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By Michelle R. Buck at 2:57 pm, May 08, 2019

Land Planning Inc.

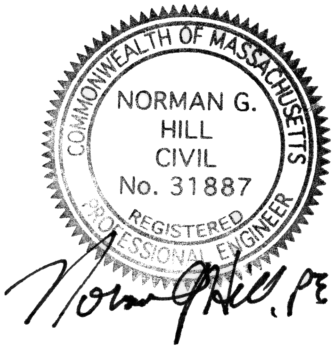
Traffic Impact Statement

Cultivate Holdings LLC
22 Burncoat Street
Leicester, Massachusetts

April 25, 2019

Prepared For

Campanelli
One Campanelli Drive
Braintree, MA 02184



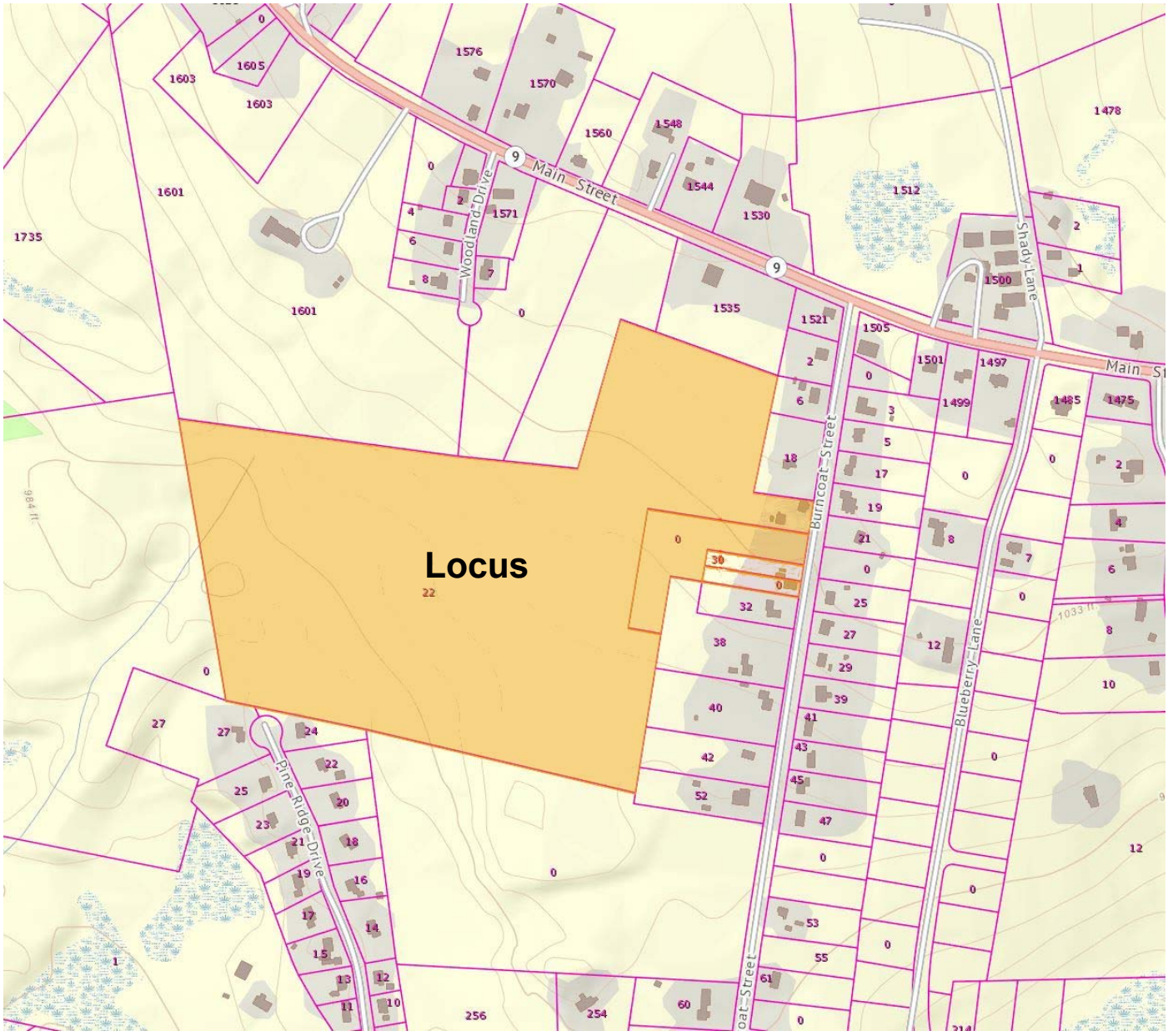
Norman G. Hill, P.E. April 26, 2019

214 Worcester Street, North Grafton, MA 01536 Phone: 508-839-9526 Fax: 508-839-9528
www.landplanninginc.com

Introduction

This report provides an analysis of the trip generation and parking demand associated with the proposed development to be located at 22 Burncoat Street, Leicester, MA. Cultivate Holdings, LLC proposes to operate greenhouse and distribution facility on the property that is currently in residential use. The existing structures are to be razed and the proposed 135,000 building, driveway, loading area, and 65 space parking lot constructed.

The site is located on the west side of Burncoat Street, approximately 800 feet south of the Main Street/Burncoat Street intersection. The location of the project with respect to the area's roadway system is shown below.



Locus Plan
1" = 500'

Analysis of Probable Impacts

The focus of this section is to identify the probable impacts the proposed project will have on anticipated traffic conditions.

Trip Generation

The traffic generated by the Cultivate facility will follow established patterns with respect to magnitude and distribution. The Institute of Transportation Engineers has published relevant data for the proposed use. The trip generation information provided herein refers to the ITE Trip Generation Manual, 10th Edition.

Cultivate's proposed use is most closely represented by ITE Land Use code 110, General Light Industrial. General Light Industrial is described by the ITE as:

> *A light industrial facility is a free-standing facility devoted to a single use. The facility has an emphasis on activities other than manufacturing and typically has minimal office space.*

Trip generation rates are provided by the ITE with two options for the independent variable: by gross floor area or by number of employees. Greenhouse use, by nature, requires a more intensive use of floor space than that typically associated with light industrial use. Therefore, this analysis will use the number of employees as the basis for estimating trip generation. The total number of employees Cultivate will maintain on this site is 50.

