



To: Mr. David Tillman
 Tillman & Associates Engineering
 1720 SE 16th Ave., Bldg 100
 Ocala, FL 34471

Date: August 12, 2021

Memorandum

Project #: 63867.xx

From: VHB, Inc.
 225 E. Robinson St., STE 300
 Orlando, FL 32801

Re: Marco Polo Industries at CR 484
 Traffic Impact Summary

Introduction

The purpose of this memorandum is to document the traffic impacts from the Marco Polo PUD Property project. Currently, the land consists of 69.15 acres with a land use designation of Employment Center. The approved maximum density of Commercial land use within the Employment Center designation is a floor area ratio (FAR) of 2.0. The applicant is seeking 49.15 acres of Commercial land use with a maximum density FAR of 1.0. The remaining 20 acres is proposed to be Multi-Family residential units (mid-rise) with a maximum density of 16 units per acres. The residential component is considered a permitted use within the PUD. The proposed site plan is provided as an attachment.

Trip Generation Comparison

The number of vehicle trips that will originate from, or are destined to, a development is dependent upon the type of land uses contained within that development. Trip rates used in this analysis are from the ITE publication, Trip Generation, 10th Edition. Tables 1 and 2 summarize the land use type, land use code and trip generation of the properties:

Table 1

Marco Polo PUD

Approved Trip Generation

AM Peak					Total Trips		
ITE		Size / Units		Daily	AM Peak		
Code	Land Use			Trips	Total	Enter	Exit
820	Shopping Center	6,024,348	S.F.	97,580	5,663	3,511	2,152
Totals:				97,580	5,663	3,511	2,152

PM Peak					Total Trips		
ITE		Size / Units		Daily	PM Peak		
Code	Land Use			Trips	Total	Enter	Exit
820	Shopping Center	6,024,348	S.F.	97,580	11,279	5,414	5,865
Totals:				97,580	11,279	5,414	5,865

VHB

Notes:

Trip generation rates and equations are based on the Institute of Transportation (ITE) Trip Generation Manual 10th Edition

Table 2
Marco Polo PUD
Proposed Trip Generation

AM Peak				Total Trips		
ITE Code	Land Use	Size / Units	Daily Trips	AM Peak		
				Total	Enter	Exit
220	Multifamily Mid-Rise	320 D.U.	1,743	116	30	86
820	Shopping Center	2,140,974 S.F.	48,288	2,013	1,248	765
Totals:			50,031	2,129	1,278	851

PM Peak				Total Trips		
ITE Code	Land Use	Size / Units	Daily Trips	PM Peak		
				Total	Enter	Exit
220	Multifamily Mid-Rise	320 D.U.	1,743	141	86	55
820	Shopping Center	2,140,974 S.F.	48,288	5,246	2,518	2,728
Totals:			50,031	5,387	2,604	2,783

VHB

Notes:

Trip generation rates and equations are based on the Institute of Transportation (ITE) Trip Generation Manual 10th Edition

The decrease of trip generation volumes are 47,549 daily trips, 3,634 AM peak hour trips, and 5,892 PM peak hour trips respectively. The ITE Trip Generation Summary sheets are attached.

