

# 2012 DATA COLLECTION PROJECT

## ITE WESTERN DISTRICT

### Project Completed By:

Oregon State University

OSU ITE

220 Owen Hall

Corvallis, OR 97331

**Project Manager:** Lacy Brown (OSU ITE)

**Faculty Advisor:** Karen Dixon (OSU ITE)

**Professional Mentor:** Kelly Sandow (JRH Engineering- Eugene, Oregon)

**Submitted: May 18, 2012**



The Oregon State University student chapter of the Institute of Transportation Engineers (OSU ITE) recently collected trip and parking generation data at three elementary schools (LU 520) in Corvallis, Oregon. OSU ITE manually collected turning movement counts and parking utilization counts from 7AM to 7PM on typical weekdays. Adjacent street traffic volumes were also collected using automatic tube counters during the same 12-hour periods. **Table 1** presents the site characteristics for each of the three schools and graphical depictions are included in the Appendix.

## **Trip Generation**

OSU ITE used JAMAR count boards to count vehicular turning movements, pedestrian and bicycle trips, and by-pass trips. By-pass trips are defined as vehicles that could have turned into and out of the school parking lots but instead dropped-off and picked-up students on the adjacent streets. Two of the three schools provided bus pick-up and drop-off in designated areas on adjacent streets instead of on-site, and thus busses were not included in the driveway traffic volume counts. Final trip generation numbers and associated ITE estimates are presented in **Table 2**. Nearly all vehicular trips are higher than those estimated using the ITE rates and equations. However, when looking at the data points graphically, as shown in the Appendix, the collected data falls well within the range of data points currently included in the manual. We are confident that these three sites do not exhibit exceptionally unique characteristics.

## **Parking Generation**

OSU ITE recorded parking usage in 15-minute intervals and calculated hourly parking demand using the highest recorded parking usage of the four 15-minute intervals. Parking generation data is presented numerically in **Table 3** and graphically in the Appendix.

OSU ITE noted that several vehicles parked in no-parking zones, bus waiting areas, or along the curb line, often when empty parking spaces were available. Therefore, during certain hours the total number of parked vehicles is not identical to the number of filled parking spaces. (Note: Bicycle parking data could not be collected as bicycle parking was located within the fenced playground area and was not accessible or visible to OSU ITE members.)

## **Adjacent Street Traffic**

Automatic tube counters were used to collect adjacent street traffic during the same 12-hour periods of trip and parking data collection. The street from which traffic entered the parking lot was designated the adjacent street. To estimate the Average Daily Traffic volumes (ADT) shown in **Table 1**, OSU ITE assumed that morning and afternoon peak hours represented 8% and 10% of the daily traffic volume, respectively (based on local traffic patterns).

## **Summary**

Observed vehicle volumes were higher than those estimated using ITE Trip Generation rates, while observed parking usage was significantly lower than estimates based on ITE Parking Generation rates. The higher driveway volumes could be attributed to rainy weather resulting in fewer bicycle and pedestrian trips and more vehicle trips. The lower parking demand volumes are likely attributed to the limited parking capacity currently available, resulting in more curbside by-pass trips, pedestrian, and bicycle trips.

# SUMMARY TABLES

**Table 1. Elementary School Site Characteristics**

Site Name	Site Size (acres)	Building Size (gsf)	Enrolled Students	Staff (FTE)	Parking Spaces	Adjacent Street ADT
<i>Garfield Elementary</i>	7.3	50,800	336	39.8	28	2,300
<i>Jefferson Elementary</i>	8.5	49,550	305	39.1	30	1,100
<i>Wilson Elementary</i>	9.3	53,100	346	37.9	92	5,000

**Table 2. Trip Generation Data & Comparisons**

Time Period	Peak Hour	Vehicles In	Vehicles Out	Total Vehicles	Bikes & Peds	Busses	By-Pass	Total Trips	% Bike/Ped
<i>Garfield Elementary - Actual Counts (ITE Estimates)<sup>1</sup></i>									
Weekday	-	219 (217)	222 (217)	441 (433)	176	0	59	676	26.0%
AM Peak	7:30-8:30	116 (62)	100 (51)	216 (113)	82	0	30	328	25.0%
PM Peak	2:15-3:15	35 (38)	41 (47)	76 (85)	62	0	20	158	39.2%
<i>Jefferson Elementary - Actual Counts (ITE Estimates)<sup>1</sup></i>									
Weekday	-	282 (197)	269 (197)	551 (393)	213	0	89	853	25.0%
AM Peak	7:30-8:30	118 (56)	102 (46)	220 (101)	74	0	31	325	22.8%
PM Peak	2:15-3:15	48 (34)	52 (42)	100 (76)	91	0	21	212	42.9%
<i>Wilson Elementary - Actual Counts (ITE Estimates)<sup>1</sup></i>									
Weekday	-	446 (223)	424 (223)	870 (446)	95	32	20	1017	9.3%
AM Peak	7:30-8:30	191 (64)	163 (53)	354 (117)	39	9	6	408	9.6%
PM Peak	2:30-3:30	88 (39)	105 (48)	193 (88)	26	6	14	239	10.9%

<sup>1</sup>Note: ITE Estimates calculated using rates and equations based on number of students.

**Table 3. Parking Generation Data & Comparisons**

Site Name	Peak Period	Filled Spots	Empty Spots	Parked Vehicles	ITE Estimate
<i>Garfield Elementary</i>	9:00-10:00AM	26	2	30	94
<i>Jefferson Elementary</i>	2:00-3:00PM	29	1	33	85
<i>Wilson Elementary</i>	2:00-3:00PM	82	10	82	97

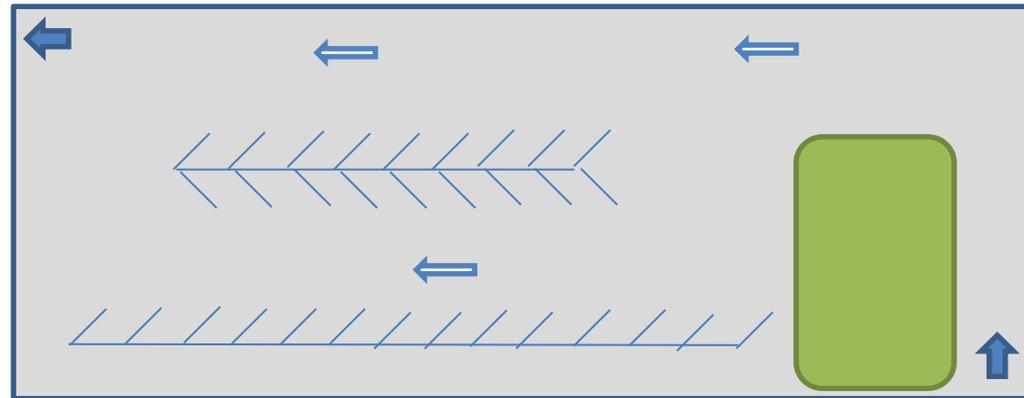
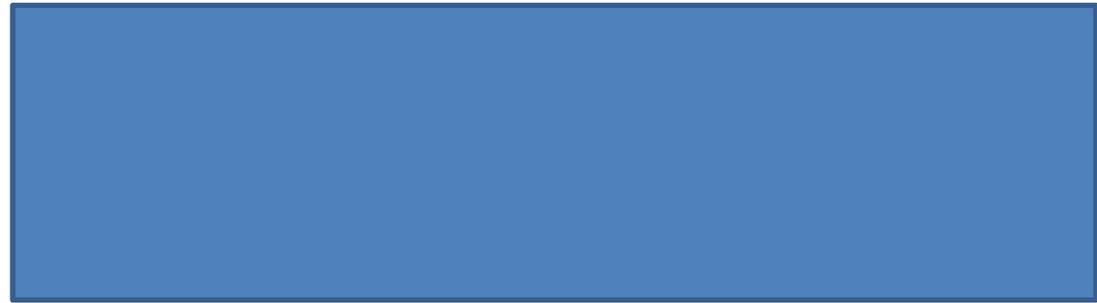
# **APPENDIX A**