Cultivate's hours of operation for the facility are 7:30 AM to 4:30 PM. The peak hours of the proposed generator may coincide with the peak hours of adjacent street traffic.

The proposed site generated trips are summarized by use within the following table:

Proposed Trip Generation: Land Use 110, General Light Industrial							
Weekday	**Trip Generation Rate Per Employee**		**Number of Employees**	**Trip Generation**		**Distribution**	
						Enter	**Exit**
Total	3.42	trips/day	50	171	trips/day	86	86
AM Peak Street	0.50	trips/hour	50	25	trips/hour	21	4
PM Peak Street	0.46	trips/hour	50	23	trips/hour	5	18
AM Peak Generator	0.69	trips/hour	50	35	trips/hour	29	5
PM Peak Generator	0.70	trips/hour	50	35	trips/hour	10	24
Saturday							
Total	0.56	trips/day	50	28	trips/day	14	14
Peak Hour Generator	0.10	trips/hour	50	5	trips/hour	2	3

Traffic Volume Increases

The proposed facility is located approximately 800 feet from the Main Street/Burncoat Street intersection to the north. It is assumed that virtually all site traffic will enter from and exit to the north on Burncoat Street as this provides the most direct access to Route 9.

The project will minimally increase vehicle trips at the Main Street/Burncoat Street intersection. Existing traffic exceeds 16,000 vehicles per day per MassDOT. With a daily distribution of 50% entering the facility and 50% exiting the facility, the increase in daily traffic on Route 9 is half of the increase in trip ends at the site:

$$\frac{171 \text{ trip ends}}{2} = 86 \text{ additional vehicles on Route 9 east}$$

The increase represents 0.5% of the existing vehicles on Route 9.

Parking

Parking demand for the Cultivate facility will follow established patterns with respect to magnitude and distribution. The Institute of Transportation Engineers has published relevant data for the proposed use. The parking demand information provided herein refers to the ITE Parking Generation Manual, 5th Edition.

Parking demand was determined using the number of employees as the basis for the calculations. The total number of employees Cultivate will maintain on this site is 50. The parking demand and temporal distribution are presented within the following tables:

Parking Demand
Peak Demand 9:00 AM to 3:00 PM
P = 0.44(X)+7.57
P = 30 Spaces Required

Distribution		
Hour Beginning	**% of Peak Demand**	**Spaces Required**
4:00 AM	0%	0
5:00 AM	2%	1
6:00 AM	15%	4
7:00 AM	41%	12
8:00 AM	83%	25
9:00 AM	100%	30
10:00 AM	99%	29
11:00 AM	98%	29
12:00 PM	94%	28
1:00 PM	90%	27
2:00 PM	94%	28
3:00 PM	88%	26
4:00 PM	68%	20
5:00 PM	49%	14
6:00 PM	9%	3
7:00 PM	3%	1
8:00 PM	3%	1
9:00 PM	3%	1
10:00 PM	0%	0

The site plan, as proposed, provides 65 parking spaces. The peak calculated parking demand is 30 spaces.

Conclusions

This analysis resulted in the following conclusions:

- The proposed facility will generate 171 total daily trips with a maximum peak hour rate of 35 trips/hour. All of the facility generated trips are considered new vehicle trips. However, the increase in trips generated by the proposed development is minor relative to existing the traffic volume for Main Street (Route 9).
- The facility's calculated parking demand is 30 spaces while 65 parking spaces are proposed. Adequate parking for the facility and use is provided.

Attachments

- ITE Trip Generation Data
- ITE Parking Generation Data
- MassDOT Traffic Data

General Light Industrial
(110)

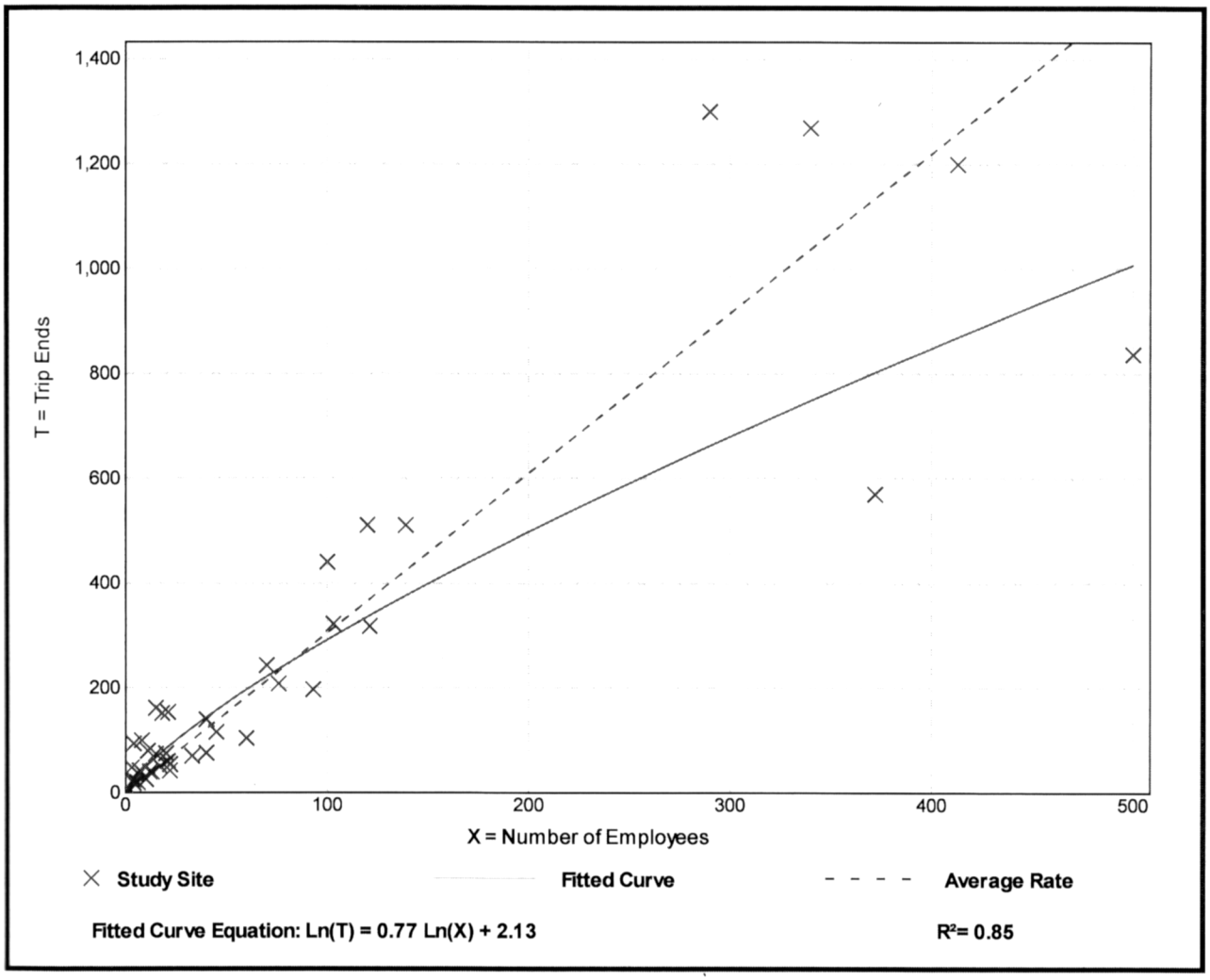
Vehicle Trip Ends vs: **Employees**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 40
Avg. Num. of Employees: 80
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
3.05	1.53 - 23.50	1.64

