



October 6, 2012

Mr. David Pollock  
Amerco Real Estate Company  
2727 N Central Avenue  
Phoenix, AZ 85004

Subject: CAP Trip Analysis for U-Haul  
Sherwood, Oregon

Mr. Pollock:

Information is required per Sherwood Development Code, Section 6.307- Highway 99W Capacity Allocation Program. This letter addresses trip generation information for proposed modification to the U-Haul rental yards and mini-warehouse addition in Sherwood.

The site trip limit per the CAP is based on area and can be calculated by multiplying the acreage of the site by 43 PM peak trips per acre to determine the limit. The site contains 3.25 acres thereby setting a site trip limit to 140 PM peak trips (139.75 trips calculated).

The legal description for the site is Tax Lot 400, Map #2S1 28BD. A site plan is attached with the pertinent information regarding this site.

**Type and location of the regulated activity**

The site is located on a 3.25 acre parcel at 13921 SW Tualatin-Sherwood Road. The current building contains 54,100 square feet total. The existing uses are as follows:

Existing Uses

5,100 square feet Automobile Care Center (ITE Land Use Code 942)  
7,300 square feet Specialty Retail (ITE Land Use Code 814)  
41,700 square feet Warehouse (ITE Land Use Code 150)

Proposed Uses

The warehouse use is being modified to mini-warehouse and a second floor for additional mini-warehouse space will be added within the enclosed space for a total of 92,500 square feet total in the building. The new uses for the building will therefore be:

5,100 square feet Automobile Care Center (ITE Land Use Code 942)  
7,300 square feet Specialty Retail (ITE Land Use Code 814)  
80,100 square feet Mini-Warehouse (ITE Land Use Code 151)

## Determine Number of Trips

### Existing Trip Generation

The following trip generation table summarizes the existing trip generation for the site. It should be noted that the AWDT for the Automobile Care Center Use (Land Use Code 942) is estimated based on Saturday Daily volumes. Also attached for both existing uses and proposed uses are spreadsheets generated by MicroTrans Trip Generation software which utilizes the data from the ITE Trip Generation Manual, 8<sup>th</sup> Edition.

**TABLE 1**  
Existing Trip Generation

<u>Time Period</u>	<u>LUC 942</u>	<u>LUC 814</u>	<u>LUC 150</u>	<u>Total Trips</u>
AWDT Total	80 vpd	324 vpd	148 vpd	552 vpd
PM Peak Total	17 vph	20 vph	13 vph	50 vph

### Proposed Trip Generation

The following trip generation table summarizes the trip generation for the site with the changes in use and the new square footage.

**TABLE 2**  
Proposed Trip Generation

<u>Time Period</u>	<u>LUC 942</u>	<u>LUC 814</u>	<u>LUC 151</u>	<u>Total Trips</u>
AWDT Total	80 vpd	324 vpd	200 vpd	604 vpd
PM Peak Total	17 vph	20 vph	21 vph	58 vph

## Summary

The change in use adds an additional 8 PM peak trips and an additional 52 daily trips. The 58 PM peak trips generated after the site is re-developed is less than the allowed trips for this 3.25 acre site which is 140 trips.

Based on this trip generation analysis, no further analysis is required. Please call if further information is required.

Sincerely,



Gregary B. Heath, P.E., P.T.O.E.

**CAP TRIP ANALYSIS WORKSHEET**

Trip Analysis conducted by:	Gregary B. Heath P.E.
Project Description:	See attached analysis for project description
Land Use Application File No: Project Name:	

The CAP Trip Analysis Worksheet is meant to summarize the detailed information contained in the Traffic Study prepared by a professional engineer registered in the State of Oregon with expertise in traffic or transportation engineering and attached with the CAP Trip Analysis.

Net Trips means the number of trips generated by a regulated activity during the p.m. peak hour. Net trips equal new trips, diverted trips, and trips from existing activities on a site that will remain. Net trips do not include: pass-by trips, internal trips, trips from existing facilities that will be removed, and trips reduced due to implementation of transportation demand strategies.

The following types of projects and activities are specifically excluded from the provisions of the CAP: (1) churches; (2) elementary, middle, and high schools; (3) residential; and (4) changes in use that do not increase the number of trips generated by the current use.

**1. Net Trips**

- a   50   Existing Site Net Trips
- b   58   Proposed Development Net Trips (proposed development includes existing sites that will remain)
- c   0   Future (Full-Build-Out) Development Net Trips
- d   58   Proposed and Future Development Net Trips (1b+1c)\*

**2. Acreage**

Tax Lot Number	Total Acreage	Net Acreage (Total Minus 100-Year Flood plain)	Proposed Development Net Acreage	Future Development Net Acreage (2b-2c)
400	3.25	3.25	0	3.25
<b>TOTAL</b>	a 3.25	b 3.25	c 0	d 3.25

**3. Net Trips Per Acre**

- a 15.4 Existing Net Trips per Net Acre (1a/2b)
- b 17.8 Proposed Development Net Trips per Net Acre (1b/2c)
- c 17.8 Proposed & Future Development Net Trips per Net Acre (1d/2b)
- d 43 Net Trips per Net Acre Allowed (**City of Sherwood Trip Limit**)

**4. Proposed Mitigation:**

---

---

---

---

---

---

---

---

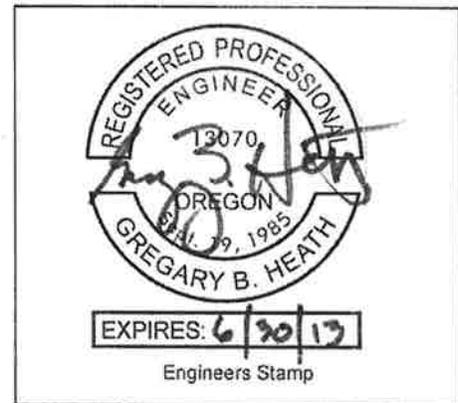
---

---

\*If proposed and future net trips per net acre (3c) are less than the existing net trips per net acre (3a) then the application is EXEMPT from CAP Ordinance requirements.