## **School Site Layouts**



# Garfield Elementary School

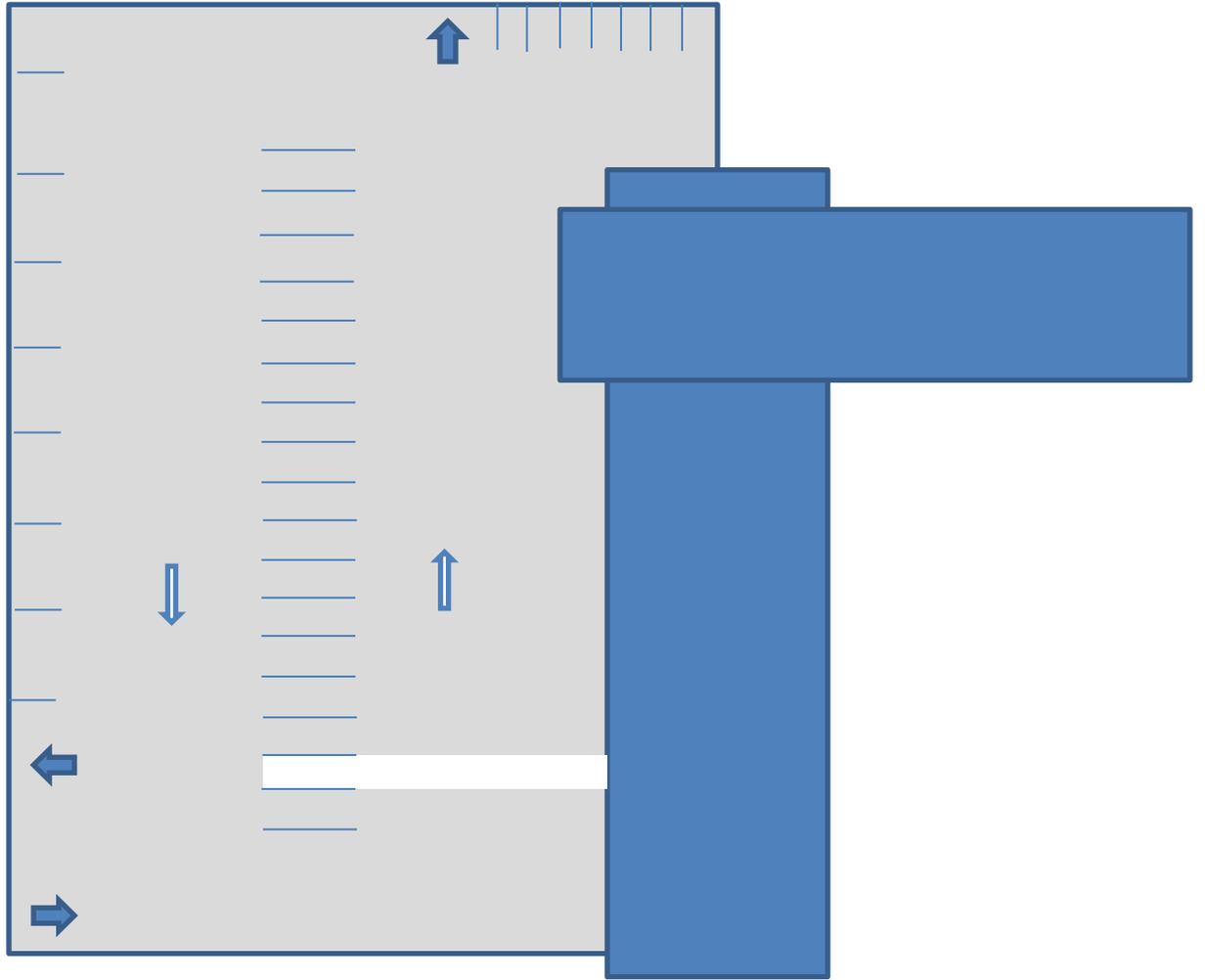
NW Dixon Street



NW Garfield Avenue

NW Circle Boulevard

NW 27<sup>th</sup> Street



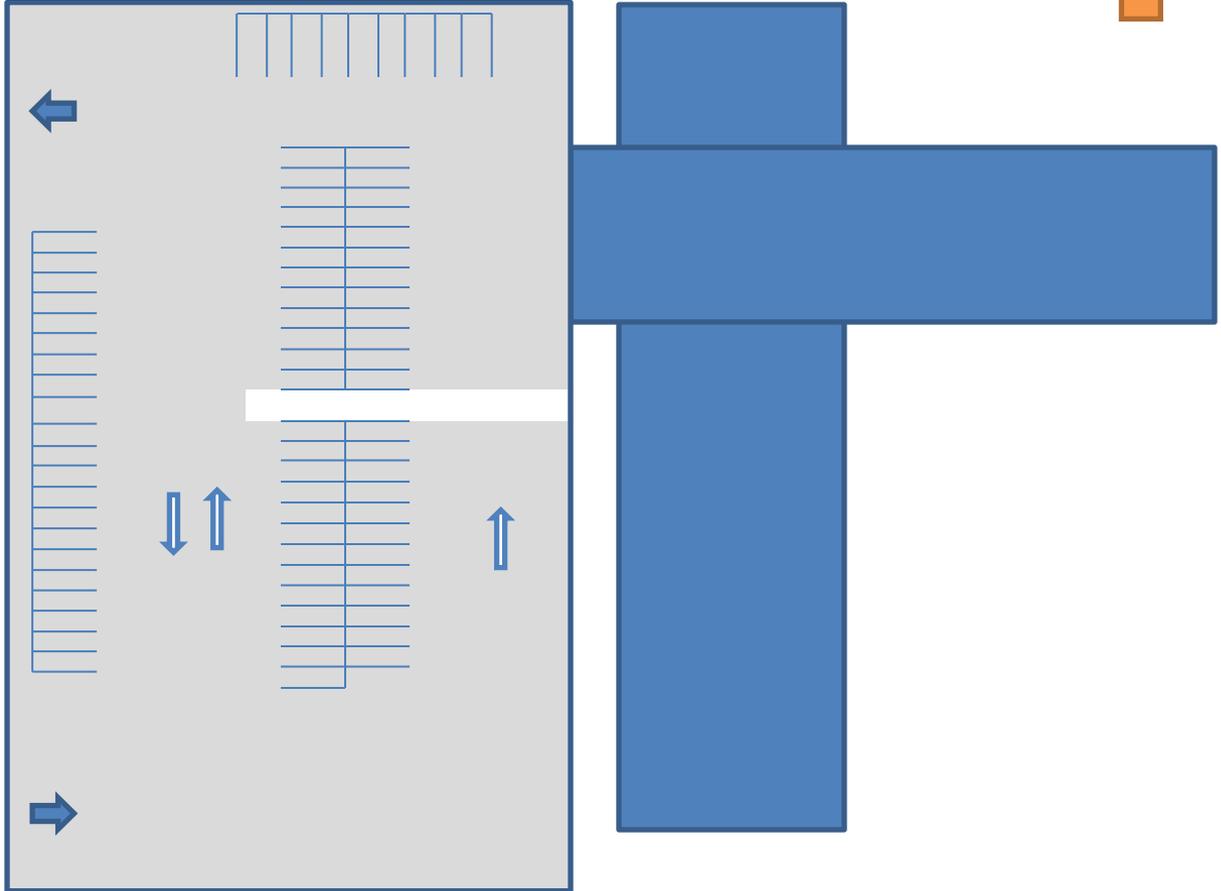
Jefferson Elementary School



# Wilson Elementary School



Satinwood Avenue



Walnut Boulevard

# Garfield Elementary School



Imagery Date: 7/8/2010

44°35'01.14" N 123°15'52.97" W elev. 232 ft

Google earth

Eye alt. 1420 ft

# Jefferson Elementary School



Imagery Date: 7/8/2010

44°35'08.29" N 123°16'45.68" W elev 249.ft

Eye alt 1420 ft

# Wilson Elementary School



# **APPENDIX B**

## **Trip Generation Data**

# Trip Generation Data Form (Part 1)

Land Use/Building Type: <sup>1</sup> <u>Elementary School</u>	ITE Land Use Code: <u>520</u>
Source:	Source No. (ITE use only):
Name of Development: <u>Egarfield Elementary School</u>	Day of the Week: <u>Tues.</u>
City: <u>Corvallis</u> State/Province: <u>OR</u> Zip/Postal Code: <u>97330</u>	Day: <u>21</u> Month: <u>Feb.</u> Year: <u>2012</u>
Country: <u>USA</u>	Metropolitan Area: <u>Corvallis</u>

1. For fast-food land use, please specify if hamburger- or nonhamburger-based.

Location Within Area:				Detailed Description of Development: <sup>3</sup>			
<input type="checkbox"/> (1) CBD		<input type="checkbox"/> (3) Suburban (Non-CBD)		<input type="checkbox"/> (5) Rural		<u>elementary school (K-4) in urban area (pop. ~50,000) Bike &amp; Ped friendly area, bike racks on-site. Bus drop-off on adjacent street (not using driveways).</u>	
<input checked="" type="checkbox"/> (2) Urban (Non-CBD)		<input type="checkbox"/> (4) Suburban CBD		<input type="checkbox"/> (6) Freeway Interchange Area (Rural)			
				<input type="checkbox"/> (7) Not Given			
Independent Variable: (include data for as many as possible) <sup>2</sup>		Actual	Estimated	Actual	Estimated		
<u>39.8</u> (1) Employees (#) - FTE	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>28</u> (9) Parking Spaces (% occupied: <u>100%</u> )	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
<u>334</u> (2) Persons (#) - <u>students</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	(10) Beds (% occupied: _____)	<input type="checkbox"/>	<input type="checkbox"/>		
_____ (3) Total Units (#) (indicate unit: _____)	<input type="checkbox"/>	<input type="checkbox"/>	(11) Seats (#)	<input type="checkbox"/>	<input type="checkbox"/>		
_____ (4) Occupied Units (#) (indicate unit: _____)	<input type="checkbox"/>	<input type="checkbox"/>	(12) Servicing Positions/Vehicle Fueling Positions	<input type="checkbox"/>	<input type="checkbox"/>		
<u>50,800</u> (5) Gross Floor Area (gross sq. ft.)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	(13) Shopping Center % Out-parcels/pads	<input type="checkbox"/>	<input type="checkbox"/>		
(% of development occupied <u>100%</u> )			(14) A.M. Peak Hour Volume of Adjacent Street Traffic	<input type="checkbox"/>	<input type="checkbox"/>		
_____ (6) Net Rentable Area (sq. ft.)	<input type="checkbox"/>	<input type="checkbox"/>	(15) P.M. Peak Hour Volume of Adjacent Street Traffic	<input type="checkbox"/>	<input type="checkbox"/>		
_____ (7) Gross Leasable Area (sq. ft.)	<input type="checkbox"/>	<input type="checkbox"/>	(16) Other _____	<input type="checkbox"/>	<input type="checkbox"/>		
(% of development occupied _____)			(17) Other _____	<input type="checkbox"/>	<input type="checkbox"/>		
_____ (8) Total Acres (% developed: _____)	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		

2. Definitions for several independent variables can be found in the *Trip Generation, Second Edition, User's Guide Glossary*.

3. Please provide all pertinent information to describe the subject project, including the presence of bicycle/pedestrian facilities. To report bicycle/pedestrian volumes, please refer to Part 4 of this data form.

Other Data:		Transportation Demand Management (TDM) Information:	
Vehicle Occupancy (#): _____ A.M. _____ P.M. _____ 24-hour % Percent by Transit: _____ A.M. % _____ P.M. % _____ 24-hour % Percent by Carpool/Vanpool: _____ A.M. % _____ P.M. % _____ 24-hour %		At the time of this study, was there a TDM program (that may have impacted the trip generation characteristics of this site) underway? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (If yes, please check appropriate box/boxes, describe the nature of the TDM program(s) and provide a source for any studies that may help quantify this impact. Attach additional sheets if necessary)	
Employees by Shift: First Shift: Start Time _____ End Time _____ Employees (#) _____ Second Shift: Start Time _____ End Time _____ Employees (#) _____ Third Shift: Start Time _____ End Time _____ Employees (#) _____ Parking Cost on Site: Hourly _____ Daily _____		<input type="checkbox"/> (1) Transit Service <input type="checkbox"/> (2) Carpool Programs <input type="checkbox"/> (3) Vanpool Programs <input type="checkbox"/> (4) Bicycle/Pedestrian Facilities and Site Improvements <input type="checkbox"/> (5) Employer Support Measures <input type="checkbox"/> (6) Preferential HOV Treatments <input type="checkbox"/> (7) Transit and Ridesharing Incentives <input type="checkbox"/> (8) Parking Supply and Pricing Management <input type="checkbox"/> (9) Tolls and Congestion Pricing <input type="checkbox"/> (10) Variable Work Hours/Compressed Work Weeks <input type="checkbox"/> (11) Telecommuting <input type="checkbox"/> (12) Other _____	

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**Trip Generation Data Form (Part 2)**

Summary of Driveway Volumes

(All = All Vehicles Counted, Including Trucks; Trucks = Heavy Duty Trucks and Buses)

	Average Weekday (M-F)						Saturday						Sunday						
	Enter		Exit		Total		Enter		Exit		Total		Enter		Exit		Total		
	All	Trucks	All	Trucks	All	Trucks	All	Trucks	All	Trucks	All	Trucks	All	Trucks	All	Trucks	All	Trucks	
12 24-Hour Volume	219	0	222	0	441	0													
A.M. Peak Hour of Adjacent Street Traffic (7 - 9) Time (ex.: 7:15 - 8:15): 7:30-8:30	116	0	100	0	216	0													
P.M. Peak Hour of Adjacent Street Traffic (4 - 6) Time: 5:15-6:15	6	0	7	0	13	0													
A.M. Peak Hour Generator <sup>1</sup> Time: 7:30-8:30	116	0	100	0	216	0													
P.M. Peak Hour Generator <sup>2</sup> Time: 2:15-3:15	35	0	41	0	76	0													
Peak Hour Generator <sup>3</sup> Time (Weekend):																			

<sup>1</sup> Highest hourly volume between 7 a.m. and 9 a.m. (4 p.m. and 6 p.m.). Please specify the peak hour.

<sup>2</sup> Highest hourly volume during the a.m. or p.m. period. Please specify the peak hour.

<sup>3</sup> Highest hourly volume during the entire day. Please specify the peak hour.

Please refer to the Trip Generation User's Guide for full definition of terms.

Hourly Driveway Volumes- Average Weekday (M-F)

A.M. Period	Enter		Exit		Total		Mid-Day Period	Enter		Exit		Total		P.M. Period	Enter		Exit		Total	
	All	Trucks	All	Trucks	All	Trucks		All	Trucks	All	Trucks	All	Trucks		All	Trucks	All	Trucks	All	Trucks
6:00-7:00							11:00-12:00	3		7		10		3:00-4:00	11		29		40	
6:15-7:15							11:15-12:15	2		2		4		3:15-4:15	10		23		33	
6:30-7:30							11:30-12:30	2		1		3		3:30-4:30	11		24		35	
6:45-7:45							11:45-12:45	1		1		2		3:45-4:45	6		17		23	
7:00-8:00	126		41		107		12:00-1:00	4		2		6		4:00-5:00	6		12		18	
7:15-8:15	111		78		189		12:15-1:15	4		4		8		4:15-5:15	6		11		17	
7:30-8:30	116		100		216		12:30-1:30	5		4		9		4:30-5:30	5		8		13	
7:45-8:45	95		88		183		12:45-1:45	5		5		10		4:45-5:45	4		5		9	
8:00-9:00	68		69		137		1:00-2:00	5		4		9		5:00-6:00	5		6		11	

Check if Part 3, 4 and/or additional information is attached.

Survey conducted by: Name: LACY BROWN  
 Organization: OSU - ITE  
 Address: 220 Owen Hall, Oregon State University  
 City/State/Zip: Corvallis, OR, 97331  
 Telephone #: \_\_\_\_\_ Fax #: \_\_\_\_\_

Please return to: Institute of Transportation Engineers  
 Technical Projects Division  
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 Fax: +1 202-785-0609  
 ITE on the Web: www.ite.org

E-mail: osuite@engr.orst.edu

# Trip Generation Data Form (Part 3)

Name/Organization: OSU-ITE City/State: Corvallis, OR

Telephone Number: \_\_\_\_\_

Detailed Driveway Volumes: Attach this sheet to Parts 1 and 2 if you are providing additional information.

Day of the week: Tuesday (All = All Vehicles Counted, Including Trucks; Trucks = Heavy Duty Trucks and Buses)

A.M. Period	Enter		Exit		Total		P.M. Period	Enter		Exit		Total	
	All	Trucks	All	Trucks	All	Trucks		All	Trucks	All	Trucks	All	Trucks
12:00-12:15							12:00-12:15	1		0		1	
12:15-12:30							12:15-12:30	0		0		0	
12:30-12:45							12:30-12:45	1		0		1	
12:45-1:00							12:45-1:00	3		1		3	
1:00-1:15							1:00-1:15	1		2		3	
1:15-1:30							1:15-1:30	1		0		1	
1:30-1:45							1:30-1:45	0		2		2	
1:45-2:00							1:45-2:00	3		0		3	
2:00-2:15							2:00-2:15	0		0		0	
2:15-2:30							2:15-2:30	5		1		6	
2:30-2:45							2:30-2:45	14		4		18	
2:45-3:00							2:45-3:00	15		28		43	
3:00-3:15							3:00-3:15	1		8		9	
3:15-3:30							3:15-3:30	1		3		4	
3:30-3:45							3:30-3:45	9		11		20	
3:45-4:00							3:45-4:00	0		7		7	
4:00-4:15							4:00-4:15	0		2		2	
4:15-4:30							4:15-4:30	2		4		6	
4:30-4:45							4:30-4:45	4		4		8	
4:45-5:00							4:45-5:00	0		2		2	
5:00-5:15							5:00-5:15	0		1		1	
5:15-5:30							5:15-5:30	1		1		2	
5:30-5:45							5:30-5:45	3		1		4	
5:45-6:00							5:45-6:00	1		3		4	
6:00-6:15							6:00-6:15	1		2		3	
6:15-6:30							6:15-6:30	0		0		0	
6:30-6:45							6:30-6:45	0		0		0	
6:45-7:00							6:45-7:00	0		1		1	
7:00-7:15	2		0		2		7:00-7:15	0		0		0	
7:15-7:30	7		1		8		7:15-7:30						
7:30-7:45	27		17		44		7:30-7:45						
7:45-8:00	30		23		53		7:45-8:00						
8:00-8:15	47		37		84		8:00-8:15						
8:15-8:30	12		23		35		8:15-8:30						
8:30-8:45	6		5		11		8:30-8:45						
8:45-9:00	3		4		7		8:45-9:00						
9:00-9:15	1		1		2		9:00-9:15						
9:15-9:30	4		0		4		9:15-9:30						
9:30-9:45	1		6		7		9:30-9:45						
9:45-10:00	3		3		6		9:45-10:00						
10:00-10:15	2		1		3		10:00-10:15						
10:15-10:30	0		0		0		10:15-10:30						
10:30-10:45	1		1		2		10:30-10:45						
10:45-11:00	4		4		8		10:45-11:00						
11:00-11:15	2		5		7		11:00-11:15						
11:15-11:30	0		1		1		11:15-11:30						
11:30-11:45	1		1		2		11:30-11:45						
11:45-12:00	0		0		0		11:45-12:00						

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**Trip Generation Data Form (Part 4)**

**Summary of Bicycle Volumes**

	Average Weekday (M-F)			Saturday			Sunday		
	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
12 24-Hour Volume			27						
A.M. Peak Hour of Adjacent Street Traffic (7 - 9) Time (ex.: 7:15 - 8:15): 7:30-8:30			14						
P.M. Peak Hour of Adjacent Street Traffic (4 - 6) Time: 5:15-6:15			0						
A.M. Peak Hour Generator <sup>2</sup> Time: 7:30-8:30			14						
P.M. Peak Hour Generator Time: 2:15-3:15			8						
Peak Hour Generator Time (Weekend):									

<sup>1</sup> Highest hourly volume between 7 a.m. and 9 a.m. (4 p.m. and 6 p.m.) as defined in Trip Generation Data Form (Part 2). Please specify the peak hour.

