shop + DT	937	1000 S.F.	820.38	49%	51/49	88.99	50/50	43.38
	Gas Station w/Convenience Store <sup>i</sup>	FDOT	FP, 1000 S.F.	14.3*PM Trips	61%	50/50	Note j	50/50	12.3*FP+15.5*(X)
	Carwash (Automated) <sup>k</sup>	PBC	Lane	166.00	0%	50/50	11.97	50/50	13.65

Modification History  
**3/26/2019:** First published  
**3/2/2020:** Added Landscape Services, modification history, edited formatting,

Footnotes

- a) Weekend peak hour rate = 9.99 per 1,000 s.f. with a 48/52 directional split
- b) To be used only when adjacent to hospital, for Med. Office square footage not to exceed 44% of the hospital square footage
- c) Use caution when using because of very low sample data. Consult with the County before using.
- d) For intensities under 10,000 s.f., use a rate of 125.61 / 1,000 S.F. instead of the equation.
- e) Pass-by percent = 62% for 10,000 s.f. or less, otherwise =  $83.18 - 9.30 * \text{Ln}(A)$  where A is 1,000 s.f. of leasable area
- f) For intensities under 10,000 s.f., use a rate of 9.9 / 1,000 s.f. instead of the equation.
- g) Use these rates for a drive-in bank with up to 4 drive-thru lanes (excl. ATM lane). For additional drive-thru lanes, use per lane rates from ITE Code 912 (124.76 daily, 8.83 AM, 27.15 PM. Use same in/out splits)
- h) ITE rate NA. Rate derived using PM to Daily ratio for ITE Code 937
- i) FP=Fueling Position. Use both FP and Convenience Store size in estimating trips using the provided equation. Note that no internalization between the gas pumps and convenience store, as per ULDC Article 12, should be applied to estimate the net trips.
- j) Use PM rates
- k) Daily rate taken from PBC trip gen. study. Peak hour rates derived by applying peak to daily ratios for gas station to daily carwash rate
- l) Assume 50/50
- m) Landscape Services acreage consists of overnight vehicle and equipment storage as well as areas (covered or uncovered) for chemicals, fertilizers, landscape materials (excluding plants) and other items needed for day-to-day operations. Not included are drive aisles, customer/employee parking, structures shared by nursery and landscape services, facilities that solely serve the onsite landscape activities or any nursery growing areas.



# Land Use: 820

## Shopping Center

### Description

A shopping center is an integrated group of commercial establishments that is planned, developed, owned, and managed as a unit. A shopping center's composition is related to its market area in terms of size, location, and type of store. A shopping center also provides on-site parking facilities sufficient to serve its own parking demands. Factory outlet center (Land Use 823) is a related use.

### Additional Data

Shopping centers, including neighborhood centers, community centers, regional centers, and super regional centers, were surveyed for this land use. Some of these centers contained non-merchandising facilities, such as office buildings, movie theaters, restaurants, post offices, banks, health clubs, and recreational facilities (for example, ice skating rinks or indoor miniature golf courses).

**Many shopping centers, in addition to the integrated unit of shops in one building or enclosed around a mall, include outparcels (peripheral buildings or pads located on the perimeter of the center adjacent to the streets and major access points). These buildings are typically drive-in banks, retail stores, restaurants, or small offices. Although the data herein do not indicate which of the centers studied included peripheral buildings, it can be assumed that some of the data show their effect.**

The vehicle trips generated at a shopping center are based upon the total GLA of the center. In cases of smaller centers without an enclosed mall or peripheral buildings, the GLA could be the same as the gross floor area of the building.

Time-of-day distribution data for this land use are presented in Appendix A. For the 10 general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 11:45 a.m. and 12:45 p.m. and 12:15 and 1:15 p.m., respectively.

The average numbers of person trips per vehicle trip at the 27 general urban/suburban sites at which both person trip and vehicle trip data were collected were as follows:

- 1.31 during Weekday, AM Peak Hour of Generator
- 1.43 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 1.46 during Weekday, PM Peak Hour of Generator

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), British Columbia (CAN), California, Colorado, Connecticut, Delaware, District of Columbia, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Nevada, New Jersey, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, South Dakota, Tennessee, Texas, Vermont, Virginia, Washington, West Virginia, and Wisconsin.