If any changes are proposed for the regulated activity (i.e. type of activity, acreage, etc.) the trip analysis worksheet shall be resubmitted with the original for comparative purposes and approval.

Comments:



20 February 2006



## **Land Use: 942**

### **Automobile Care Center**

#### **Description**

An automobile care center houses numerous businesses that provide automobile-related services, such as repair and servicing; stereo installation; and seat cover upholstery. Quick lubrication vehicle shop (Land Use 941) and automobile parts and service center (Land Use 943) are related uses.

#### **Additional Data**

The p.m. peak hour of the generator typically coincided with the peak hour of the adjacent street traffic.

The sites were surveyed in 1988 and 1994 in Florida and California.

#### **Source Numbers**

267, 273, 439

# Automobile Care Center (942)

**Average Vehicle Trip Ends vs: 1000 Sq. Feet Occ. Gr. Leasable Area**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 4 and 6 p.m.**

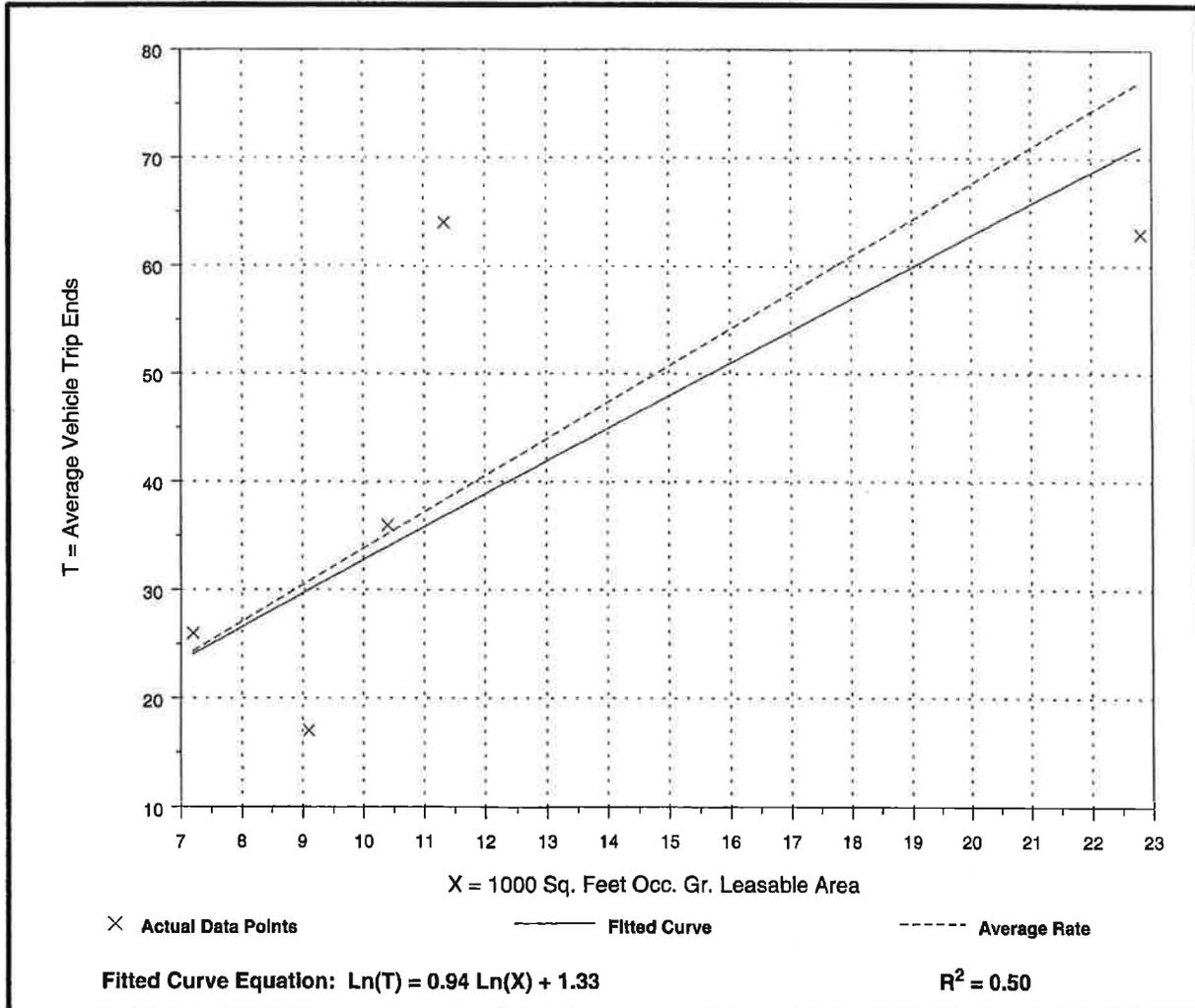
Number of Studies: 5  
 Average 1000 Sq. Feet OGLA: 12  
 Directional Distribution: 50% entering, 50% exiting

## Trip Generation per 1000 Sq. Feet Occ. Gr. Leasable Area

Average Rate	Range of Rates	Standard Deviation
3.38	1.87 - 5.64	2.15

## Data Plot and Equation

*Caution - Use Carefully - Small Sample Size*



# Land Use: 814

## Specialty Retail Center

### Description

Specialty retail centers are generally small strip shopping centers that contain a variety of retail shops and specialize in quality apparel, hard goods and services, such as real estate offices, dance studios, florists and small restaurants. Shopping center (Land Use 820) is a related use.

### Additional Data

The sites were surveyed between the late 1970s and the 2000s in California, Florida, Georgia, New York and Pennsylvania.