Trip Generation Summary

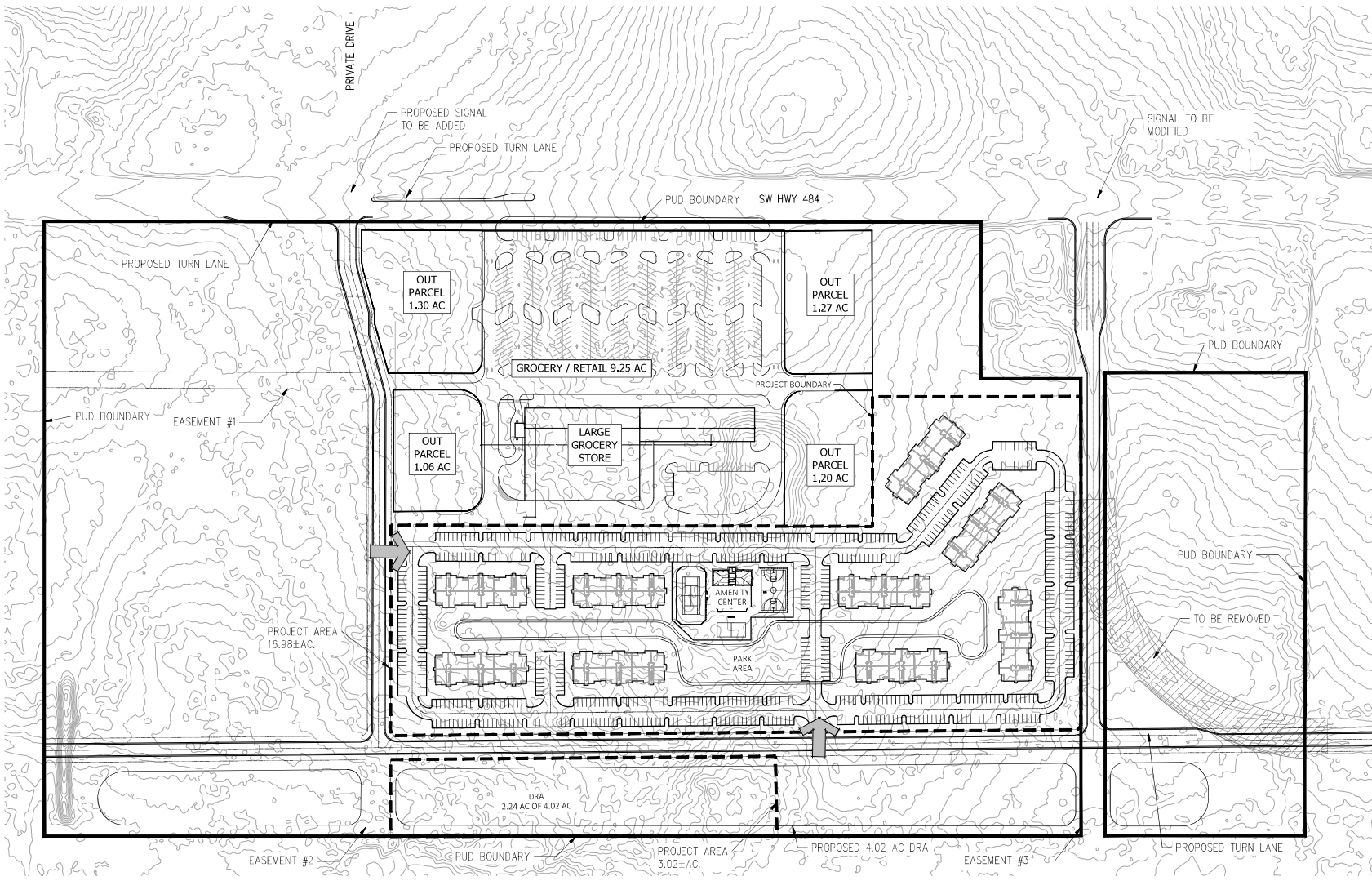
The net change in traffic volumes from the proposed project will result in a reduction of 47,549 Daily trips, 3,634 AM Peak Hour trips (2,233 entering and 1,301 exiting), and 5,892 PM Peak Hour trips (2,810 entering and 3,082 exiting).

Respectfully,
VHB, Inc.



Karl Krichbaum
Project Manager

Attachments:
Site Plan
ITE Trip Generation Summary sheets



SITE DATA
 OWNER:
 DEVELOPER: MARCO POLO BUILDERS INC
 ADDRESS: 4926 SW 114TH STREET RD
 OCALA, FL, 34476

PARCEL: 41200-061-00, 41200-062-00, 41200-063-00, 41200-063-01, 41200-063-02, 41200-064-00, 41200-064-01, 41200-064-09

PROJECT AREA: 20.00 ± AC. (16.98 AC, +3.02 AC.)