### Source Numbers

105, 110, 154, 156, 159, 186, 190, 198, 199, 202, 204, 211, 213, 239, 251, 259, 260, 269, 294, 295, 299, 300, 301, 304, 305, 307, 308, 309, 310, 311, 314, 315, 316, 317, 319, 358, 365, 376, 385, 390, 400, 404, 414, 420, 423, 428, 437, 440, 442, 444, 446, 507, 562, 580, 598, 629, 658, 702, 715, 728, 868, 870, 871, 880, 899, 908, 912, 915, 926, 936, 944, 946, 960, 961, 962, 973, 974, 978

# Shopping Center (820)

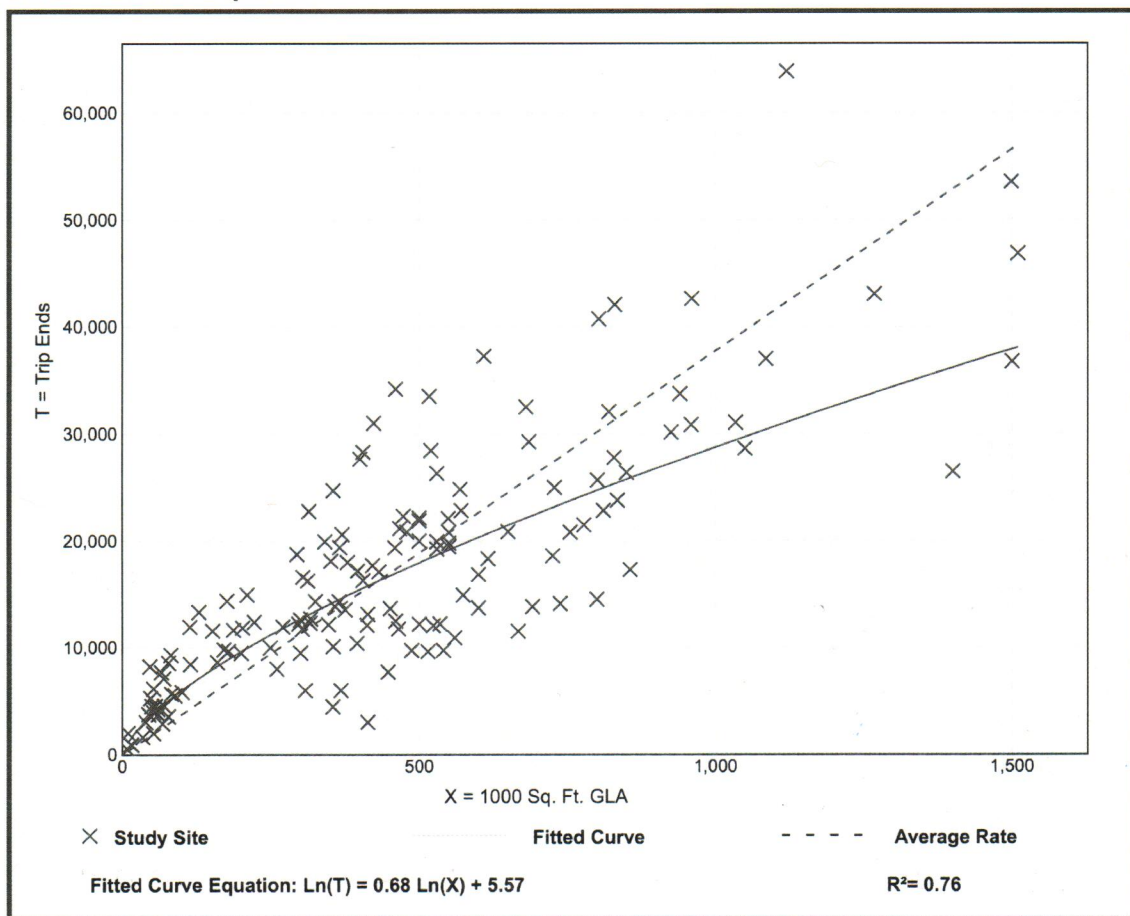
Vehicle Trip Ends vs: 1000 Sq. Ft. GLA  
On a: Weekday

Setting/Location: General Urban/Suburban  
Number of Studies: 147  
1000 Sq. Ft. GLA: 453  
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
37.75	7.42 - 207.98	16.41

## Data Plot and Equation



## **Land Use: 840**

### **Automobile Sales (New)**

#### **Description**

A new automobile sales dealership is typically located along a major arterial street characterized by abundant commercial development. The sale or leasing of new cars is the primary business at these facilities; however, automobile services, parts sales, and used car sales may also be available. Some dealerships also include leasing options, truck sales, and servicing. Automobile sales (used) (Land Use 841) and recreational vehicle sales (Land Use 842) are related uses.

#### **Additional Data**

Time-of-day distribution data for this land use are presented in Appendix A. For the six general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 11:15 a.m. and 12:15 p.m. and 1:45 and 2:45 p.m., respectively.

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), California, Delaware, Florida, Georgia, Indiana, New York, North Carolina, Oregon, Texas, Vermont, and Virginia.

#### **Source Numbers**

260, 271, 280, 328, 414, 424, 427, 438, 440, 507, 571, 583, 612, 715, 728, 880, 881, 936, 974, 975



## Automobile Sales (New) (840)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GFA**  
**On a: Weekday**

**Setting/Location: General Urban/Suburban**  
Number of Studies: 18  
1000 Sq. Ft. GFA: 36  
Directional Distribution: 50% entering, 50% exiting

### Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
27.84	14.98 - 41.78	7.01

### Data Plot and Equation