### Source Numbers

100, 304, 305, 367, 423, 507, 577

# Specialty Retail Center (814)

**Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Leasable Area  
On a: Weekday**

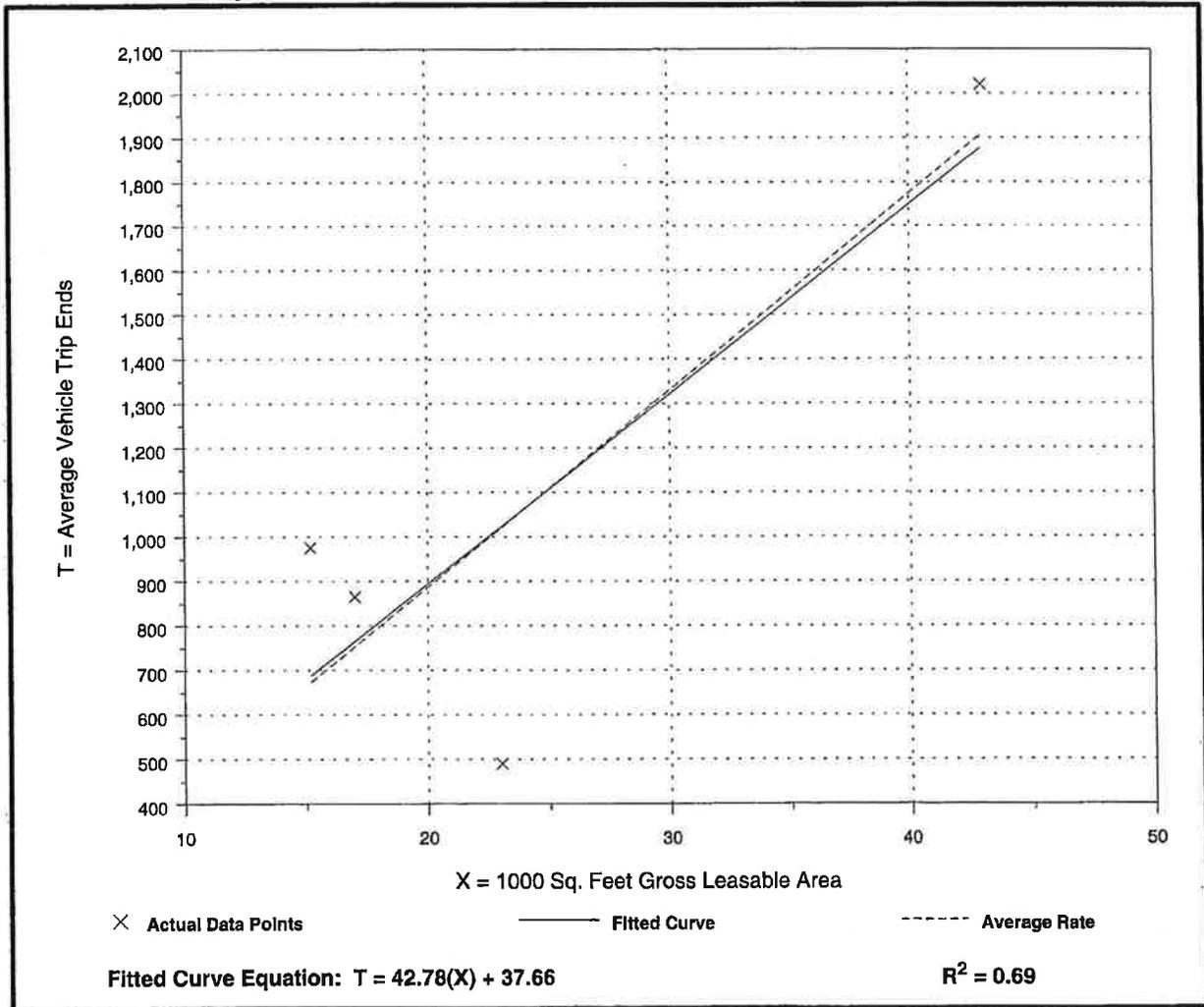
Number of Studies: 4  
Average 1000 Sq. Feet GLA: 25  
Directional Distribution: 50% entering, 50% exiting

## Trip Generation per 1000 Sq. Feet Gross Leasable Area

Average Rate	Range of Rates	Standard Deviation
44.32	21.30 - 64.21	15.52

## Data Plot and Equation

*Caution - Use Carefully - Small Sample Size*



# Land Use: 150 Warehousing

## Description

Warehouses are primarily devoted to the storage of materials, but they may also include office and maintenance areas. High-cube warehouse (Land Use 152) is a related use.

## Additional Data

Truck trips accounted for 20 percent of the weekday traffic at one of the sites surveyed. No vehicle occupancy data were available specifically for warehousing, but the average was approximately 1.3 persons per automobile for all industrial uses.

The peak hour of the generator typically coincided with the peak hour of the adjacent street traffic.

Facilities with employees on shift work may peak at other hours.

Two sources indicated that the warehousing sites comprised multiple buildings.

The sites were surveyed between the late 1960s and the 2000s throughout the United States and Canada.