<sup>2</sup> Highest hourly volume during the a.m. or p.m. period. Please specify the peak hour.

<sup>3</sup> Highest hourly volume during the entire day. Please specify the peak hour. Please attach supplemental hourly volumes.

Please refer to the *Trip Generation User's Guide* for full definition of terms.

**Summary of Pedestrian Volumes**

	Average Weekday (M-F)			Saturday			Sunday		
	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
12 24-Hour Volume			149						
A.M. Peak Hour of Adjacent Street Traffic (7 - 9) Time (ex.: 7:15 - 8:15): 7:30-8:30			68						
P.M. Peak Hour of Adjacent Street Traffic (4 - 6) Time: 5:15-6:15			6						
A.M. Peak Hour Generator <sup>2</sup> Time: 7:30-8:30			68						
P.M. Peak Hour Generator Time: 2:15-3:15			55						
Peak Hour Generator Time (Weekend):									

Survey conducted by: Name: Lacy Brown

Organization: OSU - ITE

Address: 220 Owen Hall, Oregon State University

City/State/Zip: Corvallis, OR, 97331

Telephone #: \_\_\_\_\_

Fax #: \_\_\_\_\_

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Please return to: Institute of Transportation Engineers  
 Technical Projects Division  
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 Washington, DC 20006 USA  
 Telephone: +1 202-785-0060  
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 ITE on the Web: www.ite.org

## Trip Generation Data Form (Part 1)

Land Use/Building Type: <sup>1</sup> <u>Elementary School</u>	ITE Land Use Code: <u>520</u>		
Source:	Source No. (ITE use only):		
Name of Development: <u>Jefferson Elementary School</u>	Day of the Week: <u>wed.</u>		
City: <u>Corvallis</u> State/Province: <u>OR</u> Zip/Postal Code: <u>97330</u>	Day: <u>22</u>	Month: <u>Feb.</u>	Year: <u>2012</u>
Country: <u>USA</u>	Metropolitan Area: <u>Corvallis</u>		

1. For fast-food land use, please specify if hamburger- or nonhamburger-based.

Location Within Area:				Detailed Description of Development: <sup>3</sup>			
<input type="checkbox"/> (1) CBD	<input type="checkbox"/> (3) Suburban (Non-CBD)	<input type="checkbox"/> (5) Rural		<u>elementary school (K-4) in urban area (pop. x 50,000). Bike &amp; ped-friendly area, bike racks on site. Bus drop-off on adjacent street (not using driveways).</u>			
<input checked="" type="checkbox"/> (2) Urban (Non-CBD)	<input type="checkbox"/> (4) Suburban CBD	<input type="checkbox"/> (6) Freeway Interchange Area (Rural)					
		<input type="checkbox"/> (7) Not Given					
Independent Variable: (include data for as many as possible) <sup>2</sup>	Actual	Estimated		Actual	Estimated		
<u>39.1</u> (1) Employees (#) (FTE)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>30</u> (9) Parking Spaces (% occupied: <u>100%</u> )	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
<u>305</u> (2) Persons (#) - <u>students</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	(10) Beds (% occupied: _____)	<input type="checkbox"/>	<input type="checkbox"/>		
_____ (3) Total Units (#) (indicate unit: _____)	<input type="checkbox"/>	<input type="checkbox"/>	(11) Seats (#)	<input type="checkbox"/>	<input type="checkbox"/>		
_____ (4) Occupied Units (#) (indicate unit: _____)	<input type="checkbox"/>	<input type="checkbox"/>	(12) Servicing Positions/Vehicle Fueling Positions	<input type="checkbox"/>	<input type="checkbox"/>		
<u>49,520</u> (5) Gross Floor Area (gross sq. ft.)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	(13) Shopping Center % Out-parcels/pads	<input type="checkbox"/>	<input type="checkbox"/>		
(% of development occupied <u>100%</u> )			(14) A.M. Peak Hour Volume of Adjacent Street Traffic	<input type="checkbox"/>	<input type="checkbox"/>		
_____ (6) Net Rentable Area (sq. ft.)	<input type="checkbox"/>	<input type="checkbox"/>	(15) P.M. Peak Hour Volume of Adjacent Street Traffic	<input type="checkbox"/>	<input type="checkbox"/>		
_____ (7) Gross Leasable Area (sq. ft.)	<input type="checkbox"/>	<input type="checkbox"/>	(16) Other _____	<input type="checkbox"/>	<input type="checkbox"/>		
(% of development occupied _____)			(17) Other _____	<input type="checkbox"/>	<input type="checkbox"/>		
_____ (8) Total Acres (% developed: _____)	<input type="checkbox"/>	<input type="checkbox"/>					

2. Definitions for several independent variables can be found in the *Trip Generation, Second Edition, User's Guide Glossary*.

3. Please provide all pertinent information to describe the subject project, including the presence of bicycle/pedestrian facilities. To report bicycle/pedestrian volumes, please refer to Part 4 of this data form.

Other Data:		Transportation Demand Management (TDM) Information:	
Vehicle Occupancy (#): _____ A.M. _____ P.M. _____ 24-hour % Percent by Transit: _____ A.M. % _____ P.M. % _____ 24-hour % Percent by Carpool/Vanpool: _____ A.M. % _____ P.M. % _____ 24-hour %		At the time of this study, was there a TDM program (that may have impacted the trip generation characteristics of this site) underway? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (If yes, please check appropriate box/boxes, describe the nature of the TDM program(s) and provide a source for any studies that may help quantify this impact. Attach additional sheets if necessary)	
Employees by Shift: First Shift: Start Time _____ End Time _____ Employees (#) _____ Second Shift: Start Time _____ End Time _____ Employees (#) _____ Third Shift: Start Time _____ End Time _____ Employees (#) _____ Parking Cost on Site: Hourly _____ Daily _____		<input type="checkbox"/> (1) Transit Service <input type="checkbox"/> (2) Carpool Programs <input type="checkbox"/> (3) Vanpool Programs <input type="checkbox"/> (4) Bicycle/Pedestrian Facilities and Site Improvements <input type="checkbox"/> (5) Employer Support Measures <input type="checkbox"/> (6) Preferential HOV Treatments <input type="checkbox"/> (7) Transit and Ridesharing Incentives <input type="checkbox"/> (8) Parking Supply and Pricing Management <input type="checkbox"/> (9) Tolls and Congestion Pricing <input type="checkbox"/> (10) Variable Work Hours/Compressed Work Weeks <input type="checkbox"/> (11) Telecommuting <input type="checkbox"/> (12) Other _____	

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**Trip Generation Data Form (Part 2)**

Summary of Driveway Volumes

(All = All Vehicles Counted, Including Trucks; Trucks = Heavy Duty Trucks and Buses)

	Average Weekday (M-F)						Saturday						Sunday						
	Enter		Exit		Total		Enter		Exit		Total		Enter		Exit		Total		
	All	Trucks	All	Trucks	All	Trucks	All	Trucks	All	Trucks	All	Trucks	All	Trucks	All	Trucks	All	Trucks	
12 24-Hour Volume	282	0	269	0	551	0													
A.M. Peak Hour of Adjacent Street Traffic (7-9) Time (ex.: 7:15-8:15): 8-9	83	0	91	0	174	0													
P.M. Peak Hour of Adjacent Street Traffic (4-6) Time: 4:45-5:45	9	0	15	0	24	0													
A.M. Peak Hour Generator <sup>2</sup> Time: 7:30-8:30	118	0	102	0	220	0													
P.M. Peak Hour Generator <sup>3</sup> Time: 2:15-3:15	48	0	52	0	100	0													
Peak Hour Generator Time (Weekend):																			

<sup>1</sup> Highest hourly volume between 7 a.m. and 9 a.m. (4 p.m. and 6 p.m.). Please specify the peak hour.

<sup>2</sup> Highest hourly volume during the a.m. or p.m. period. Please specify the peak hour.

<sup>3</sup> Highest hourly volume during the entire day. Please specify the peak hour.

Please refer to the Trip Generation User's Guide for full definition of terms.

Hourly Driveway Volumes- Average Weekday (M-F)

A.M. Period	Enter		Exit		Total		Mid-Day Period	Enter		Exit		Total		P.M. Period	Enter		Exit		Total	
	All	Trucks	All	Trucks	All	Trucks		All	Trucks	All	Trucks	All	Trucks		All	Trucks	All	Trucks	All	Trucks
6:00-7:00							11:00-12:00	26		24		50		3:00-4:00	13		20		33	
6:15-7:15							11:15-12:15	22		21		43		3:15-4:15	12		15		27	
6:30-7:30							11:30-12:30	21		19		40		3:30-4:30	11		16		27	
6:45-7:45							11:45-12:45	21		16		37		3:45-4:45	11		18		29	
7:00-8:00	57		23		80		12:00-1:00	16		11		27		4:00-5:00	9		18		27	
7:15-8:15	121		84		205		12:15-1:15	11		10		21		4:15-5:15	7		19		26	
7:30-8:30	118		102		220		12:30-1:30	10		10		20		4:30-5:30	11		19		30	
7:45-8:45	102		100		202		12:45-1:45	8		11		19		4:45-5:45	9		15		24	
8:00-9:00	83		91		174		1:00-2:00	6		11		17		5:00-6:00	7		10		17	

Check if Part 3, 4 and/or additional information is attached.

Survey conducted by: Name: Lacy Brown  
 Organization: OSU-ITE  
 Address: 220 Owen Hall, Oregon State University  
 City/State/Zip: Corvallis, OR, 97331  
 Telephone #: \_\_\_\_\_ Fax #: \_\_\_\_\_

Please return to: Institute of Transportation Engineers  
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 ITE on the Web: www.ite.org

E-mail: osuite@orst-engr.edu  
enr.orst.edu

# Trip Generation Data Form (Part 3)

Name/Organization: OSU-ITE City/State: Corvallis, OR

Telephone Number: \_\_\_\_\_

Detailed Driveway Volumes: Attach this sheet to Parts 1 and 2 if you are providing additional information.