Data Plot and Equation



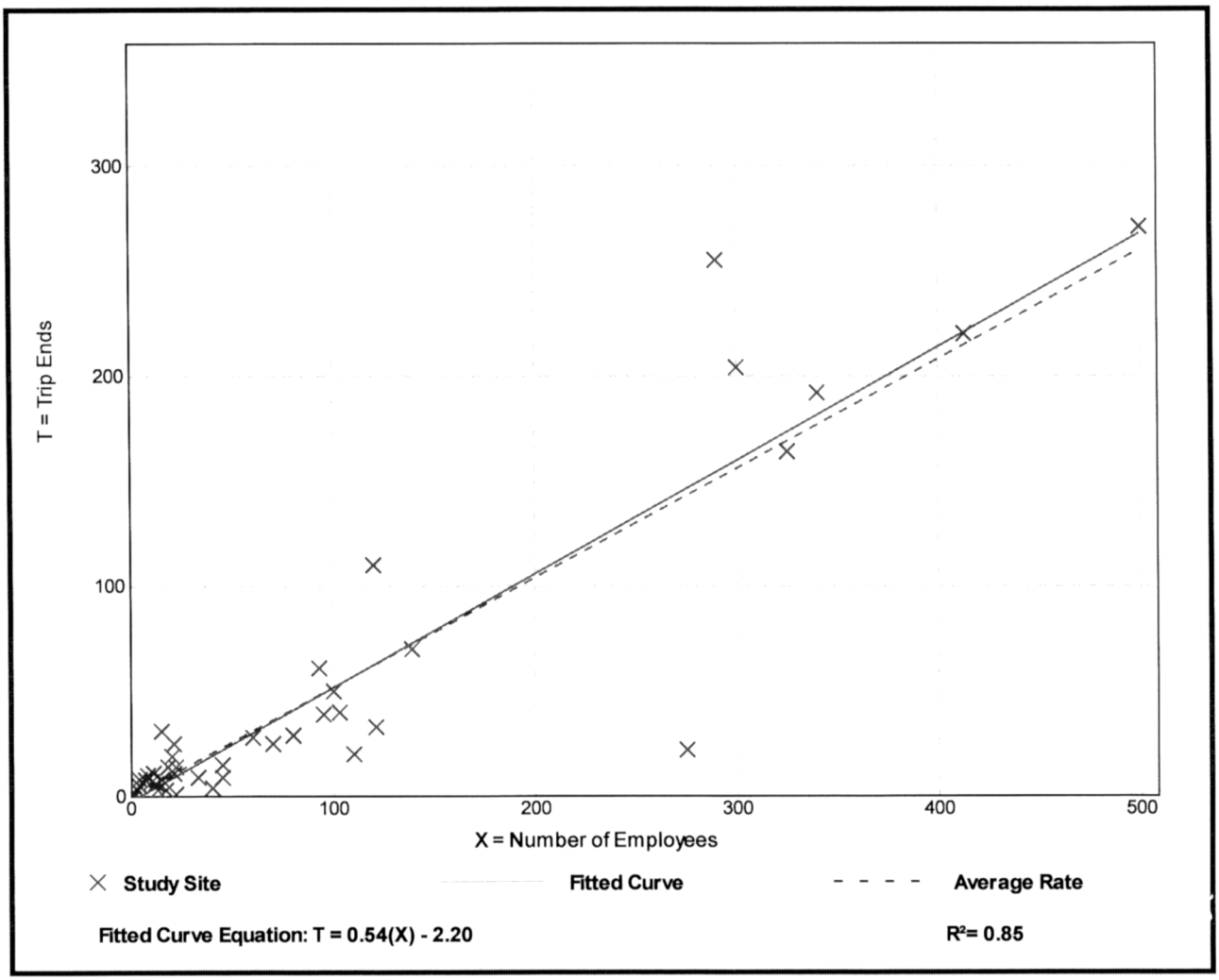
General Light Industrial
(110)

Vehicle Trip Ends vs: **Employees**
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: 44
Avg. Num. of Employees: 91
Directional Distribution: 83% entering, 17% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.52	0.05 - 2.07	0.26