## Source Numbers

6, 7, 12, 13, 15, 17, 74, 184, 192, 390, 406, 411, 436, 443, 571, 579, 583, 596, 598, 611

# Warehousing (150)

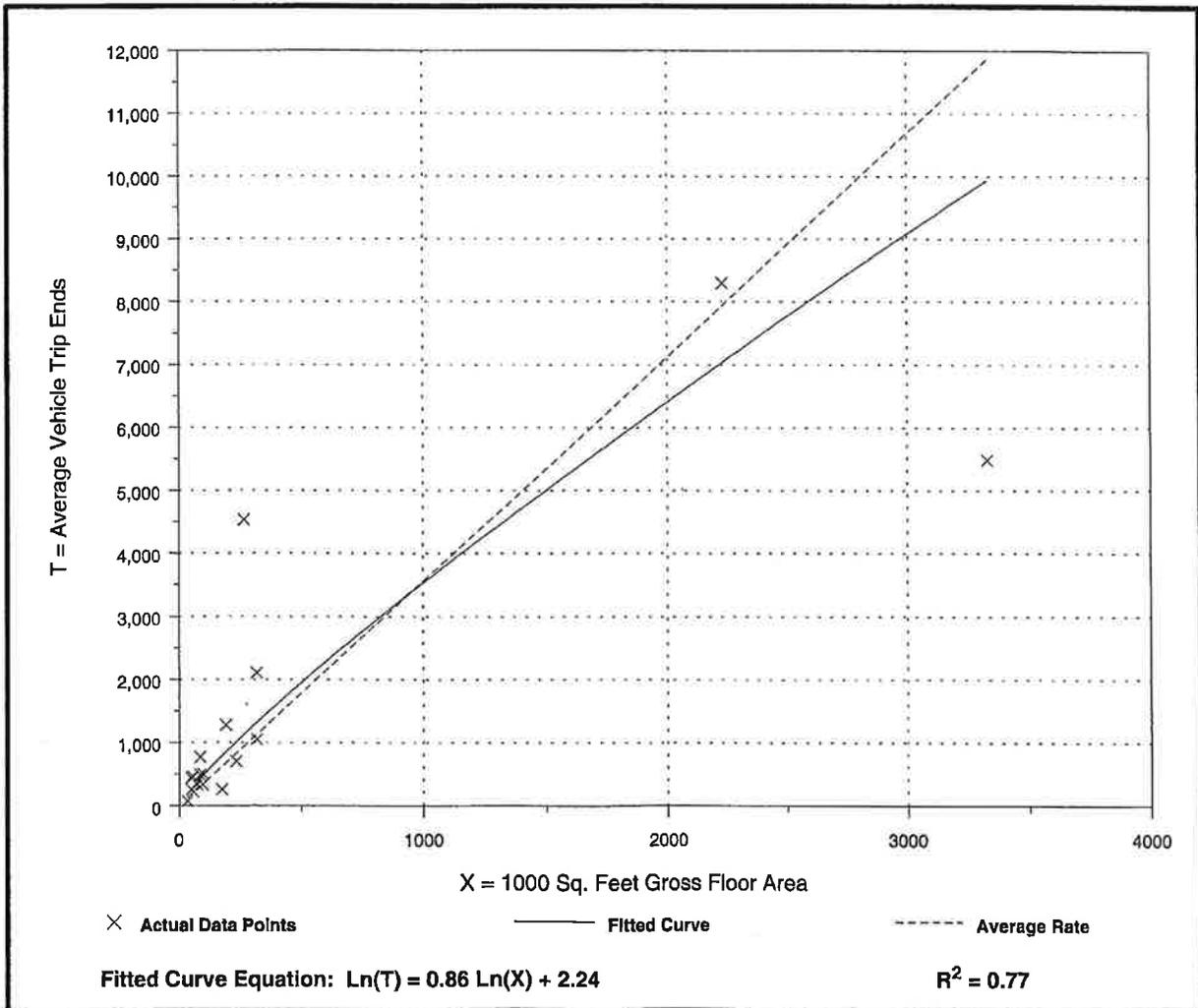
**Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area**  
**On a: Weekday**

Number of Studies: 18  
 Average 1000 Sq. Feet GFA: 431  
 Directional Distribution: 50% entering, 50% exiting

### Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
3.56	1.51 - 17.00	3.58

### Data Plot and Equation



# Warehousing (150)

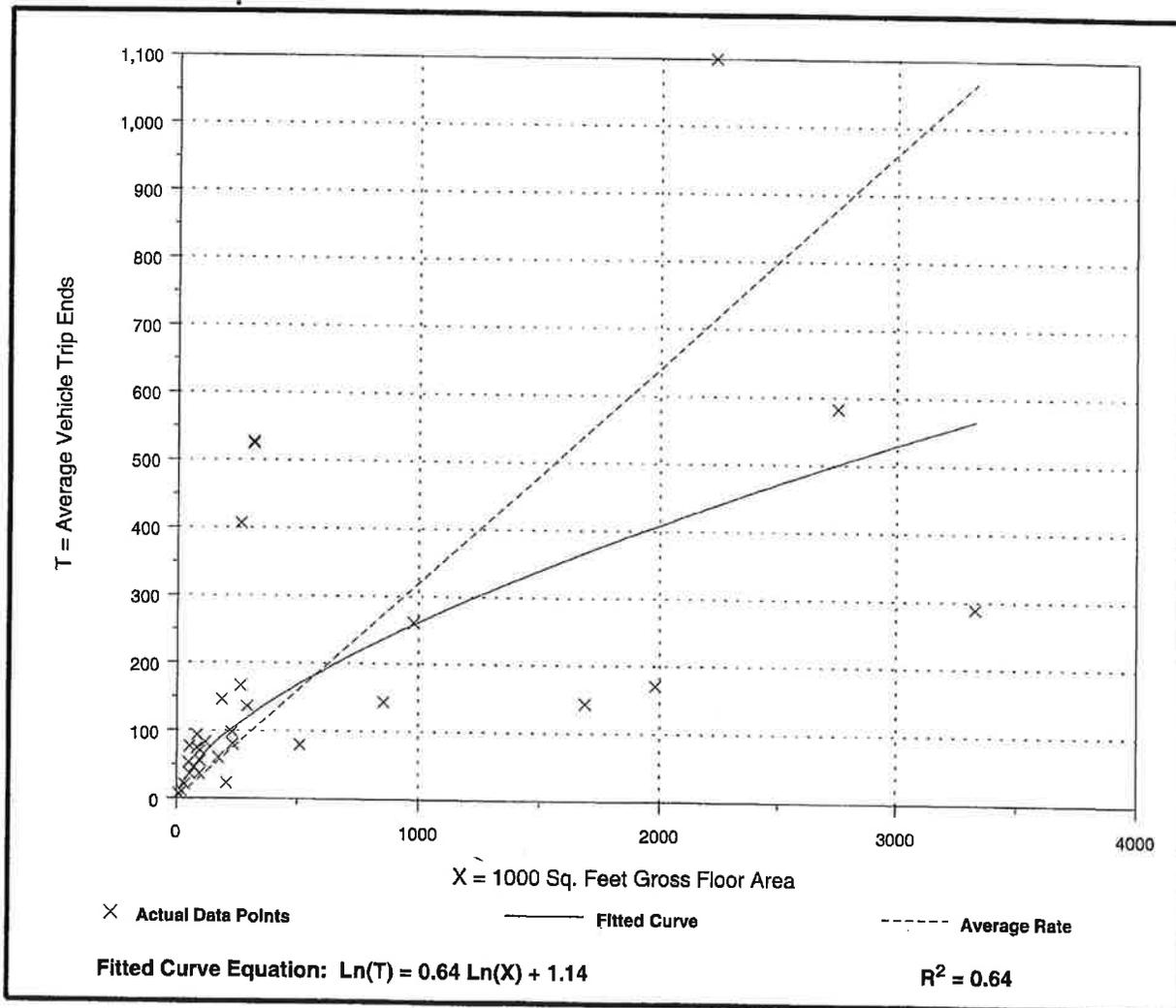
**Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 4 and 6 p.m.**