Day of the week: Wednesday (All = All Vehicles Counted, Including Trucks; Trucks = Heavy Duty Trucks and Buses)

A.M. Period	Enter		Exit		Total		P.M. Period	Enter		Exit		Total	
	All	Trucks	All	Trucks	All	Trucks		All	Trucks	All	Trucks	All	Trucks
12:00-12:15							12:00-12:15	6		6		12	
12:15-12:30							12:15-12:30	2		3		5	
12:30-12:45							12:30-12:45	5		1		6	
12:45-1:00							12:45-1:00	3		1		4	
1:00-1:15							1:00-1:15	1		5		6	
1:15-1:30							1:15-1:30	1		3		4	
1:30-1:45							1:30-1:45	3		2		5	
1:45-2:00							1:45-2:00	1		1		2	
2:00-2:15							2:00-2:15	1		0		1	
2:15-2:30							2:15-2:30	11		3		14	
2:30-2:45							2:30-2:45	14		5		19	
2:45-3:00							2:45-3:00	19		37		56	
3:00-3:15							3:00-3:15	4		7		11	
3:15-3:30							3:15-3:30	3		4		7	
3:30-3:45							3:30-3:45	2		4		6	
3:45-4:00							3:45-4:00	4		5		9	
4:00-4:15							4:00-4:15	3		2		5	
4:15-4:30							4:15-4:30	2		5		7	
4:30-4:45							4:30-4:45	2		6		8	
4:45-5:00							4:45-5:00	2		5		7	
5:00-5:15							5:00-5:15	1		3		4	
5:15-5:30							5:15-5:30	6		5		11	
5:30-5:45							5:30-5:45	0		2		2	
5:45-6:00							5:45-6:00	0		0		0	
6:00-6:15							6:00-6:15	1		1		2	
6:15-6:30							6:15-6:30	0		1		1	
6:30-6:45							6:30-6:45	0		0		0	
6:45-7:00							6:45-7:00	1		0		1	
7:00-7:15	4		0		4		7:00-7:15						
7:15-7:30	12		2		14		7:15-7:30						
7:30-7:45	20		9		29		7:30-7:45						
7:45-8:00	21		12		33		7:45-8:00						
8:00-8:15	68		61		129		8:00-8:15						
8:15-8:30	9		20		29		8:15-8:30						
8:30-8:45	4		7		11		8:30-8:45						
8:45-9:00	2		3		5		8:45-9:00						
9:00-9:15	1		0		1		9:00-9:15						
9:15-9:30	2		4		6		9:15-9:30						
9:30-9:45	3		2		5		9:30-9:45						
9:45-10:00	3		1		4		9:45-10:00						
10:00-10:15	2		2		4		10:00-10:15						
10:15-10:30	0		2		2		10:15-10:30						
10:30-10:45	2		1		3		10:30-10:45						
10:45-11:00	5		2		7		10:45-11:00						
11:00-11:15	10		9		19		11:00-11:15						
11:15-11:30	3		5		8		11:15-11:30						
11:30-11:45	5		4		9		11:30-11:45						
11:45-12:00	8		6		14		11:45-12:00						

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**Trip Generation Data Form (Part 4)**

**Summary of Bicycle Volumes**

	Average Weekday (M-F)			Saturday			Sunday		
	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
12 24-Hour Volume			33						
A.M. Peak Hour of Adjacent Street Traffic (7 - 9) Time (ex.: 7:15 - 8:15): 8-9			19						
P.M. Peak Hour of Adjacent Street Traffic (4 - 6) Time: 4:45-5:45			0						
A.M. Peak Hour Generator <sup>1</sup> Time: 7:30-8:30			23						
P.M. Peak Hour Generator <sup>2</sup> Time: 2:15-3:15			4						
Peak Hour Generator <sup>3</sup> Time (Weekend):									

<sup>1</sup> Highest hourly volume between 7 a.m. and 9 a.m. (4 p.m. and 6 p.m.) as defined in Trip Generation Data Form (Part 2). Please specify the peak hour.

<sup>2</sup> Highest hourly volume during the a.m. or p.m. period. Please specify the peak hour.

<sup>3</sup> Highest hourly volume during the entire day. Please specify the peak hour. Please attach supplemental hourly volumes.

Please refer to the *Trip Generation User's Guide* for full definition of terms.

**Summary of Pedestrian Volumes**

	Average Weekday (M-F)			Saturday			Sunday		
	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
12 24-Hour Volume			179						
A.M. Peak Hour of Adjacent Street Traffic (7 - 9) Time (ex.: 7:15 - 8:15): 8-9			45						
P.M. Peak Hour of Adjacent Street Traffic (4 - 6) Time: 4:45-5:45			0						
A.M. Peak Hour Generator <sup>1</sup> Time: 7:30-8:30			53						
P.M. Peak Hour Generator <sup>2</sup> Time: 2:15-3:15			87						
Peak Hour Generator <sup>3</sup> Time (Weekend):									

Survey conducted by: Name: Lamy Brown

Organization: OSU-ITE

Address: 220 Owen Hall, Oregon State University

City/State/Zip: Corvallis, OR, 97331

Telephone #: \_\_\_\_\_ Fax #: \_\_\_\_\_

E-mail: osuite@enr.orst.edu

Please return to: Institute of Transportation Engineers  
 Technical Projects Division  
 1627 Eye Street, NW, Suite 600  
 Washington, DC 20006 USA  
 Telephone: +1 202-785-0060  
 Fax: +1 202-785-0609  
 ITE on the Web: www.ite.org

## Trip Generation Data Form (Part 1)

Land Use/Building Type: <sup>1</sup> <u>Elementary School</u>	ITE Land Use Code: <u>1520</u>		
Source:	Source No. (ITE use only):		
Name of Development: <u>Wilson Elementary School</u>	Day of the Week: <u>Thurs.</u>		
City: <u>Corvallis</u> State/Province: <u>OR</u> Zip/Postal Code: <u>97330</u>	Day: <u>28</u>	Month: <u>Feb.</u>	Year: <u>2012</u>
Country: <u>USA</u>	Metropolitan Area: <u>Corvallis</u>		

1. For fast-food land use, please specify if hamburger- or nonhamburger-based.

Location Within Area: <input type="checkbox"/> (1) CBD <input type="checkbox"/> (3) Suburban (Non-CBD) <input type="checkbox"/> (5) Rural <input type="checkbox"/> (2) Urban (Non-CBD) <input type="checkbox"/> (4) Suburban CBD <input type="checkbox"/> (6) Freeway Interchange Area (Rural) <input type="checkbox"/> (7) Not Given				Detailed Description of Development: <sup>3</sup> <u>Elementary school in urban area (pop. ~ 50,000). Bike &amp; ped friendly area. Bike racks on-site. Bus drop-off on-site.</u>			
Independent Variable: (include data for as many as possible) <sup>2</sup>	Actual	Estimated		Actual	Estimated		
<u>37.9</u> (1) Employees (#) - FTE	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>92</u> (9) Parking Spaces (% occupied: <u>90%</u> )	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
<u>346</u> (2) Persons (#) - students	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____ (10) Beds (% occupied: _____)	<input type="checkbox"/>	<input type="checkbox"/>		
_____ (3) Total Units (#) (indicate unit: _____)	<input type="checkbox"/>	<input type="checkbox"/>	_____ (11) Seats (#)	<input type="checkbox"/>	<input type="checkbox"/>		
_____ (4) Occupied Units (#) (indicate unit: _____)	<input type="checkbox"/>	<input type="checkbox"/>	_____ (12) Servicing Positions/Vehicle Fueling Positions	<input type="checkbox"/>	<input type="checkbox"/>		
<u>53,100</u> (5) Gross Floor Area (gross sq. ft.)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____ (13) Shopping Center % Out-parcels/pads	<input type="checkbox"/>	<input type="checkbox"/>		
_____ (% of development occupied _____)			_____ (14) A.M. Peak Hour Volume of Adjacent Street Traffic	<input type="checkbox"/>	<input type="checkbox"/>		
_____ (6) Net Rentable Area (sq. ft.)	<input type="checkbox"/>	<input type="checkbox"/>	_____ (15) P.M. Peak Hour Volume of Adjacent Street Traffic	<input type="checkbox"/>	<input type="checkbox"/>		
_____ (7) Gross Leasable Area (sq. ft.)	<input type="checkbox"/>	<input type="checkbox"/>	_____ (16) Other _____	<input type="checkbox"/>	<input type="checkbox"/>		
_____ (% of development occupied _____)			_____ (17) Other _____	<input type="checkbox"/>	<input type="checkbox"/>		
_____ (8) Total Acres (% developed: _____)	<input type="checkbox"/>	<input type="checkbox"/>					

2. Definitions for several independent variables can be found in the *Trip Generation, Second Edition, User's Guide Glossary*.

3. Please provide all pertinent information to describe the subject project, including the presence of bicycle/pedestrian facilities. To report bicycle/pedestrian volumes, please refer to Part 4 of this data form.

Other Data: Vehicle Occupancy (#): _____ A.M. _____ P.M. _____ 24-hour % Percent by Transit: _____ A.M. % _____ P.M. % _____ 24-hour % Percent by Carpool/Vanpool: _____ A.M. % _____ P.M. % _____ 24-hour %  Employees by Shift: First Shift: Start Time _____ End Time _____ Employees (#) _____ Second Shift: Start Time _____ End Time _____ Employees (#) _____ Third Shift: Start Time _____ End Time _____ Employees (#) _____ Parking Cost on Site: Hourly _____ Daily _____		Transportation Demand Management (TDM) Information: At the time of this study, was there a TDM program (that may have impacted the trip generation characteristics of this site) underway? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (If yes, please check appropriate box/boxes, describe the nature of the TDM program(s) and provide a source for any studies that may help quantify this impact. Attach additional sheets if necessary)  <input type="checkbox"/> (1) Transit Service <input type="checkbox"/> (5) Employer Support Measures <input type="checkbox"/> (9) Tolls and Congestion Pricing <input type="checkbox"/> (2) Carpool Programs <input type="checkbox"/> (6) Preferential HOV Treatments <input type="checkbox"/> (10) Variable Work Hours/Compressed Work Weeks <input type="checkbox"/> (3) Vanpool Programs <input type="checkbox"/> (7) Transit and Ridesharing Incentives <input type="checkbox"/> (11) Telecommuting <input type="checkbox"/> (4) Bicycle/Pedestrian Facilities and Site Improvements <input type="checkbox"/> (8) Parking Supply and Pricing Management <input type="checkbox"/> (12) Other _____	
--	--	---	--

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**Trip Generation Data Form (Part 2)**

Summary of Driveway Volumes

(All = All Vehicles Counted, Including Trucks; Trucks = Heavy Duty Trucks and Buses)

	Average Weekday (M-F)						Saturday						Sunday						
	Enter		Exit		Total		Enter		Exit		Total		Enter		Exit		Total		
	All	Trucks	All	Trucks	All	Trucks	All	Trucks	All	Trucks	All	Trucks	All	Trucks	All	Trucks	All	Trucks	
12 24-Hour Volume	446	16	424	16	870	32													
A.M. Peak Hour of Adjacent Street Traffic (7 - 9) Time (ex.: 7:15 - 8:15): 8-9	128	3	121	3	249	6													
P.M. Peak Hour of Adjacent Street Traffic (4 - 6) Time: 4:30-5:30	13	0	13	0	26	0													
A.M. Peak Hour Generator Time: 7:30-8:30	191	5	183	4	354	69													
P.M. Peak Hour Generator Time: 2:30-3:30	88	3	105	3	193	6													
Peak Hour Generator Time (Weekend):																			

<sup>1</sup> Highest hourly volume between 7 a.m. and 9 a.m. (4 p.m. and 6 p.m.). Please specify the peak hour.

<sup>2</sup> Highest hourly volume during the a.m. or p.m. period. Please specify the peak hour.

<sup>3</sup> Highest hourly volume during the entire day. Please specify the peak hour.

Please refer to the Trip Generation User's Guide for full definition of terms.

Hourly Driveway Volumes- Average Weekday (M-F)

A.M. Period	Enter		Exit		Total		Mid-Day Period	Enter		Exit		Total		P.M. Period	Enter		Exit		Total	
	All	Trucks	All	Trucks	All	Trucks		All	Trucks	All	Trucks	All	Trucks		All	Trucks	All	Trucks	All	Trucks
6:00-7:00							11:00-12:00	39	2	33	0	72	2	3:00-4:00	29	0	45	6	74	0
6:15-7:15							11:15-12:15	25	0	25	1	50	1	3:15-4:15	24	0	43	0	107	0
6:30-7:30							11:30-12:30	25	0	19	1	44	1	3:30-4:30	22	0	38	0	100	0
6:45-7:45							11:45-12:45	18	0	20	0	38	0	3:45-4:45	11	1	34	1	45	2
7:00-8:00	93	0	59	0	152	0	12:00-1:00	6	0	11	0	17	0	4:00-5:00	5	2	16	1	21	3
7:15-8:15	186	2	142	0	328	2	12:15-1:15	5	0	10	0	15	0	4:15-5:15	9	0	12	1	21	1
7:30-8:30	191	1	183	1	354	2	12:30-1:30	3	0	6	0	9	0	4:30-5:30	13	0	13	0	26	0
7:45-8:45	164	3	155	2	319	5	12:45-1:45	3	0	6	0	9	0	4:45-5:45	14	0	13	0	29	0
8:00-9:00	128	0	121	2	249	2	1:00-2:00	4	0	6	0	12	0	5:00-6:00	20	0	17	0	37	0

Check if Part 3, 4 and/or additional information is attached.

Survey conducted by: Name: Lacy Brown  
 Organization: OSU-ITE  
 Address: 220 Owen Hall, Oregon State University  
 City/State/Zip: Corvallis, OR 97331  
 Telephone #: \_\_\_\_\_ Fax #: \_\_\_\_\_

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 ITE on the Web: www.ite.org

E-mail: osuite@enr.orst.edu

# Trip Generation Data Form (Part 3)

Name/Organization: OSU-ITE City/State: Corvallis, OR

Telephone Number: \_\_\_\_\_

Detailed Driveway Volumes: Attach this sheet to Parts 1 and 2 if you are providing additional information.