Data Plot and Equation



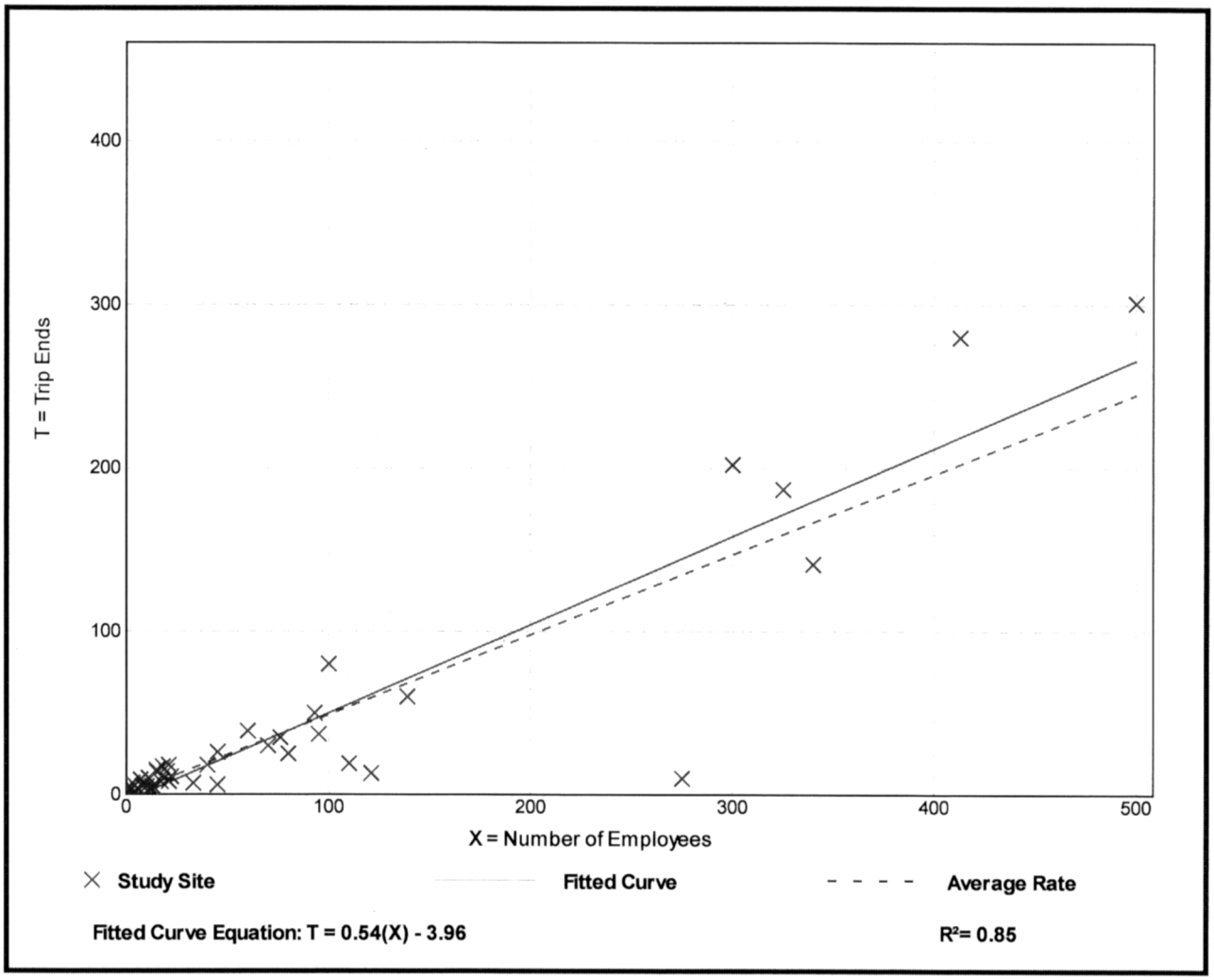
General Light Industrial
(110)

Vehicle Trip Ends vs:	**Employees**
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:	42
Avg. Num. of Employees:	84
Directional Distribution:	22% entering, 78% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.49	0.04 - 2.33	0.23

Data Plot and Equation



General Light Industrial
(110)

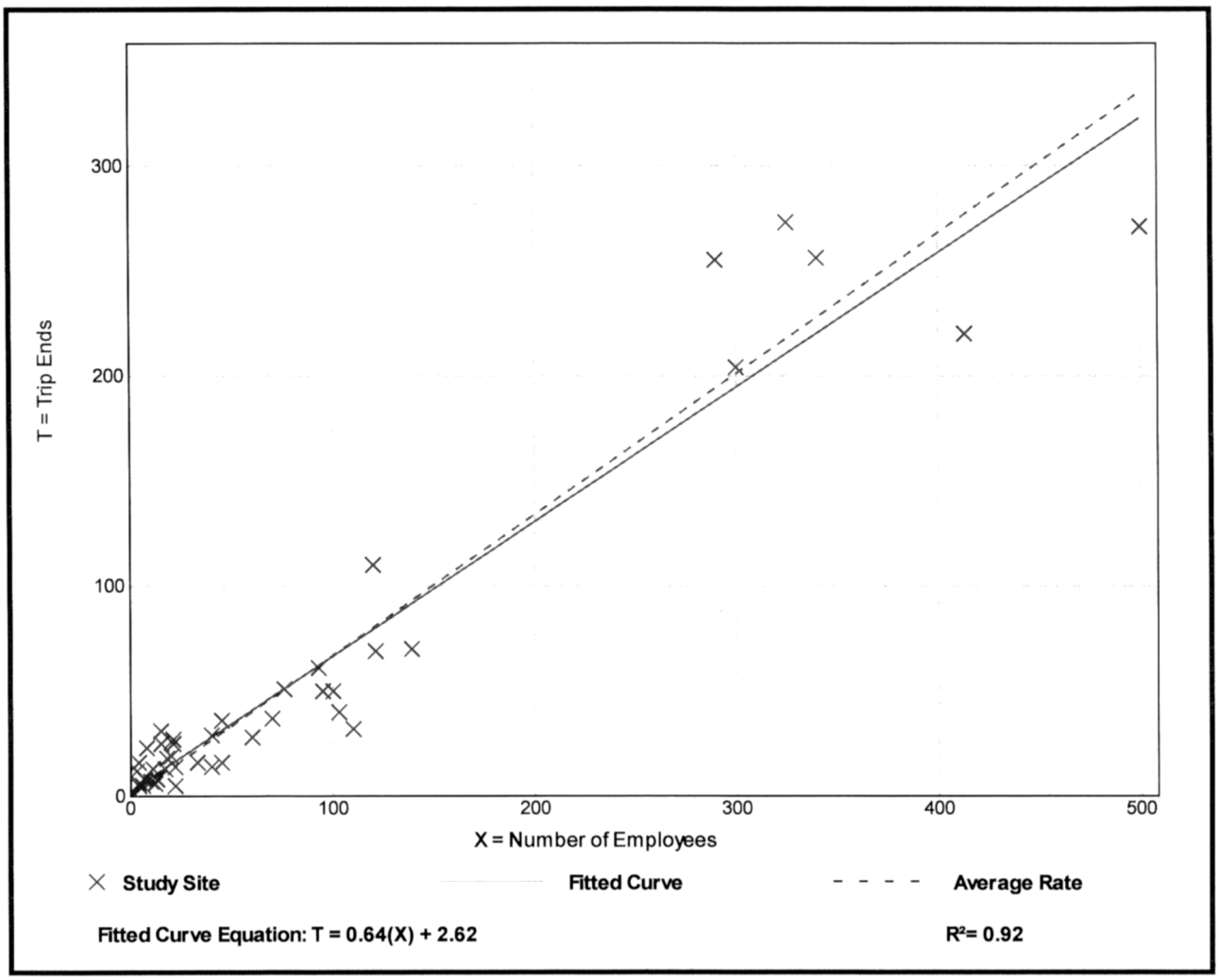
Vehicle Trip Ends vs: **Employees**
On a: **Weekday,**
AM Peak Hour of Generator