Number of Studies: 31  
 Average 1000 Sq. Feet GFA: 572  
 Directional Distribution: 25% entering, 75% exiting

## Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
0.32	0.09 - 1.66	0.67

## Data Plot and Equation



# Land Use: 151 Mini-Warehouse

## Description

Mini-warehouses are buildings in which a number of storage units or vaults are rented for the storage of goods. They are typically referred to as "self-storage" facilities. Each unit is physically separated from other units, and access is usually provided through an overhead door or other common access point.

## Additional Data

Truck trips accounted for 2 to 15 percent of the weekday traffic at the sites surveyed.

Vehicle occupancy ranged from 1.2 to 1.9 persons per automobile on an average weekday.

Peak hours of the generator —

The weekday p.m. peak hour was between 1:00 p.m. and 7:00 p.m. The Saturday peak hour was between 10:00 a.m. and 1:00 p.m. The Sunday peak hour was between 1:00 p.m. and 6:00 p.m.

For the purpose of this land use, the independent variable "occupied storage units" is defined as the number of units that have been rented.

The sites were surveyed between 1979 and 2005 in California, Colorado and New Jersey.

## Source Numbers

113, 212, 403, 551, 568, 642

# Mini-Warehouse (151)

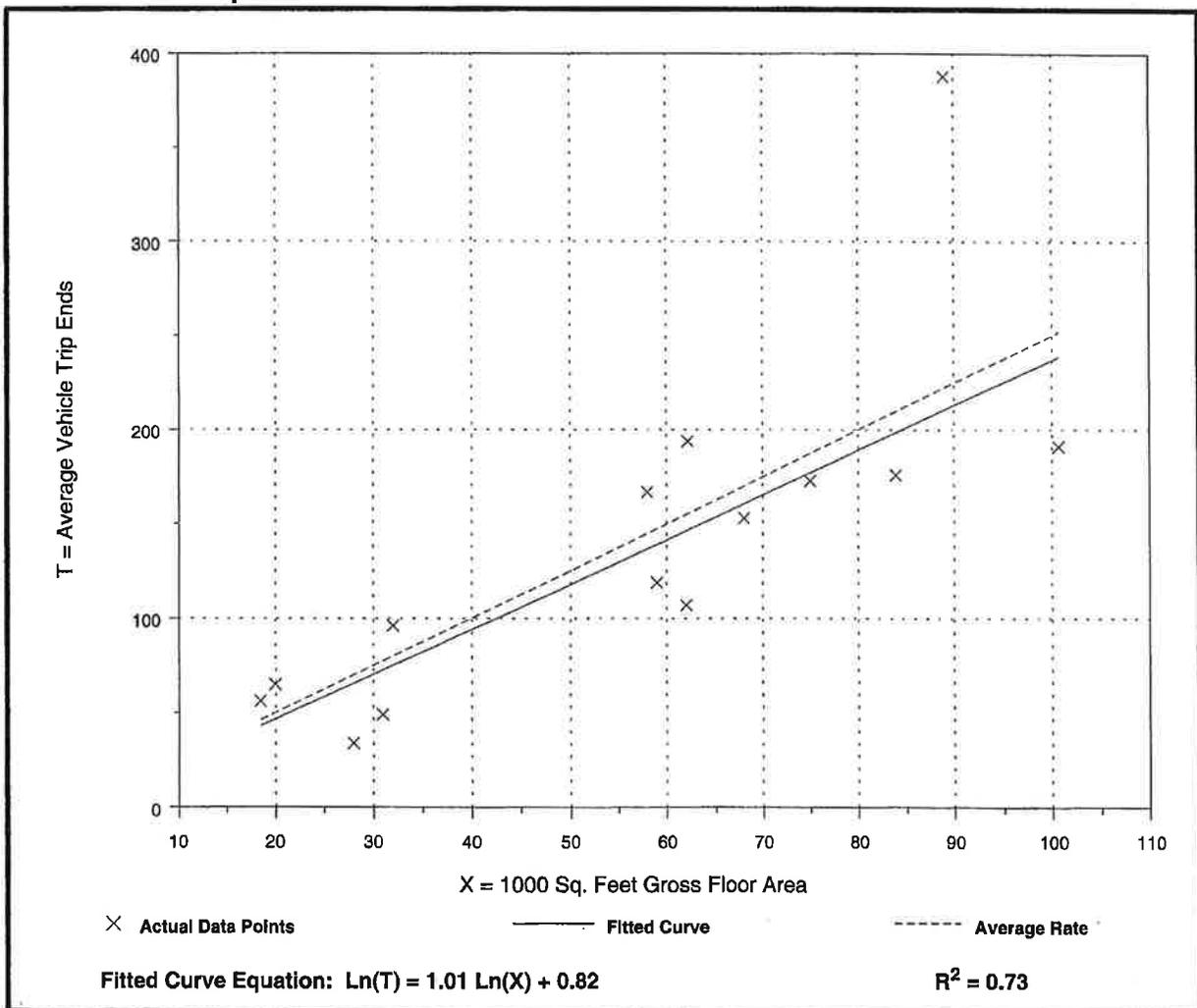
**Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area  
On a: Weekday**