Day of the week: Tuesday (All = All Vehicles Counted, Including Trucks; Trucks = Heavy Duty Trucks and Buses)

A.M. Period	Enter		Exit		Total		P.M. Period	Enter		Exit		Total	
	All	Trucks	All	Trucks	All	Trucks		All	Trucks	All	Trucks	All	Trucks
12:00-12:15							12:00-12:15	2	0	1	0	3	0
12:15-12:30							12:15-12:30	2	1	5	1	7	1
12:30-12:45							12:30-12:45	2	1	4	1	6	1
12:45-1:00							12:45-1:00	0	1	1	1	1	1
1:00-1:15							1:00-1:15	1	1	0	1	1	1
1:15-1:30							1:15-1:30	0	1	1	1	1	1
1:30-1:45							1:30-1:45	2	1	4	1	6	1
1:45-2:00							1:45-2:00	3	1	4	1	4	1
2:00-2:15							2:00-2:15	3	1	4	1	7	1
2:15-2:30							2:15-2:30	11	0	0	0	11	0
2:30-2:45							2:30-2:45	58	3	7	0	65	3
2:45-3:00							2:45-3:00	21	0	79	3	100	3
3:00-3:15							3:00-3:15	5	0	10	0	15	0
3:15-3:30							3:15-3:30	4	0	9	0	13	0
3:30-3:45							3:30-3:45	12	0	7	0	19	0
3:45-4:00							3:45-4:00	0	1	19	1	27	2
4:00-4:15							4:00-4:15	0	2	8	1	8	3
4:15-4:30							4:15-4:30	2	0	4	1	6	1
4:30-4:45							4:30-4:45	1	0	3	0	4	0
4:45-5:00							4:45-5:00	2	1	1	1	3	1
5:00-5:15							5:00-5:15	4	1	4	1	8	1
5:15-5:30							5:15-5:30	6	1	5	1	11	1
5:30-5:45							5:30-5:45	4	1	3	1	7	1
5:45-6:00							5:45-6:00	6	1	5	1	11	1
6:00-6:15							6:00-6:15	4	1	6	1	10	1
6:15-6:30							6:15-6:30	3	1	0	1	3	1
6:30-6:45							6:30-6:45	2	1	1	1	3	1
6:45-7:00							6:45-7:00	4	1	2	1	6	1
7:00-7:15	6	0	3	0	9	0	7:00-7:15						
7:15-7:30	9	2	1	0	10	2	7:15-7:30						
7:30-7:45	34	1	16	1	50	2	7:30-7:45						
7:45-8:00	44	3	39	2	83	5	7:45-8:00						
8:00-8:15	99	0	84	2	185	2	8:00-8:15						
8:15-8:30	14	0	22	0	36	0	8:15-8:30						
8:30-8:45	7	2	8	2	15	4	8:30-8:45						
8:45-9:00	8	0	5	0	13	0	8:45-9:00						
9:00-9:15	0	0	2	1	2	1	9:00-9:15						
9:15-9:30	1	0	2	0	3	0	9:15-9:30						
9:30-9:45	2	0	2	0	4	0	9:30-9:45						
9:45-10:00	3	0	1	0	4	0	9:45-10:00						
10:00-10:15	0	0	1	0	1	0	10:00-10:15						
10:15-10:30	3	0	4	0	7	0	10:15-10:30						
10:30-10:45	2	0	4	0	6	0	10:30-10:45						
10:45-11:00	3	0	1	0	4	0	10:45-11:00						
11:00-11:15	16	2	9	0	25	2	11:00-11:15						
11:15-11:30	2	0	11	1	13	1	11:15-11:30						
11:30-11:45	9	0	3	1	12	1	11:30-11:45						
11:45-12:00	12	0	10	0	22	0	11:45-12:00						

 Institute of Transportation Engineers  
**Trip Generation Data Form (Part 4)**

**Summary of Bicycle Volumes**

	Average Weekday (M-F)			Saturday			Sunday		
	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
12 24-Hour Volume			10						
A.M. Peak Hour of Adjacent <sup>1</sup> Street Traffic (7 - 9) Time (ex.: 7:15 - 8:15): 8-9			4						
P.M. Peak Hour of Adjacent <sup>1</sup> Street Traffic (4 - 6) Time: 4:30-5:30			0						
A.M. Peak Hour Generator <sup>2</sup> Time: 7:30-8:30			3						
P.M. Peak Hour Generator <sup>2</sup> Time: 2:30-3:30			1						
Peak Hour Generator Time (Weekend):									

<sup>1</sup> Highest hourly volume between 7 a.m. and 9 a.m. (4 p.m. and 6 p.m.) as defined in Trip Generation Data Form (Part 2). Please specify the peak hour.

<sup>2</sup> Highest hourly volume during the a.m. or p.m. period. Please specify the peak hour.

<sup>3</sup> Highest hourly volume during the entire day. Please specify the peak hour. Please attach supplemental hourly volumes.

Please refer to the *Trip Generation User's Guide* for full definition of terms.

**Summary of Pedestrian Volumes**

	Average Weekday (M-F)			Saturday			Sunday		
	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
12 24-Hour Volume			85						
A.M. Peak Hour of Adjacent <sup>1</sup> Street Traffic (7 - 9) Time (ex.: 7:15 - 8:15): 8-9			14						
P.M. Peak Hour of Adjacent <sup>1</sup> Street Traffic (4 - 6) Time: 4:30-5:30			1						
A.M. Peak Hour Generator <sup>2</sup> Time: 7:30-8:30			36						
P.M. Peak Hour Generator <sup>2</sup> Time: 2:30-3:30			30						
Peak Hour Generator Time (Weekend):									

Survey conducted by: Name: Larry Brown

Please return to: Institute of Transportation Engineers  
 Technical Projects Division  
 1627 Eye Street, NW, Suite 600  
 Washington, DC 20006 USA  
 Telephone: +1 202-785-0060  
 Fax: +1 202-785-0609  
 ITE on the Web: www.ite.org

Organization: OSU-ITE

Address: 220 Owen Hall, Oregon State University

City/State/Zip: Corvallis, OR, 97331

Telephone #: \_\_\_\_\_ Fax #: \_\_\_\_\_ E-mail: osuite@engr.orst.edu



# Elementary School (520)

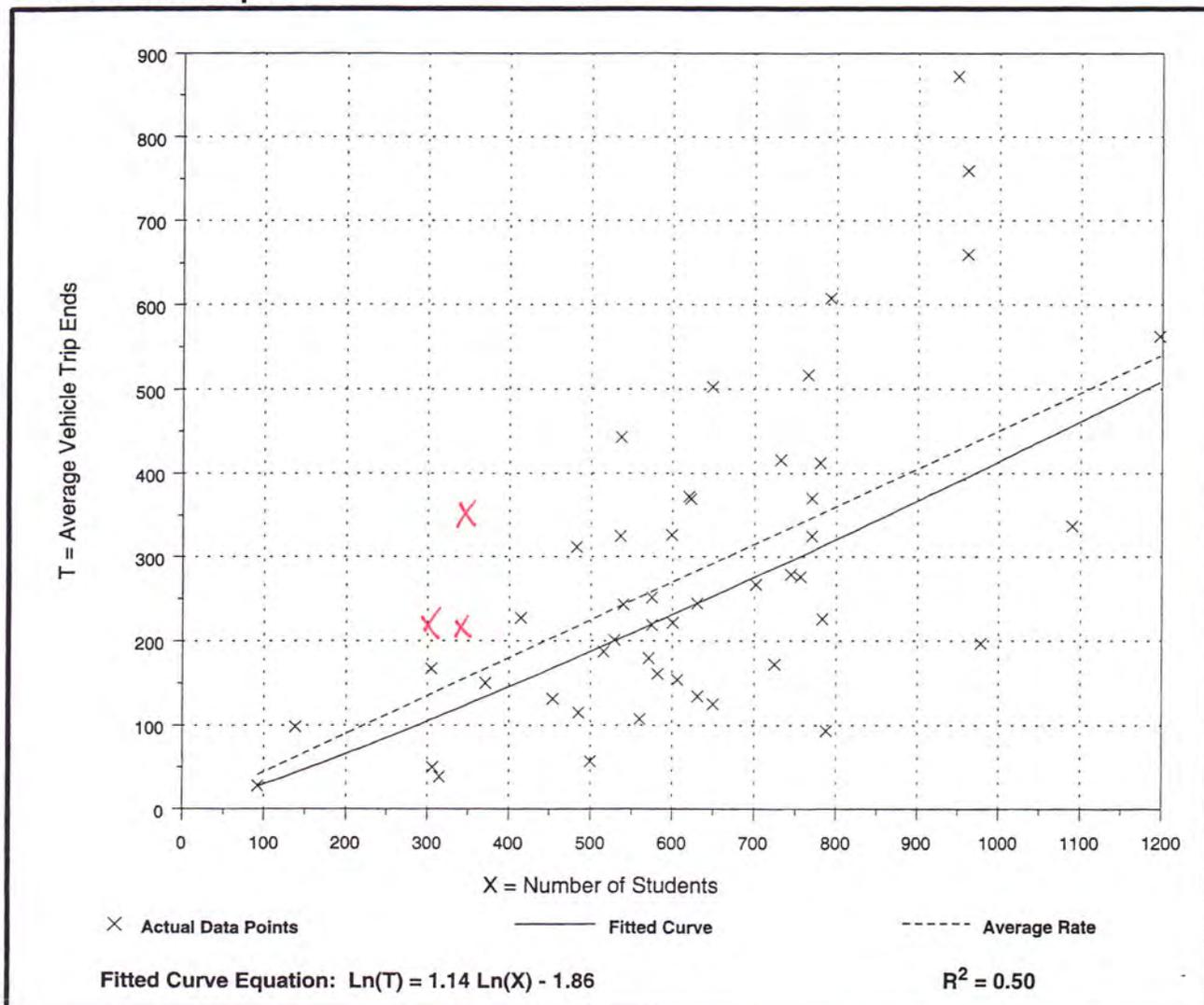
**Average Vehicle Trip Ends vs: Students**  
**On a: Weekday,**  
**A.M. Peak Hour**

Number of Studies: 48  
 Average Number of Students: 630  
 Directional Distribution: 55% entering, 45% exiting

## Trip Generation per Student

Average Rate	Range of Rates	Standard Deviation
0.45	0.11 - 0.92	0.70

## Data Plot and Equation



# Elementary School (520)

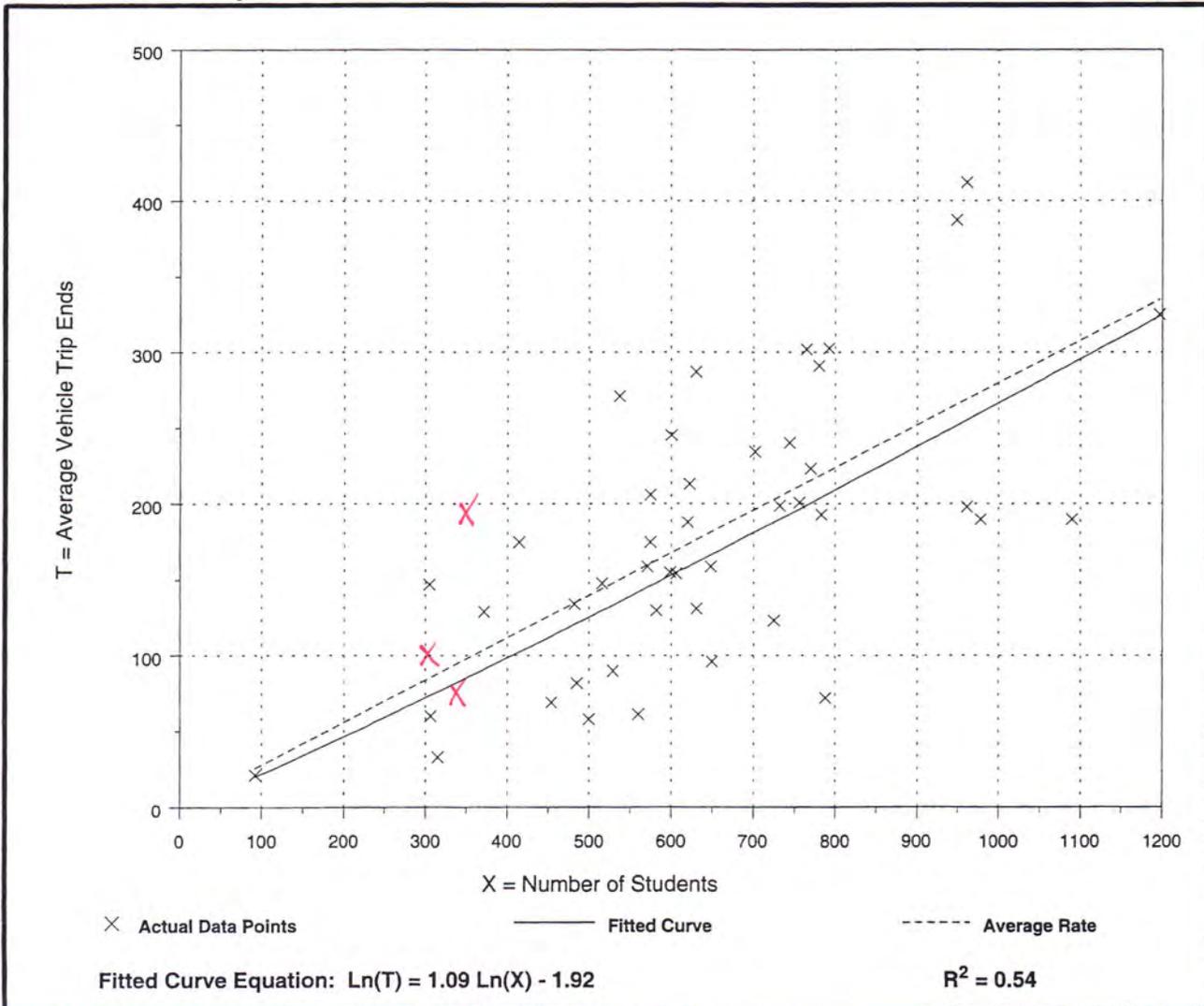
**Average Vehicle Trip Ends vs: Students**  
**On a: Weekday,**  
**P.M. Peak Hour of Generator**