LAND USE & ZONING:
 EXISTING LAND USE: EC
 FUTURE LAND USE: EC (16 DU/AC)
 EXISTING ZONING: PUD
 PROPOSED ZONING: PUD

OPEN SPACE (APARTMENT AREA):
 REQUIRED: 4.00 ± AC. (20.00 X 0.20)

*REMAINING 49.15 ± AC. TO PROVIDE 20% OPEN SPACE AT TIME OF DEVELOPMENT.

PROPOSED OPEN SPACE:
 PASSIVE OPEN SPACE: 6.91 ± AC.
 IMPROVED OPEN SPACE: 2.57 ± AC.
 DRA: 0.56 ± AC. (2.24 X 0.25)
 BUFFERS: 0.82 ± AC.
 TOTAL AS SHOWN: 10.86 ± AC.

MINIMUM BUILDING SETBACKS:
 COMMERCIAL:
 AS APPROVED WITH PREVIOUS PUD
 RESIDENTIAL:
 FRONT - (15' MULTI-FAMILY) & (15' SINGLE FAMILY)
 REAR - (15' MULTI-FAMILY) & (10' SINGLE FAMILY)
 SIDE - (15' MULTI-FAMILY) & (5' SINGLE FAMILY)

BUILDING HEIGHT:
 65'

PROPOSED BUFFERS:
 AS APPROVED WITH PUD CONCEPT PLAN

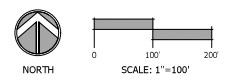
DENSITY:
 RESIDENTIAL AREA = 20.00 AC.
 RESIDENTIAL ALLOWED = 320 UNITS
 RESIDENTIAL UNITS REQUESTED = 320 UNITS

PARKING
 REQUIRED: (320 UNITS x 2) = 640 SPACES
 PROVIDED: (9' X 18') = 673 SPACES
 H/C SPACES (12' X 18') = 8 SPACES
 TOTAL = 681 SPACES

NOTES:
 LAYOUT IS CONCEPTUAL IN NATURE AND IS SUBJECT TO CHANGE.

PROJECT AREA DATA			
	PROJECT AREA	DENSITY ALLOWED	DENSITY SHOWN
TOTAL PUD BOUNDARY	49.15 ± AC.		
DECLARED RESIDENTIAL	20.00 ± AC.	320 UNITS	320 UNITS
DECLARED NON-RESIDENTIAL AREA	49.15 ± AC.	2,000	1,000
	(4,281/48 SQFT)	(2140/674 SQFT)	

--- APARTMENT PROJECT BOUNDARY
 --- PUD PROJECT BOUNDARY



Tillman & Associates
 ENGINEERING, LLC
 CIVIL ENGINEERING - PLANNING - LANDSCAPE ARCHITECTURE - ENVIRONMENTAL
 1720 SE 16th Ave, 8th Fl, Ocala, FL 34474
 Office: (352) 387-4540 Fax: (352) 387-4545
 CERTIFICATE OF AUTHORIZATION #2876

Marco Polo Apartments Concept Plan
 MARION COUNTY, FLORIDA

Shopping Center (820)