Number of Studies: 14  
Average 1000 Sq. Feet GFA: 56  
Directional Distribution: 50% entering, 50% exiting

## Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
2.50	1.21 - 4.36	1.78

## Data Plot and Equation



# Mini-Warehouse (151)

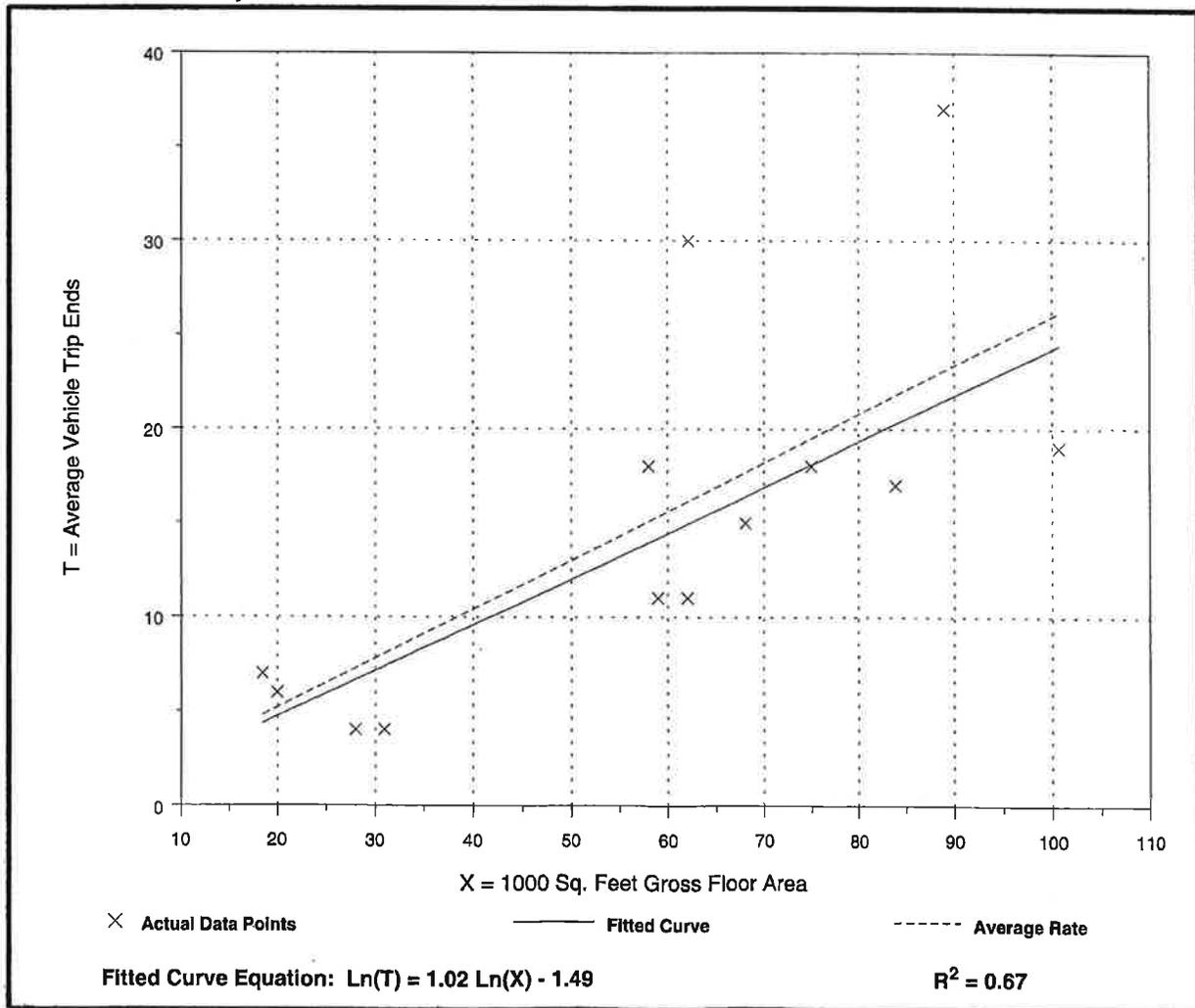
**Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 4 and 6 p.m.**

Number of Studies: 13  
 Average 1000 Sq. Feet GFA: 58  
 Directional Distribution: 51% entering, 49% exiting

### Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
0.26	0.13 - 0.48	0.52

### Data Plot and Equation



# Specialty Retail Center (814)

**Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Leasable Area**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 4 and 6 p.m.**