Number of Studies: 44  
 Average Number of Students: 642  
 Directional Distribution: 45% entering, 55% exiting

## Trip Generation per Student

Average Rate	Range of Rates	Standard Deviation
0.28	0.09 - 0.50	0.54

## Data Plot and Equation



# Elementary School (520)

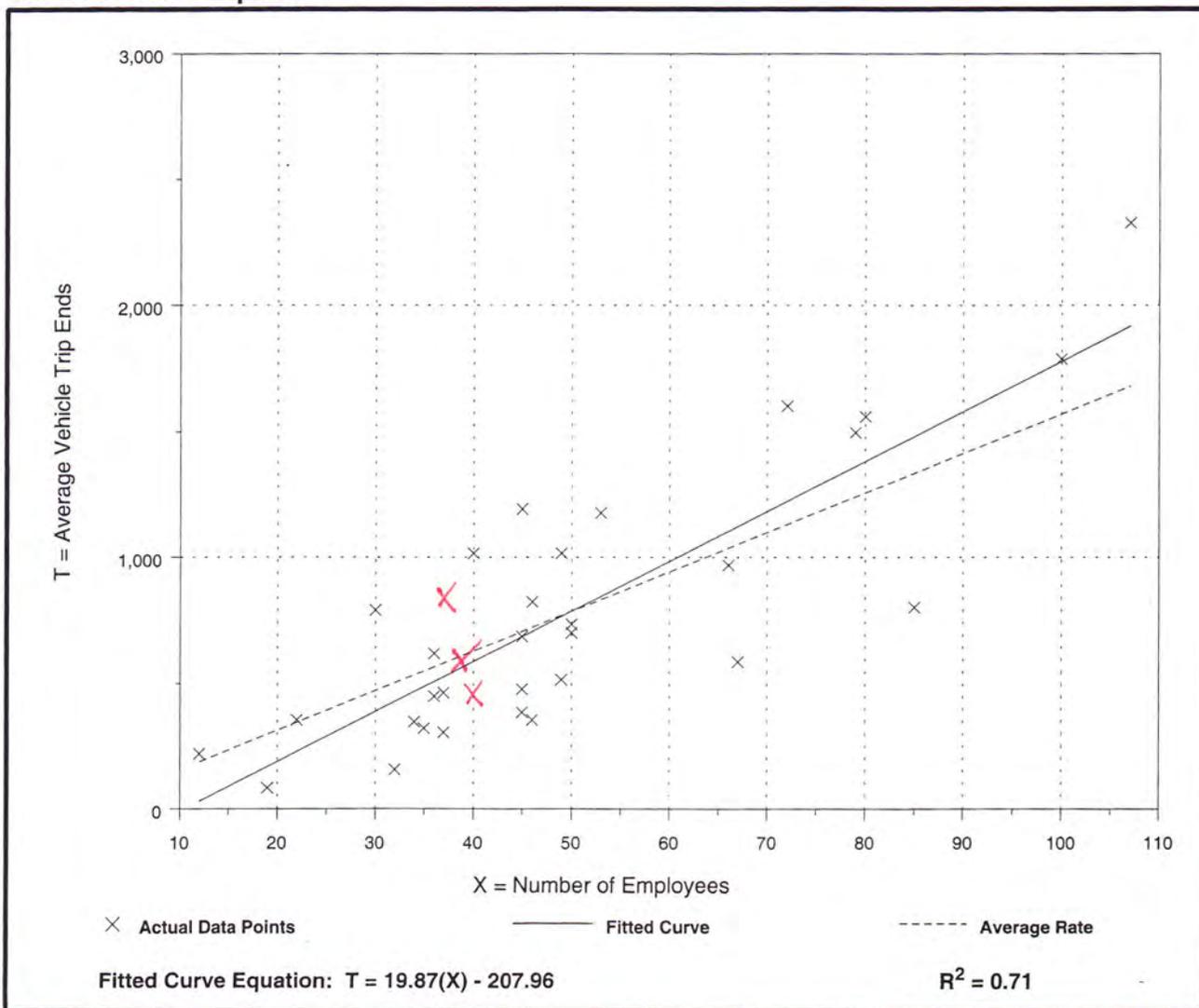
**Average Vehicle Trip Ends vs: Employees  
On a: Weekday**

Number of Studies: 31  
Avg. Number of Employees: 50  
Directional Distribution: 50% entering, 50% exiting

## Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
15.71	4.47 - 26.49	6.99

## Data Plot and Equation



# Elementary School (520)

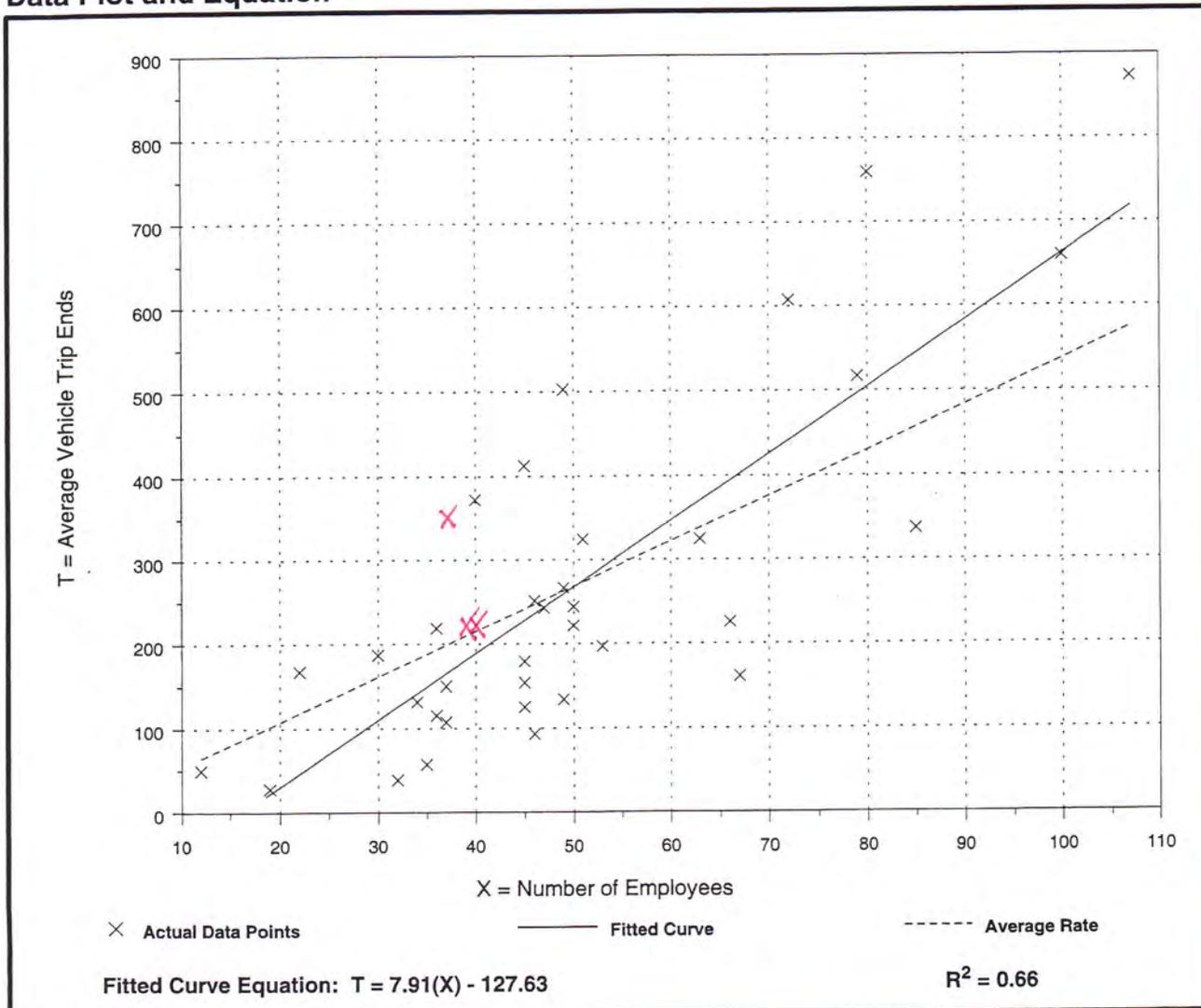
**Average Vehicle Trip Ends vs: Employees**  
**On a: Weekday,**  
**A.M. Peak Hour**

Number of Studies: 35  
 Avg. Number of Employees: 50  
 Directional Distribution: 54% entering, 46% exiting

## Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
5.37	1.22 - 10.27	3.34

## Data Plot and Equation



# Elementary School (520)

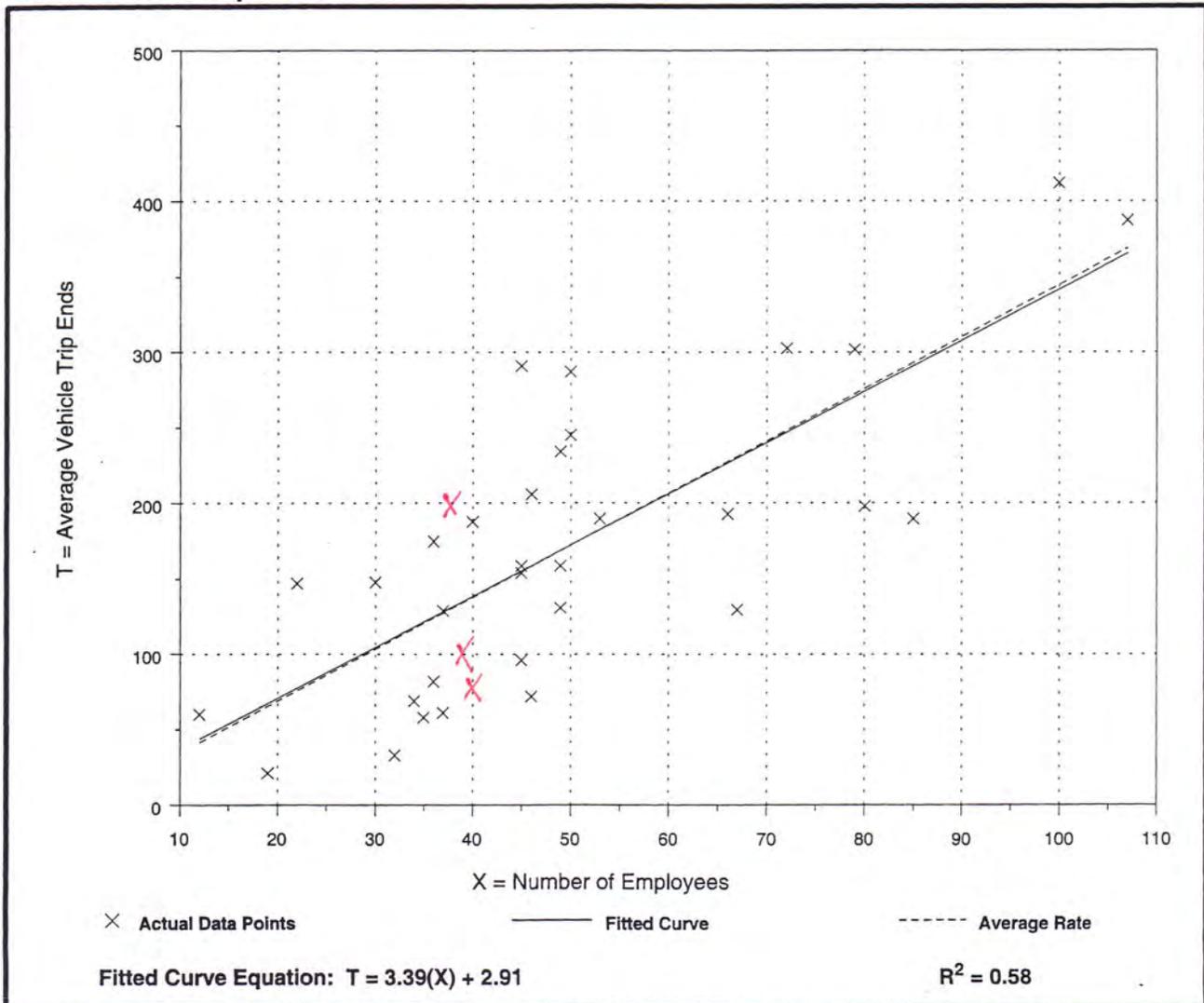
**Average Vehicle Trip Ends vs: Employees**  
**On a: Weekday,**  
**P.M. Peak Hour of Generator**

Number of Studies: 32  
 Avg. Number of Employees: 50  
 Directional Distribution: 44% entering, 56% exiting

## Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
3.45	1.03 - 6.68	2.26

## Data Plot and Equation



# Elementary School (520)

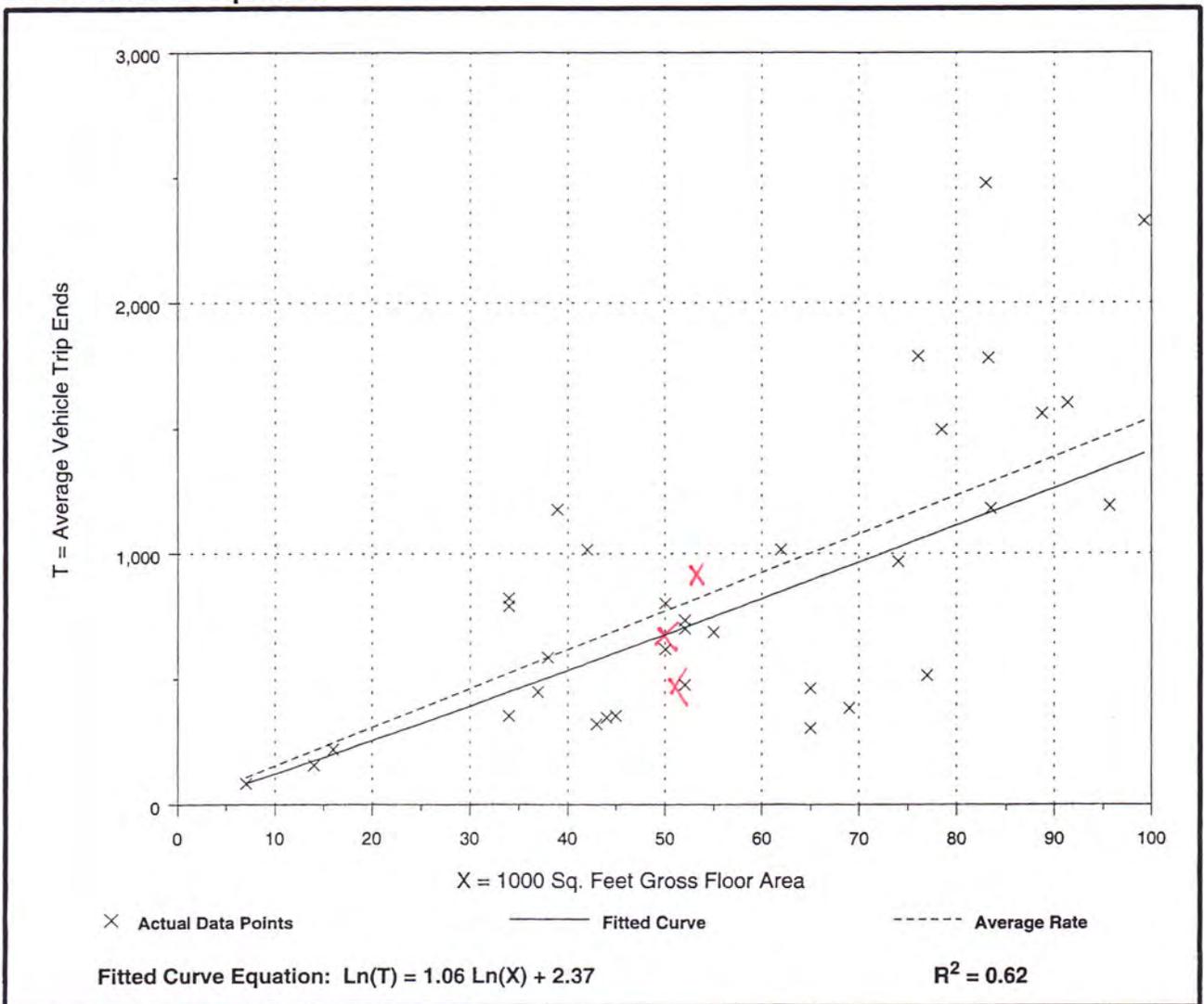
**Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area**  
On a: **Weekday**

Number of Studies: 34  
Average 1000 Sq. Feet GFA: 57  
Directional Distribution: 50% entering, 50% exiting

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

Average Rate	Range of Rates	Standard Deviation
15.43	4.69 - 30.15	7.81

## Data Plot and Equation



# Elementary School (520)

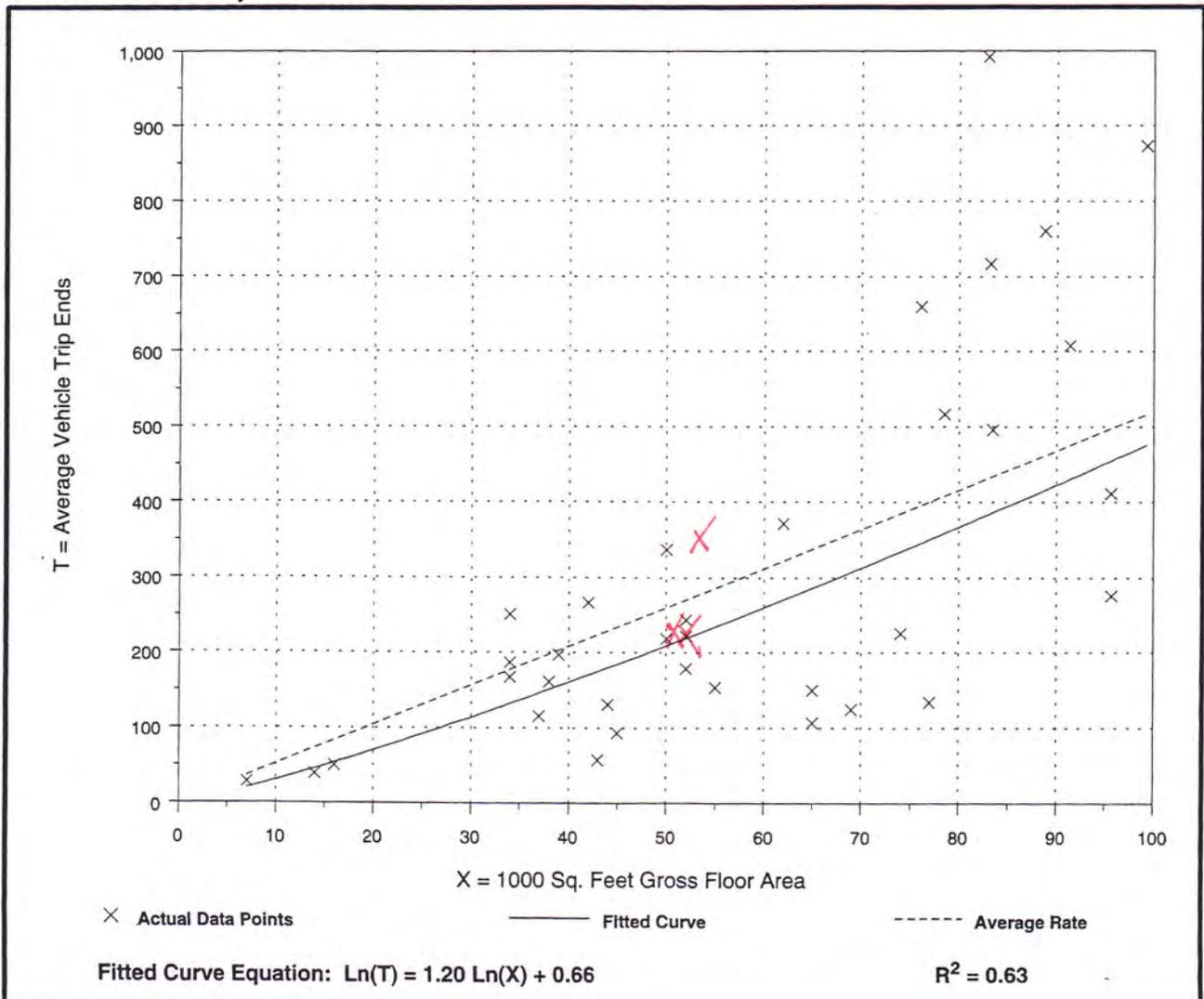
**Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area**  
**On a: Weekday,**  
**A.M. Peak Hour**

Number of Studies: 35  
 Average 1000 Sq. Feet GFA: 58  
 Directional Distribution: 56% entering, 44% exiting

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

Average Rate	Range of Rates	Standard Deviation
5.20	1.33 - 11.95	3.54

## Data Plot and Equation



# Elementary School (520)

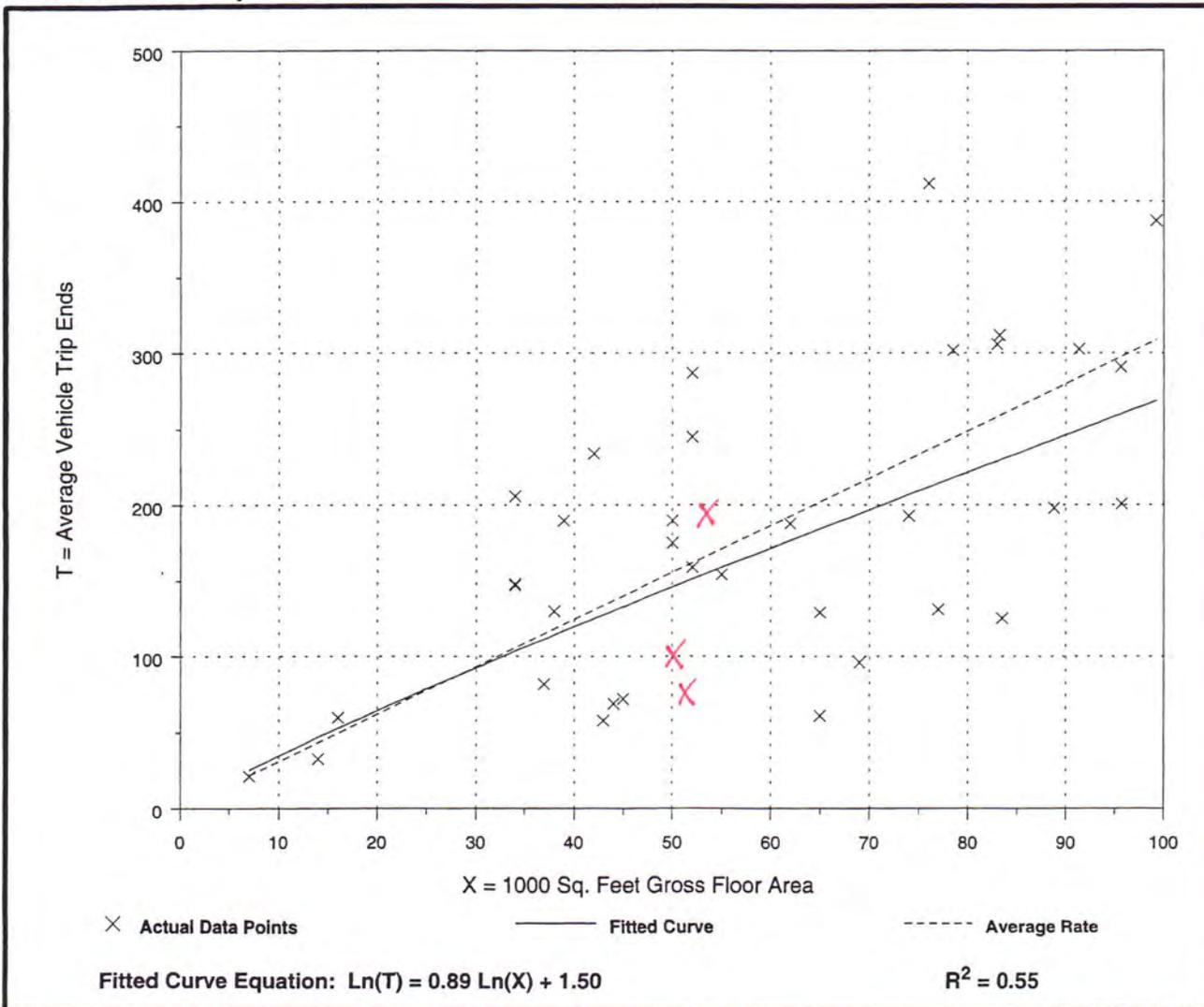
**Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area**  
**On a: Weekday,**  
**P.M. Peak Hour of Generator**

Number of Studies: 35  
 Average 1000 Sq. Feet GFA: 58  
 Directional Distribution: 44% entering, 56% exiting

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

Average Rate	Range of Rates	Standard Deviation
3.11	0.94 - 6.06	2.17

### Data Plot and Equation



# **APPENDIX C**

## **Parking Generation Data**



# Parking Demand Survey Form

Institute of Transportation Engineers

(fill in all highlighted cells - \* are required data)

Land Use Code\*

Name of Site

### Brief Description of Site

Transit\*

Area\*

TMP\*

City

State  Country

Parking Price\*  Daily Rate  Hourly Rate

Site Size\*

Units\*

Occupancy\*

Site Size

Units

Occupancy

Site Size

Units

Occupancy

Site Size

Units

Occupancy

Number of Parking Spaces Provided at Site

### Highest Observed Parking Demand for the following hours of the day (hour beginning)\*

Date	2/21/2012					
Day	Tuesday					
12 Mid						
1:00 AM						
2:00 AM						
3:00 AM						
4:00 AM						
5:00 AM						
6:00 AM						
7:00 AM	16					
8:00 AM	26					
9:00 AM	30					
10:00 AM	28					
11:00 AM	27					
12 Noon	23					
1:00 PM	27					
2:00 PM	28					
3:00 PM	22					
4:00 PM	7					
5:00 PM	2					
6:00 PM	1					
7:00 PM						
8:00 PM						
9:00 PM						
10:00 PM						
11:00 PM						