Setting/Location: **General Urban/Suburban**
Number of Studies: 44
Avg. Num. of Employees: 84
Directional Distribution: 85% entering, 15% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.67	0.23 - 4.00	0.28

Data Plot and Equation



General Light Industrial
(110)

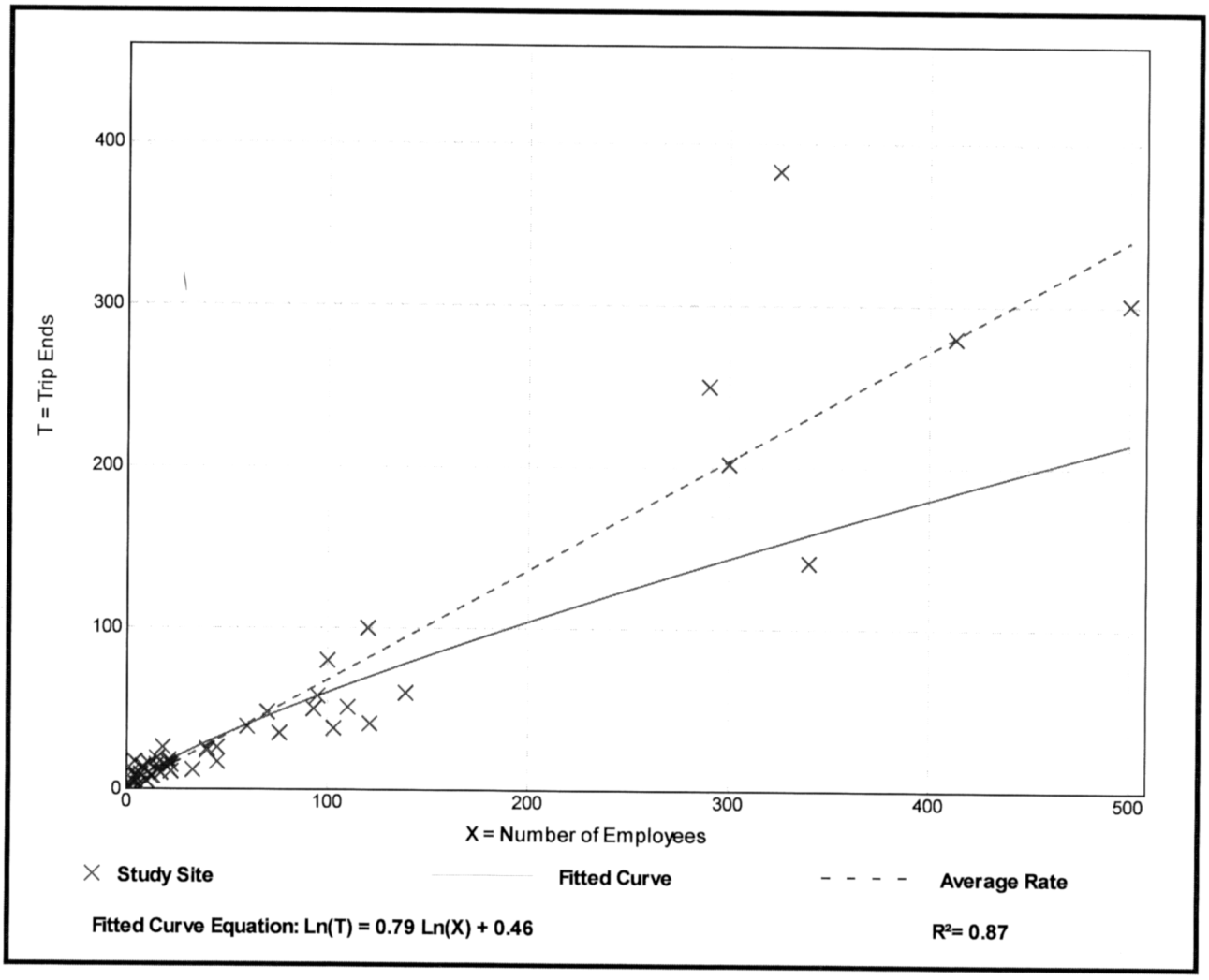
Vehicle Trip Ends vs: **Employees**
On a: **Weekday,**
PM Peak Hour of Generator

Setting/Location: **General Urban/Suburban**
Number of Studies: 44
Avg. Num. of Employees: 84
Directional Distribution: 30% entering, 70% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.68	0.34 - 4.25	0.29

Data Plot and Equation



General Light Industrial
(110)