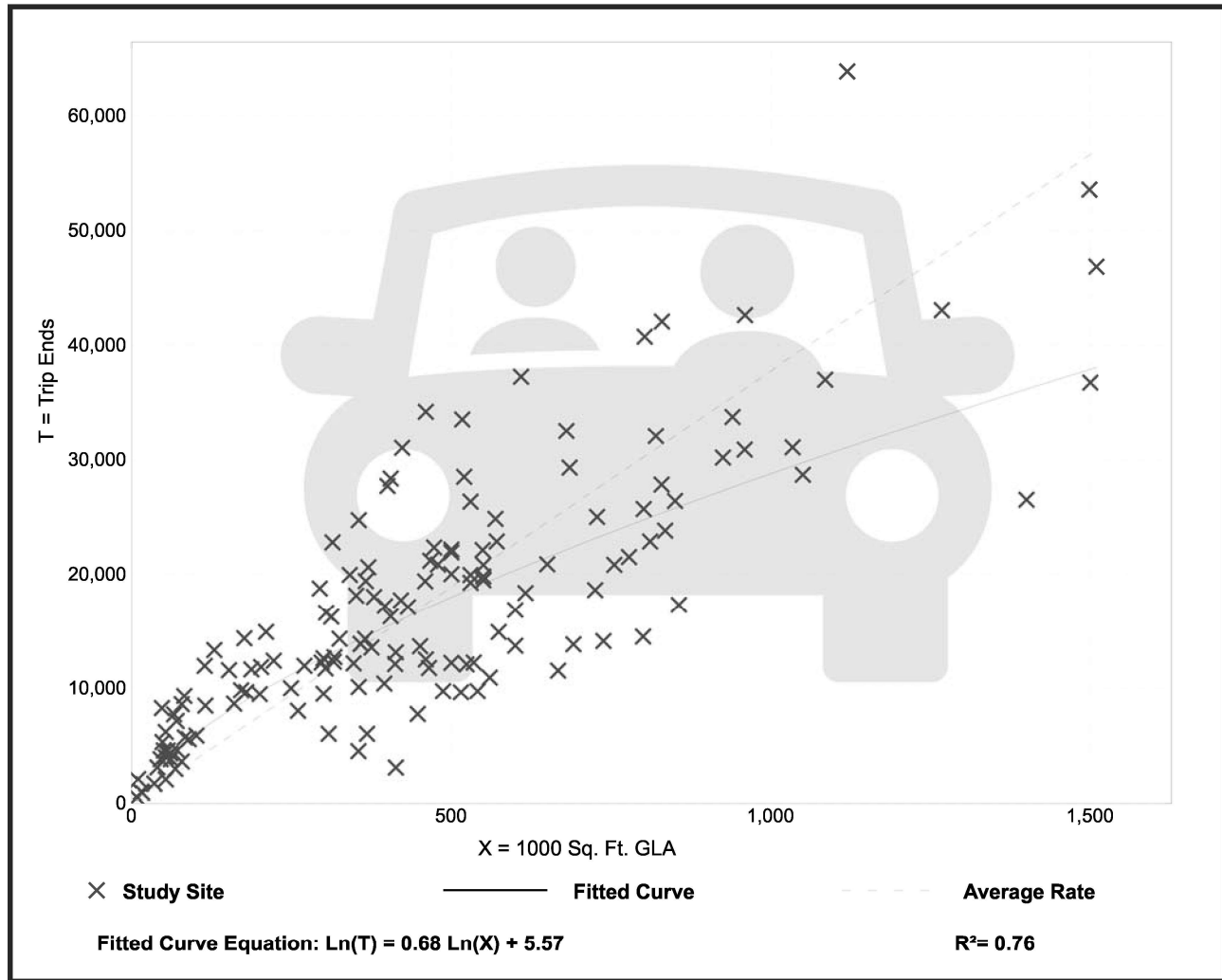
Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 147
Avg. 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



Trip Gen Manual, 10th Ed + Supplement • Institute of Transportation Engineers

Shopping Center (820)

Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

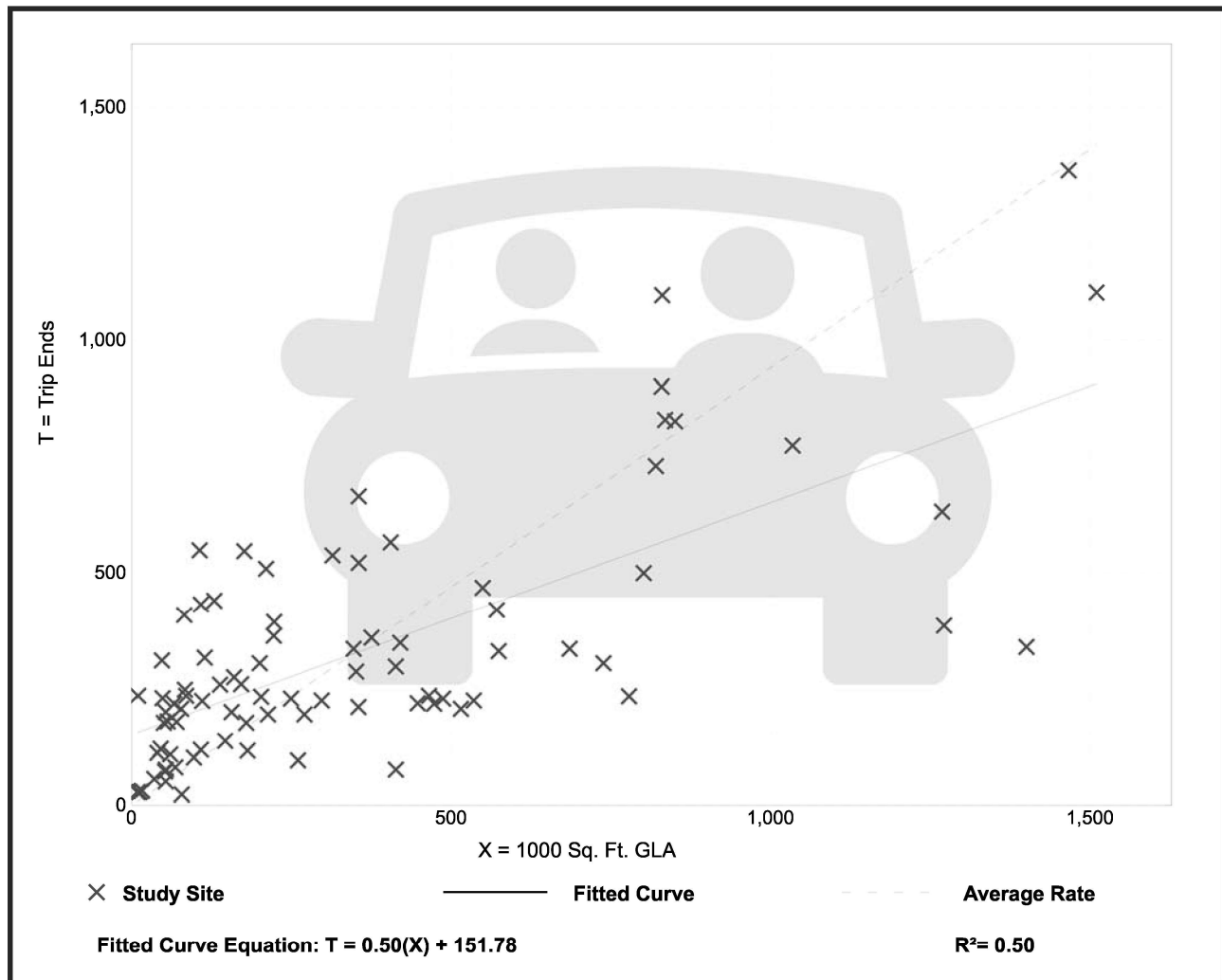
Setting/Location: General Urban/Suburban

Number of Studies: 84
 Avg. 1000 Sq. Ft. GLA: 351
 Directional Distribution: 62% entering, 38% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
0.94	0.18 - 23.74	0.87