Person

Organization

Phone

Fax

Email

Notes

Enter data on the web at [www.ite.org](http://www.ite.org)

Comments to: [ite\\_staff@ite.org](mailto:ite_staff@ite.org)

IF not entered on web site, please mail to:

Institute of Transportation Engineers, 1627 Eye Street, NW Suite 600; Washington, DC 20006



# Parking Demand Survey Form

Institute of Transportation Engineers

(fill in all highlighted cells - \* are required data)

Land Use Code\* 520

Name of Site Jefferson Elementary School

### Brief Description of Site

Urban Elementary School (pop. 50,000)

Transit\* y

Area\* cnd

TMP\* no

City Corvallis

State OR

Country USA

Parking Price\* \$0

Daily Rate

\$0

Hourly Rate 0

Site Size\* 9

Units\* Acres

Occupancy\* 100%

Site Size 49,550

Units GSF

Occupancy 100%

Site Size 305

Units Students

Occupancy 100%

Site Size 39

Units Staff (FTE)

Occupancy 100%

Number of Parking Spaces Provided at Site 30

### Highest Observed Parking Demand for the following hours of the day (hour beginning)\*

Date	2/22/2012					
Day	Wednesday					
12 Mid						
1:00 AM						
2:00 AM						
3:00 AM						
4:00 AM						
5:00 AM						
6:00 AM						
7:00 AM	21					
8:00 AM	31					
9:00 AM	28					
10:00 AM	28					
11:00 AM	32					
12 Noon	32					
1:00 PM	33					
2:00 PM	33					
3:00 PM	24					
4:00 PM	16					
5:00 PM	6					
6:00 PM	2					
7:00 PM						
8:00 PM						
9:00 PM						
10:00 PM						
11:00 PM						

Person Lacy Brown

Organization Oregon State University ITE

Phone

Fax

Email [osuite@enr.orst.edu](mailto:osuite@enr.orst.edu)

Notes

Enter data on the web at [www.ite.org](http://www.ite.org)

Comments to: [ite\\_staff@ite.org](mailto:ite_staff@ite.org)

IF not entered on web site, please mail to:

Institute of Transportation Engineers, 1627 Eye Street, NW Suite 600; Washington, DC 20006



# Parking Demand Survey Form

Institute of Transportation Engineers

(fill in all highlighted cells - \* are required data)

Land Use Code\* 520

Name of Site Wilson Elementary School

### Brief Description of Site

Urban Elementary School (pop. 50,000)

Transit\* y

Area\* cnd

TMP\* no

City Corvallis

State OR

Country USA

Parking Price\* \$0

Daily Rate

\$0

Hourly Rate

0

Site Size\* 9

Units\* Acres

Occupancy\* 100%

Site Size 53,100

Units GSF

Occupancy 100%

Site Size 346

Units Students

Occupancy 100%

Site Size 38

Units Staff (FTE)

Occupancy 100%

Number of Parking Spaces Provided at Site 92

### Highest Observed Parking Demand for the following hours of the day (hour beginning)\*

Date	2/28/2012					
Day	Tuesday					
12 Mid						
1:00 AM						
2:00 AM						
3:00 AM						
4:00 AM						
5:00 AM						
6:00 AM						
7:00 AM	25					
8:00 AM	42					
9:00 AM	39					
10:00 AM	41					
11:00 AM	42					
12 Noon	40					
1:00 PM	35					
2:00 PM	82					
3:00 PM	37					
4:00 PM	12					
5:00 PM	8					
6:00 PM	7					
7:00 PM						
8:00 PM						
9:00 PM						
10:00 PM						
11:00 PM						

Person Lacy Brown

Organization Oregon State University ITE

Phone

Fax

Email [osuite@engr.orst.edu](mailto:osuite@engr.orst.edu)

Notes

Enter data on the web at [www.ite.org](http://www.ite.org)

Comments to: [ite\\_staff@ite.org](mailto:ite_staff@ite.org)

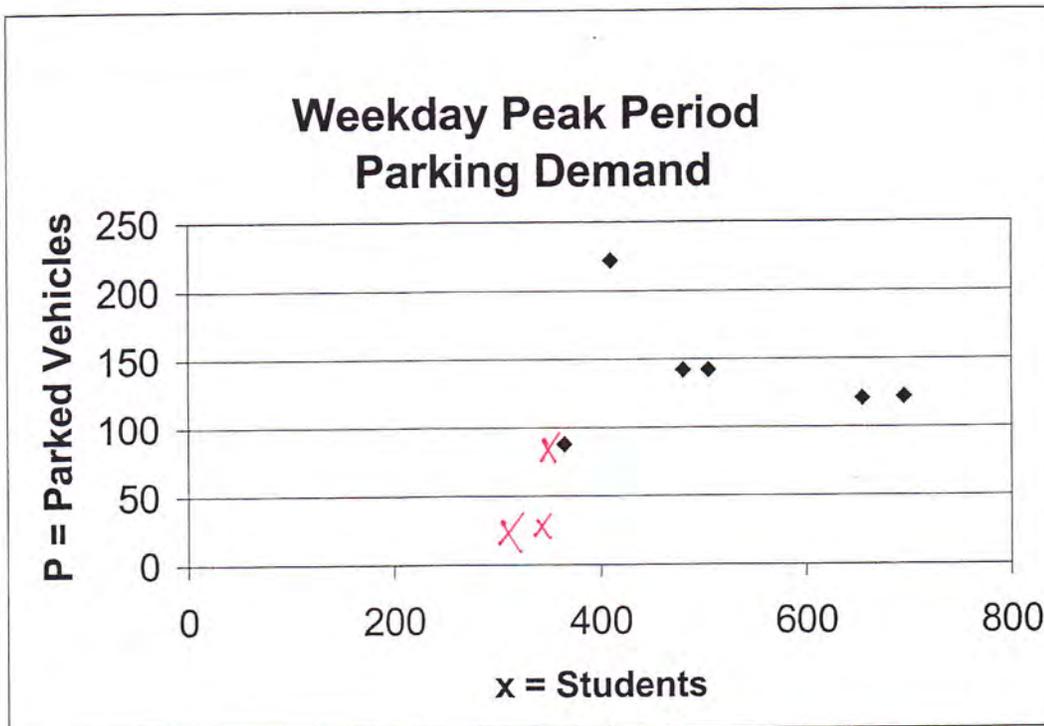
IF not entered on web site, please mail to:

Institute of Transportation Engineers, 1627 Eye Street, NW Suite 600; Washington, DC 20006

# Land Use: 520 Elementary School

## Average Peak Period Parking Demand vs: Students On a Weekday

Statistic	Peak Period Demand
Peak Period	3:00–4:00 p.m.
Number of Study Sites	6
Average Size of Study Sites	520 students
Average Peak Period Parking Demand	0.28 vehicles per student
Standard Deviation	0.14
Coefficient of Variation	50%
Range	0.18–0.54 vehicles per student
85th Percentile	0.36 vehicles per student
33rd Percentile	0.19 vehicles per student



◆ Actual Data Points

## **APPENDIX D**

### **Adjacent Street Volume Data**

Garfield Elementary School  
 NW Garfield Avenue

Time	Interval	Count	Hour Beginning	AM Peak	7:30-8:30	180		
7:00 AM	2	9	110	Midday Peak	11:15-12:1	155		
7:15 AM	3	14	156	PM Peak	5:15-6:15	230		
7:30 AM	4	42	180					
7:45 AM	5	45	172	ADT (PM/.10)	2300			
8:00 AM	6	55	171	ADT(AM/.08)	2250		ADT	2300
8:15 AM	7	38	146					
8:30 AM	8	34	135					
8:45 AM	9	44	124					
9:00 AM	10	30	112					
9:15 AM	11	27	109					
9:30 AM	12	23	107					
9:45 AM	13	32	106					
10:00 AM	14	27	101					
10:15 AM	15	25	103					
10:30 AM	16	22	118					
10:45 AM	17	27	134					
11:00 AM	18	29	153					
11:15 AM	19	40	155					
11:30 AM	20	38	141					
11:45 AM	21	46	134					
12:00 PM	22	31	115					
12:15 PM	23	26	126					
12:30 PM	24	31	133					
12:45 PM	25	27	133					
1:00 PM	26	42	143					
1:15 PM	27	33	128					
1:30 PM	28	31	126					
1:45 PM	29	37	140					
2:00 PM	30	27	166					
2:15 PM	31	31	182					
2:30 PM	32	45	188					
2:45 PM	33	63	190					
3:00 PM	34	43	184					
3:15 PM	35	37	180					
3:30 PM	36	47	187					
3:45 PM	37	57	189					
4:00 PM	38	39	172					
4:15 PM	39	44	174					
4:30 PM	40	49	193					
4:45 PM	41	40	194					
5:00 PM	42	41	211					
5:15 PM	43	63	230					
5:30 PM	44	50	213					
5:45 PM	45	57	200					
6:00 PM	46	60	188					
6:15 PM	47	46						
6:30 PM	48	37						
6:45 PM	49	45						

Jefferson Elementary School  
 NW 27th Street

Time	Interval	Count	Hour Beginning	AM Peak	8:00-9:00	115		
7:00 AM	2	7	40	Midday Peak	2:30-3:30	98		
7:15 AM	3	13	66	PM Peak	4:45-5:45	64		
7:30 AM	4	20	88					
7:45 AM	5	26	113	ADT (PM/.10)	640			
8:00 AM	6	29	115	ADT(AM/.08)	1437.5		ADT	1100
8:15 AM	7	38	100					
8:30 AM	8	22	80					
8:45 AM	9	11	46					
9:00 AM	10	9	31					
9:15 AM	11	4	28					
9:30 AM	12	7	25					
9:45 AM	13	8	30					
10:00 AM	14	6	32					
10:15 AM	15	9	37					
10:30 AM	16	9	42					
10:45 AM	17	13	41					
11:00 AM	18	11	47					
11:15 AM	19	8	48					
11:30 AM	20	15	54					
11:45 AM	21	14	56					
12:00 PM	22	17	55					
12:15 PM	23	10	53					
12:30 PM	24	14	42					
12:45 PM	25	12	37					
1:00 PM	26	6	31					
1:15 PM	27	5	32					
1:30 PM	28	8	45					
1:45 PM	29	13	64					
2:00 PM	30	19	79					
2:15 PM	31	24	95					
2:30 PM	32	23	98					
2:45 PM	33	29	91					
3:00 PM	34	22	80					
3:15 PM	35	17	61					
3:30 PM	36	12	51					
3:45 PM	37	10	48					
4:00 PM	38	12	51					
4:15 PM	39	14	56					
4:30 PM	40	15	62					
4:45 PM	41	15	64					
5:00 PM	42	18	62					
5:15 PM	43	16	59					
5:30 PM	44	13	50					
5:45 PM	45	12	40					
6:00 PM	46	9	35					
6:15 PM	47	6						
6:30 PM	48	8						
6:45 PM	49	5						

Wilson Elementary School  
 NW Satinwood Avenue

Time	Interval	Count	Hour Beginning	AM Peak	8:00-9:00	447		
7:00 AM	2	47	184	Midday Peak	2:15-3:15	453		
7:15 AM	3	65	311	PM Peak	4:30-5:30	408		
7:30 AM	4	72	386					
7:45 AM	5	127	434	ADT (PM/.10)	4080			
8:00 AM	6	122	447	ADT(AM/.08)	5587.5		ADT	5000
8:15 AM	7	113	409					
8:30 AM	8	85	363					
8:45 AM	9	89	332					
9:00 AM	10	76	325					
9:15 AM	11	82	321					
9:30 AM	12	78	328					
9:45 AM	13	85	336					
10:00 AM	14	83	340					
10:15 AM	15	90	334					
10:30 AM	16	82	325					
10:45 AM	17	79	327					
11:00 AM	18	74	315					
11:15 AM	19	92	313					
11:30 AM	20	70	344					
11:45 AM	21	77	334					
12:00 PM	22	105	335					
12:15 PM	23	82	344					
12:30 PM	24	71	325					
12:45 PM	25	86	325					
1:00 PM	26	86	339					
1:15 PM	27	82	341					
1:30 PM	28	85	355					
1:45 PM	29	88	364					
2:00 PM	30	100	405					
2:15 PM	31	91	453					
2:30 PM	32	126	444					
2:45 PM	33	136	447					
3:00 PM	34	91	448					
3:15 PM	35	94	439					
3:30 PM	36	127	447					
3:45 PM	37	127	448					
4:00 PM	38	99	412					
4:15 PM	39	95	367					
4:30 PM	40	91	408					
4:45 PM	41	82	386					
5:00 PM	42	140	373					
5:15 PM	43	73	371					
5:30 PM	44	78	291					
5:45 PM	45	80	260					
6:00 PM	46	60	236					
6:15 PM	47	42						
6:30 PM	48	54						
6:45 PM	49	50						