Vehicle Trip Ends vs: **Employees**
On a: **Saturday**

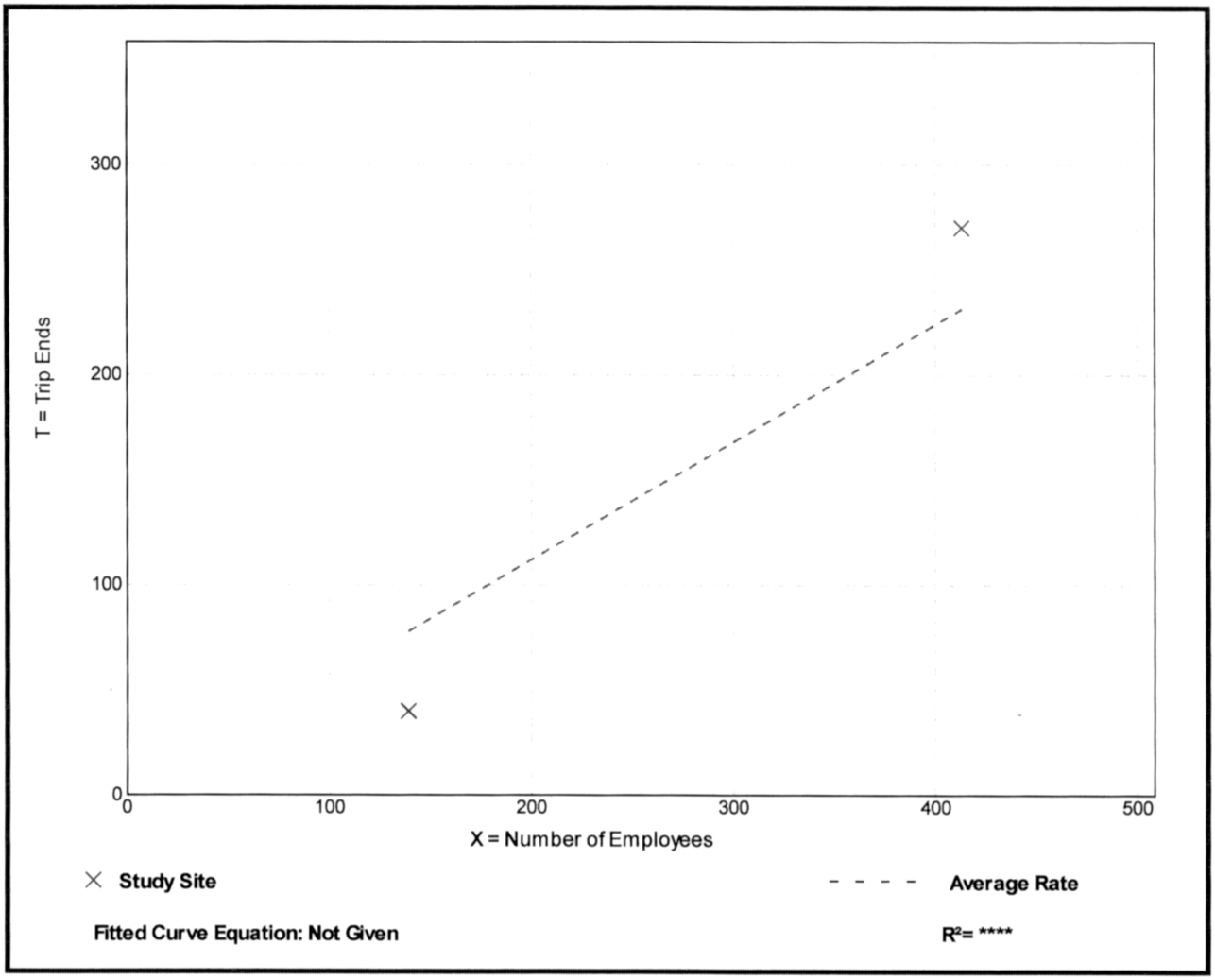
Setting/Location: **General Urban/Suburban**
Number of Studies: 2
Avg. Num. of Employees: 276
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.56	0.29 - 0.65	*

Data Plot and Equation

Caution – Small Sample Size



General Light Industrial
(110)