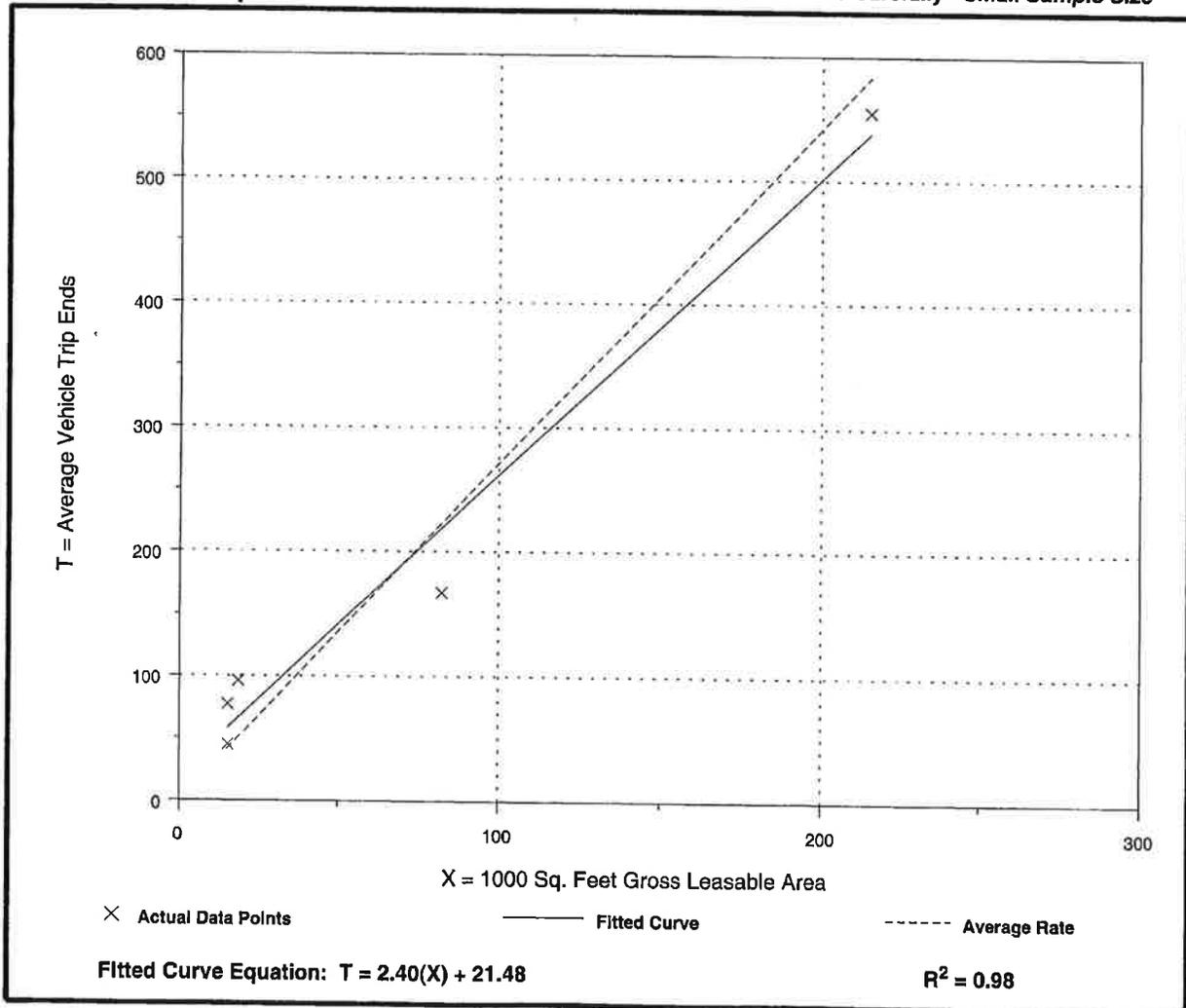
Number of Studies: 5  
 Average 1000 Sq. Feet GLA: 69  
 Directional Distribution: 44% entering, 56% exiting

## Trip Generation per 1000 Sq. Feet Gross Leasable Area

Average Rate	Range of Rates	Standard Deviation
2.71	2.03 - 5.16	1.83

## Data Plot and Equation

*Caution - Use Carefully - Small Sample Size*



LUC 942  
 Summary of Trip Generation Calculation  
 For 5.1 Th.Sq.Ft. Occupied G.L.A. of Automobile Care Center  
 October 08, 2012

	Average Rate	Standard Deviation	Adjustment Factor	Driveway Volume
Avg. Weekday 2-Way Volume	0.00	0.00	1.00	0
7-9 AM Peak Hour Enter	1.91	0.00	1.00	10
7-9 AM Peak Hour Exit	1.03	0.00	1.00	5
7-9 AM Peak Hour Total	2.94	2.15	1.00	15
4-6 PM Peak Hour Enter	1.69	0.00	1.00	9
4-6 PM Peak Hour Exit	1.69	0.00	1.00	9
4-6 PM Peak Hour Total	3.38	2.15	1.00	17
AM Pk Hr, Generator, Enter	1.93	0.00	1.00	10
AM Pk Hr, Generator, Exit	1.29	0.00	1.00	7
AM Pk Hr, Generator, Total	3.22	2.27	1.00	16
PM Pk Hr, Generator, Enter	2.05	0.00	1.00	10
PM Pk Hr, Generator, Exit	1.96	0.00	1.00	10
PM Pk Hr, Generator, Total	4.01	2.51	1.00	20
Saturday 2-Way Volume	15.86	0.00	1.00	81
Saturday Peak Hour Enter	0.00	0.00	1.00	0
Saturday Peak Hour Exit	0.00	0.00	1.00	0
Saturday Peak Hour Total	0.00	0.00	1.00	0
Sunday 2-Way Volume	2.59	0.00	1.00	13
Sunday Peak Hour Enter	0.00	0.00	1.00	0
Sunday Peak Hour Exit	0.00	0.00	1.00	0
Sunday Peak Hour Total	0.00	0.00	1.00	0

Note: A zero indicates no data available.  
 Source: Institute of Transportation Engineers  
 Trip Generation, 8th Edition, 2008.