Data Plot and Equation



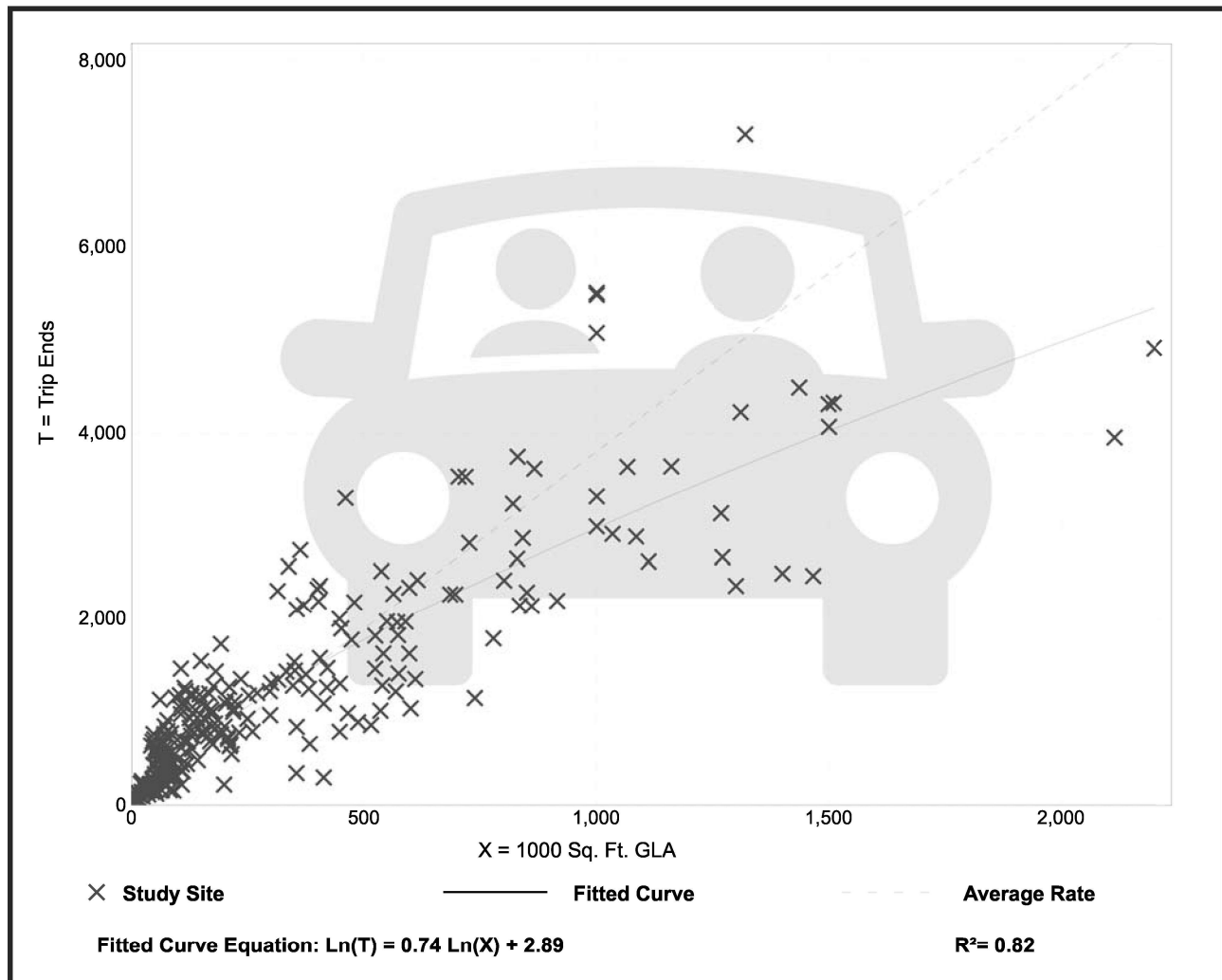
Shopping Center (820)

Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
 Number of Studies: 261
 Avg. 1000 Sq. Ft. GLA: 327
 Directional Distribution: 48% entering, 52% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
3.81	0.74 - 18.69	2.04

Data Plot and Equation



Multifamily Housing (Mid-Rise) (221)