Vehicle Trip Ends vs: **Employees**
On a: **Saturday, Peak Hour of Generator**

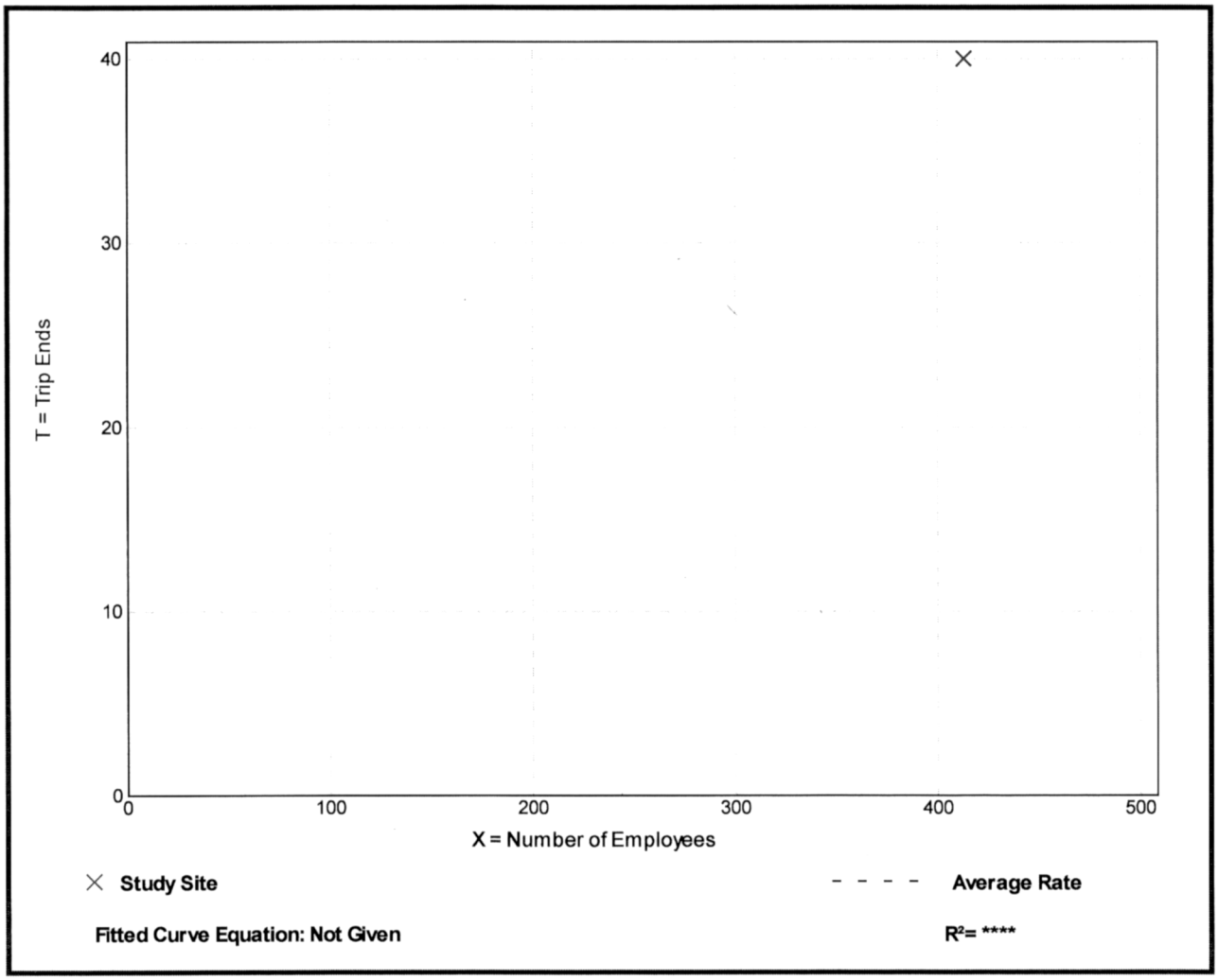
Setting/Location: **General Urban/Suburban**
Number of Studies: 1
Avg. Num. of Employees: 413
Directional Distribution: 47% entering, 53% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.10	0.10 - 0.10	*

Data Plot and Equation

Caution – Small Sample Size



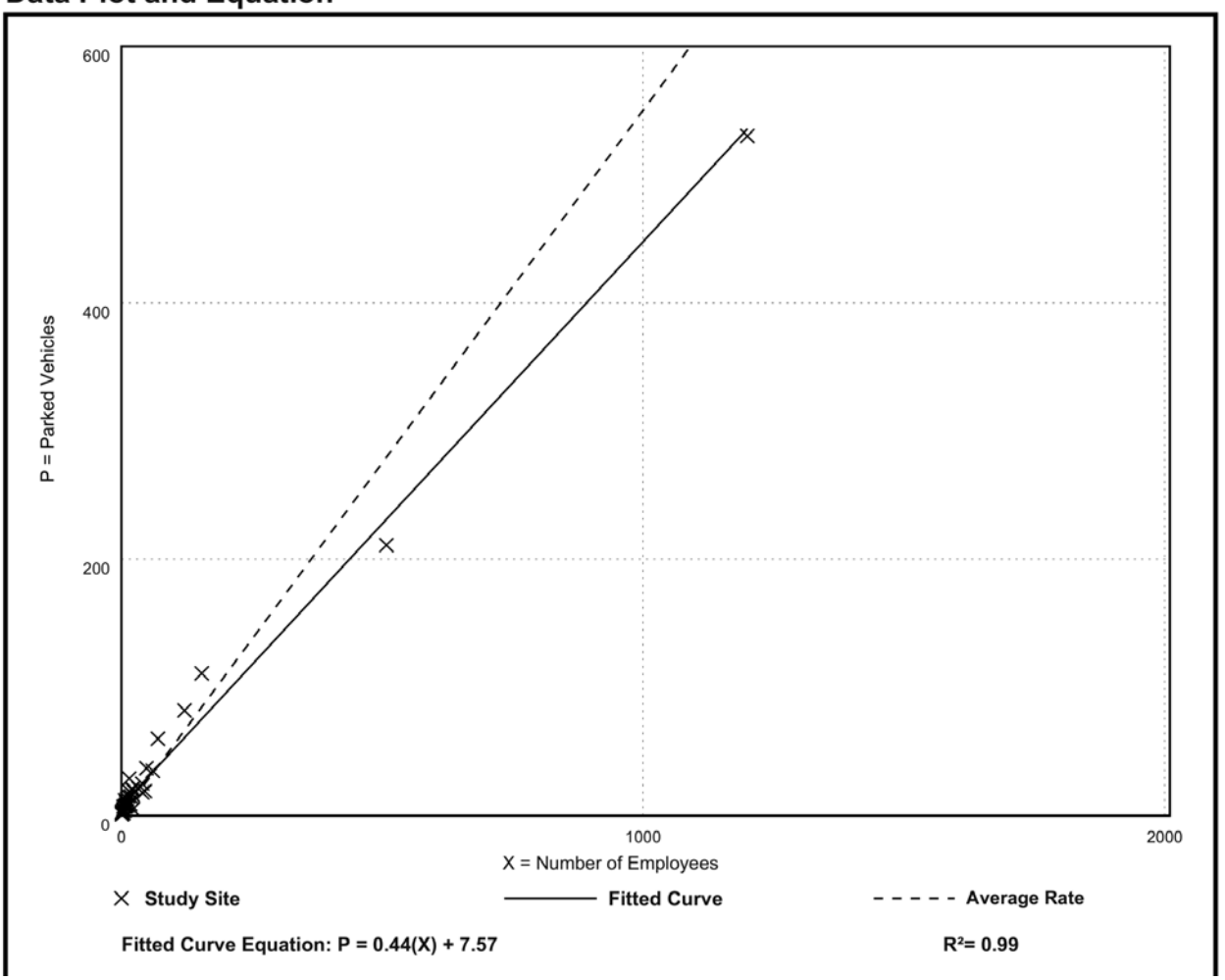
General Light Industrial
(110)

Peak Period Parking Demand vs: Employees
On a: Weekday (Monday - Friday)
Setting/Location: General Urban/Suburban
Peak Period of Parking Demand: 9:00 a.m. - 3:00 p.m.
Number of Studies: 38
Avg. Num. of Employees: 68