TRIP GENERATION BY MICROTRANS

LUC 814  
 Summary of Trip Generation Calculation  
 For 7.3 Th.Sq.Ft. GLA of Specialty Retail Center  
 October 08, 2012

	Average Rate	Standard Deviation	Adjustment Factor	Driveway Volume
Avg. Weekday 2-Way Volume	44.32	15.52	1.00	324
7-9 AM Peak Hour Enter	0.00	0.00	1.00	0
7-9 AM Peak Hour Exit	0.00	0.00	1.00	0
7-9 AM Peak Hour Total	0.00	0.00	1.00	0
4-6 PM Peak Hour Enter	1.19	0.00	1.00	9
4-6 PM Peak Hour Exit	1.52	0.00	1.00	11
4-6 PM Peak Hour Total	2.71	1.83	1.00	20
AM Pk Hr, Generator, Enter	3.28	0.00	1.00	24
AM Pk Hr, Generator, Exit	3.56	0.00	1.00	26
AM Pk Hr, Generator, Total	6.84	3.55	1.00	50
PM Pk Hr, Generator, Enter	2.81	0.00	1.00	21
PM Pk Hr, Generator, Exit	2.21	0.00	1.00	16
PM Pk Hr, Generator, Total	5.02	2.31	1.00	37
Saturday 2-Way Volume	42.04	13.97	1.00	307
Saturday Peak Hour Enter	0.00	0.00	1.00	0
Saturday Peak Hour Exit	0.00	0.00	1.00	0
Saturday Peak Hour Total	0.00	0.00	1.00	0
Sunday 2-Way Volume	20.43	10.27	1.00	149
Sunday Peak Hour Enter	0.00	0.00	1.00	0
Sunday Peak Hour Exit	0.00	0.00	1.00	0
Sunday Peak Hour Total	0.00	0.00	1.00	0

Note: A zero indicates no data available.  
 Source: Institute of Transportation Engineers  
 Trip Generation, 8th Edition, 2008.

TRIP GENERATION BY MICROTRANS

LUC 151  
 Summary of Trip Generation Calculation  
 For 80.1 Th.Sq.Ft. GFA of Mini-Warehouse  
 October 08, 2012

	Average Rate	Standard Deviation	Adjustment Factor	Driveway Volume
Avg. Weekday 2-Way Volume	2.50	1.78	1.00	200
7-9 AM Peak Hour Enter	0.09	0.00	1.00	7
7-9 AM Peak Hour Exit	0.06	0.00	1.00	5
7-9 AM Peak Hour Total	0.15	0.39	1.00	12
4-6 PM Peak Hour Enter	0.13	0.00	1.00	10
4-6 PM Peak Hour Exit	0.13	0.00	1.00	10
4-6 PM Peak Hour Total	0.26	0.52	1.00	21
AM Pk Hr, Generator, Enter	0.13	0.00	1.00	10
AM Pk Hr, Generator, Exit	0.15	0.00	1.00	12
AM Pk Hr, Generator, Total	0.28	0.54	1.00	22
PM Pk Hr, Generator, Enter	0.15	0.00	1.00	12
PM Pk Hr, Generator, Exit	0.14	0.00	1.00	11
PM Pk Hr, Generator, Total	0.29	0.54	1.00	23
Saturday 2-Way Volume	2.33	1.69	1.00	187
Saturday Peak Hour Enter	0.00	0.00	1.00	0
Saturday Peak Hour Exit	0.00	0.00	1.00	0
Saturday Peak Hour Total	0.40	0.64	1.00	32
Sunday 2-Way Volume	1.78	1.46	1.00	143
Sunday Peak Hour Enter	0.00	0.00	1.00	0
Sunday Peak Hour Exit	0.00	0.00	1.00	0
Sunday Peak Hour Total	0.30	0.55	1.00	24

Note: A zero indicates no data available.  
 Source: Institute of Transportation Engineers  
 Trip Generation, 8th Edition, 2008.

TRIP GENERATION BY MICROTRANS

LUC 150  
 Summary of Trip Generation Calculation  
 For 41.7 Th.Sq.Ft. GFA of Warehousing  
 October 08, 2012

	Average Rate	Standard Deviation	Adjustment Factor	Driveway Volume
Avg. Weekday 2-Way Volume	3.56	3.58	1.00	148
7-9 AM Peak Hour Enter	0.24	0.00	1.00	10
7-9 AM Peak Hour Exit	0.06	0.00	1.00	3
7-9 AM Peak Hour Total	0.30	0.63	1.00	13
4-6 PM Peak Hour Enter	0.08	0.00	1.00	3
4-6 PM Peak Hour Exit	0.24	0.00	1.00	10
4-6 PM Peak Hour Total	0.32	0.67	1.00	13
AM Pk Hr, Generator, Enter	0.27	0.00	1.00	11
AM Pk Hr, Generator, Exit	0.15	0.00	1.00	6
AM Pk Hr, Generator, Total	0.42	0.74	1.00	18
PM Pk Hr, Generator, Enter	0.09	0.00	1.00	4
PM Pk Hr, Generator, Exit	0.36	0.00	1.00	15
PM Pk Hr, Generator, Total	0.45	0.76	1.00	19
Saturday 2-Way Volume	1.23	2.12	1.00	51
Saturday Peak Hour Enter	0.08	0.00	1.00	3
Saturday Peak Hour Exit	0.05	0.00	1.00	2
Saturday Peak Hour Total	0.13	0.40	1.00	5
Sunday 2-Way Volume	0.78	1.74	1.00	33
Sunday Peak Hour Enter	0.04	0.00	1.00	2
Sunday Peak Hour Exit	0.03	0.00	1.00	1
Sunday Peak Hour Total	0.07	0.29	1.00	3

Note: A zero indicates no data available.  
 Source: Institute of Transportation Engineers  
 Trip Generation, 8th Edition, 2008.

TRIP GENERATION BY MICROTRANS