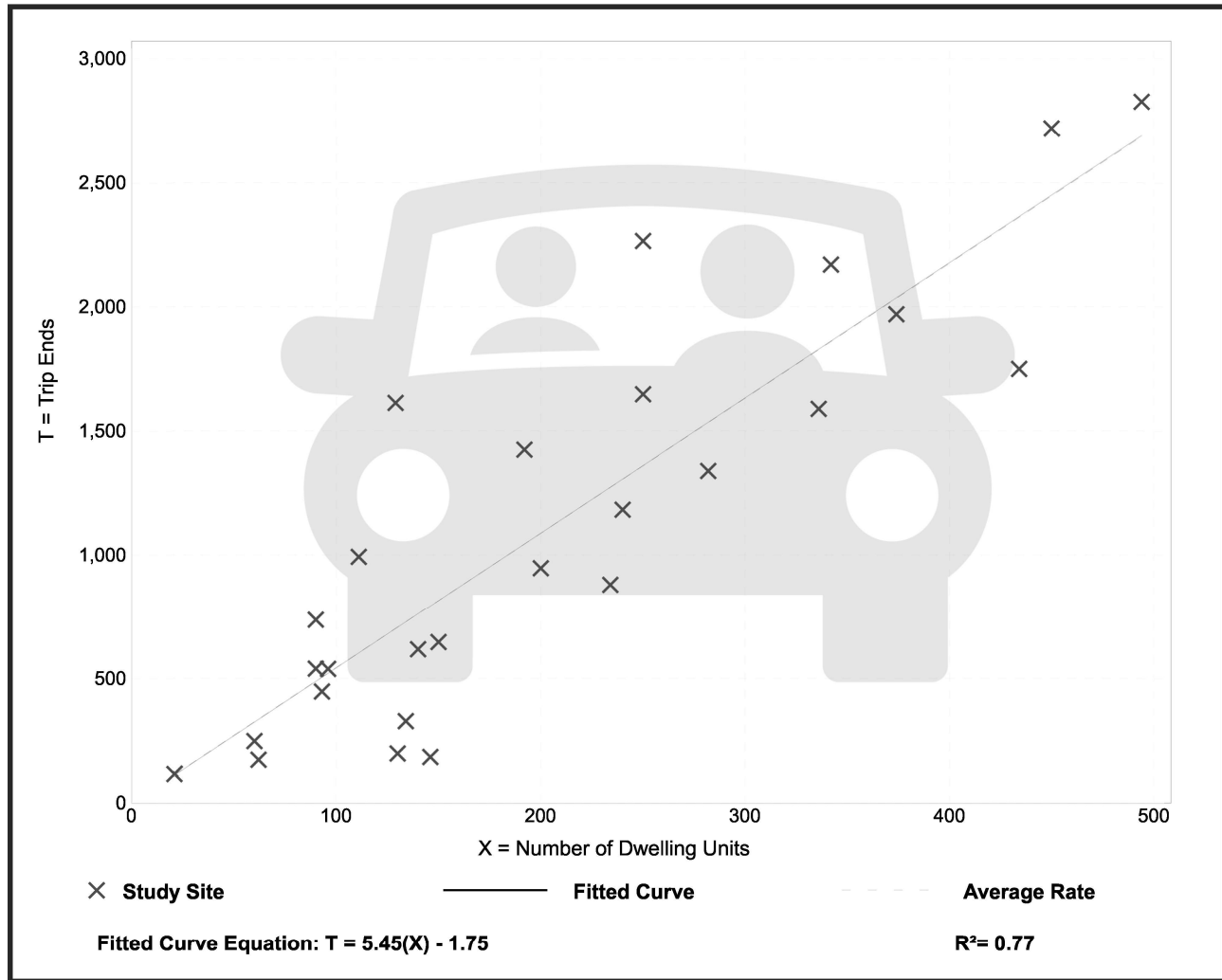
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 27
Avg. Num. of Dwelling Units: 205
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
5.44	1.27 - 12.50	2.03

Data Plot and Equation



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Multifamily Housing (Mid-Rise) (221)