Peak Period Parking Demand per Employee

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
0.55	0.23 - 3.00	0.68 / 1.39	0.48 - 0.62	0.23 (42%)

Data Plot and Equation



Land Use: 110 General Light Industrial

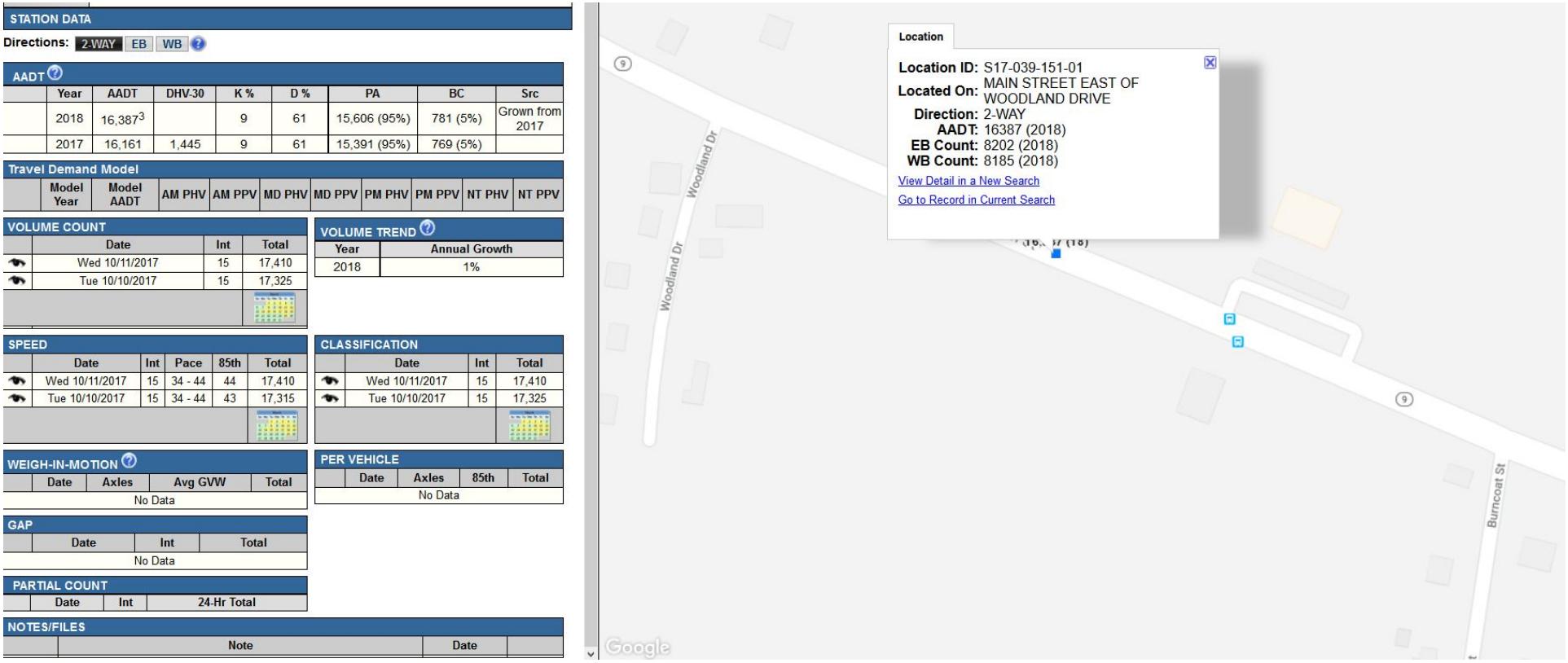
Description

A light industrial facility is a free-standing facility devoted to a single use. The facility has an emphasis on activities other than manufacturing and typically has minimal office space. Typical light industrial activities include printing, material testing, and assembly of data processing equipment. Industrial park (Land Use 130) and manufacturing (Land Use 140) are related uses.

Time of Day Distribution for Parking Demand

The following table presents a time-of-day distribution of parking demand on a weekday at 29 general urban/suburban study sites.

Hour Beginning	Percent of Weekday Peak Parking Demand
12:00–4:00 a.m.	0
5:00 a.m.	2
6:00 a.m.	15
7:00 a.m.	41
8:00 a.m.	83
9:00 a.m.	100
10:00 a.m.	99
11:00 a.m.	98
12:00 p.m.	94
1:00 p.m.	90
2:00 p.m.	94
3:00 p.m.	88
4:00 p.m.	68
5:00 p.m.	49
6:00 p.m.	9
7:00 p.m.	3
8:00 p.m.	3
9:00 p.m.	3
10:00 p.m.	0
11:00 p.m.	0



STATION DATA

Directions: 2-WAY | EB | WB

AADT

	Year	AADT	DHV-30	K %	D %	PA	BC	Src
	2018	16,387[3]		9	61	15,606 (95%)	781 (5%)	Grown from 2017
	2017	16,161	1,445	9	61	15,391 (95%)	769 (5%)	

Travel Demand Model

	Model Year	Model AADT	AM PHV	AM PPV	MD PHV	MD PPV	PM PHV	PM PPV	NT PHV	NT PPV

VOLUME COUNT

	Date	Int	Total
	Wed 10/11/2017	15	17,410
	Tue 10/10/2017	15	17,325

VOLUME TREND

Year	Annual Growth
2018	1%

SPEED

	Date	Int	Pace	85th	Total
	Wed 10/11/2017	15	34 - 44	44	17,410
	Tue 10/10/2017	15	34 - 44	43	17,315

CLASSIFICATION

	Date	Int	Total
	Wed 10/11/2017	15	17,410
	Tue 10/10/2017	15	17,325

WEIGH-IN-MOTION

	Date	Axles	Avg GVW	Total
No Data				

PER VEHICLE

	Date	Axles	85th	Total
No Data				

GAP

	Date	Int	Total
No Data			

PARTIAL COUNT

	Date	Int	24-Hr Total

NOTES/FILES

	Note	Date	

MassDOT Traffic Count Data for Route 9