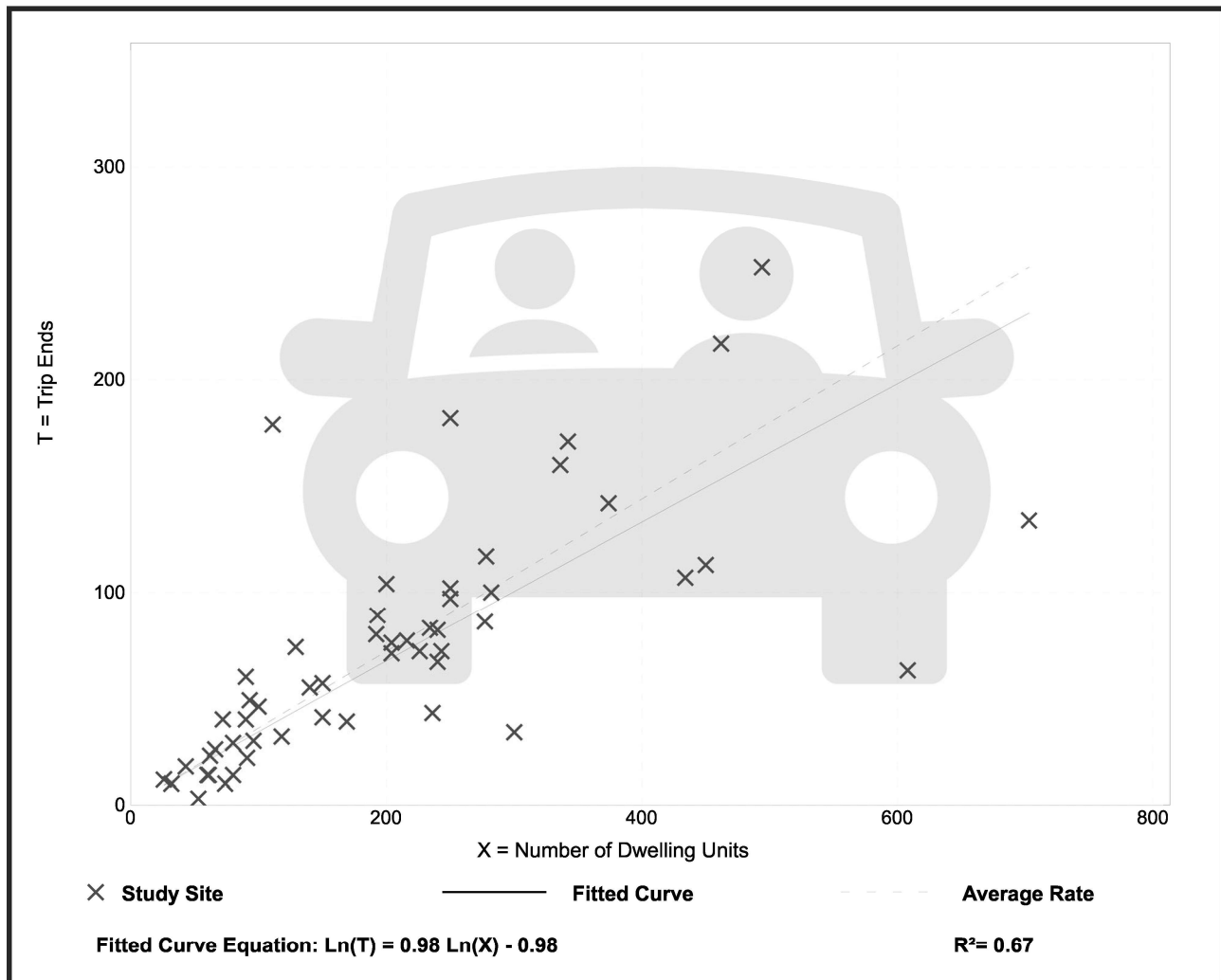
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban
 Number of Studies: 53
 Avg. Num. of Dwelling Units: 207
 Directional Distribution: 26% entering, 74% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.36	0.06 - 1.61	0.19

Data Plot and Equation



Multifamily Housing (Mid-Rise) (221)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
 Number of Studies: 60
 Avg. Num. of Dwelling Units: 208
 Directional Distribution: 61% entering, 39% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.44	0.15 - 1.11	0.19

Data Plot and Equation

