

MACKENZIE.

DESIGN DRIVEN | CLIENT FOCUSED

September 6, 2013

City of Sherwood
Attention: Jason Waters
22560 SW Pine Street
Sherwood, Oregon

Re: **Sherwood Industrial Park Phase II**
CAP Trip Analysis Worksheet
Project Number 2130096.00

Dear Mr. Waters:

The purpose of this letter is to present the assumptions used in the CAP Trip Analysis Worksheet for the proposed Sherwood Industrial Park located on Tualatin-Sherwood Road in the City of Sherwood. While the Industrial Park encompasses a large area (40.85 net acres), the proposed Phase II development only consists of 9.88 acres. This trip analysis primarily addresses Phase II trip generation assumptions.

PROPOSED DEVELOPMENT

The proposed development is approximately 107,000 square feet in two buildings on 9.88 acres. The buildings will be located in the south corner of the property and will access Tualatin-Sherwood Road and Langer Farms Parkway via Century Drive.

TRIP GENERATION

Trips generated by the proposed development are based on data contained in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 9th Edition. While the exact tenants of the new buildings are not known, conservative trip generation estimates have been made based on the ITE Land Use Code 770 – Business Park, which covers the allowed uses in the zone. Trips listed for the existing buildings are consistent with the trip assumptions made in the original CAP analysis for Pad A, prepared on May 5, 2008.

Trip generation estimates for the proposed development (new plus existing) are presented in the following table.



PROPOSED DEVELOPMENT TRIP GENERATION					
Land Use (ITE Code)	Size (KSF)	ADT	PM Peak Hour		
			Enter	Exit	Total
New Development Business Park (770)	107	1,331	35	100	135
Existing Development	60	382	7	42	49
Proposed Development Total	167	1,713	42	142	184

The proposed development is anticipated to generate 184 trips (worksheet line 1B) during the PM peak hour.

TRIP DISTRIBUTION AND ASSIGNMENT

Site trip distribution is anticipated to be:

- 45% to and from the east on Tualatin-Sherwood Road
- 15% to and from the west on Roy Rogers Road
- 20% to and from the north on Hwy 99
- 10% to and from the south on Hwy 99
- 10% to locations in the City of Sherwood south of Hwy 99

Site trip distribution and assignment are presented in attached Figure 1.

FUTURE DEVELOPMENT TRIP GENERATION

Future Development Net Acreage (worksheet line 2d) was calculated to be 24.72 acres. This acreage contains a large portion of undevelopable land due to wetland buffers and utility easements. The buildable area is estimated to allow for approximately 165,229 square feet of building area. The Business Park trip generation rate was also applied, with a resulting total trip generation for future development net acreage of 208 trips (line 1C).

CONCLUSIONS

The Proposed Development Net Trips are estimated to be 184 trips and the Future (Full-Build-Out) Net Trips are estimated to be 208 trips for a total of 392 trips (worksheet line 1d). The proposed development is estimated to result in 11.41 net trips per acre (worksheet line 3b), and the “proposed & estimated” future development is 9.59 net trips per acre (worksheet line 3c). These are less than the 43 net trips per acre allowed by the City of Sherwood. Therefore, a Preliminary Trip Allocation Certificate should be issued with the Final Trip Allocation Certificate issued as part of the staff report.



City of Sherwood
Sherwood Industrial Park Phase II
Project Number 2130096.00
September 6, 2013
Page 3

Sincerely,



Brent Ahrend, PE
Senior Associate | Traffic Engineer

Enclosures: CAP Trip Analysis Worksheet
Tax Lot Map, Site Plan
Trip Distribution and Assignment Figure
ITE Trip Generation Manual pages
Pad A CAP Letter



CAP TRIP ANALYSIS WORKSHEET

Trip Analysis conducted by:	MACKENZIE
Project Description:	INDUSTRIAL BUILDINGS
Land Use Application File No:	
Project Name:	SHERWOOD INDUSTRIAL PH II

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 49 Existing Site Net Trips
- b 184 Proposed Development Net Trips (proposed development includes existing sites that will remain)
- c 208 Future (Full-Build-Out) Development Net Trips
- d 392 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)
<u>2S129D100</u>	<u>56.19</u>	<u>40.85</u>	<u>16.13</u>	<u>24.72</u>
TOTAL	a <u>56.19</u>	b <u>40.85</u>	c <u>16.13</u>	d <u>24.72</u>

3. Net Trips Per Acre

- a 1.19 Existing Net Trips per Net Acre (1a/2b)
- b 11.41 Proposed Development Net Trips per Net Acre (1b/2c)
- c 9.59 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:

NONE

*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:

Engineers Stamp



Architecture - Interiors
Planning - Engineering

Portland, OR
503.224.9560

Vancouver, WA
360.695.7879

Seattle, WA
206.749.9993

www.mcknzie.com

MACKENZIE

CLIENT:
ORWA
SHERWOOD, LLC
8320 NE HWY 99
VANCOUVER, WA
98665

PROJECT:
SHERWOOD
INDUSTRIAL PARK

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SHEET TITLE:
EXHIBIT 1

DATE:

DRAWN BY:

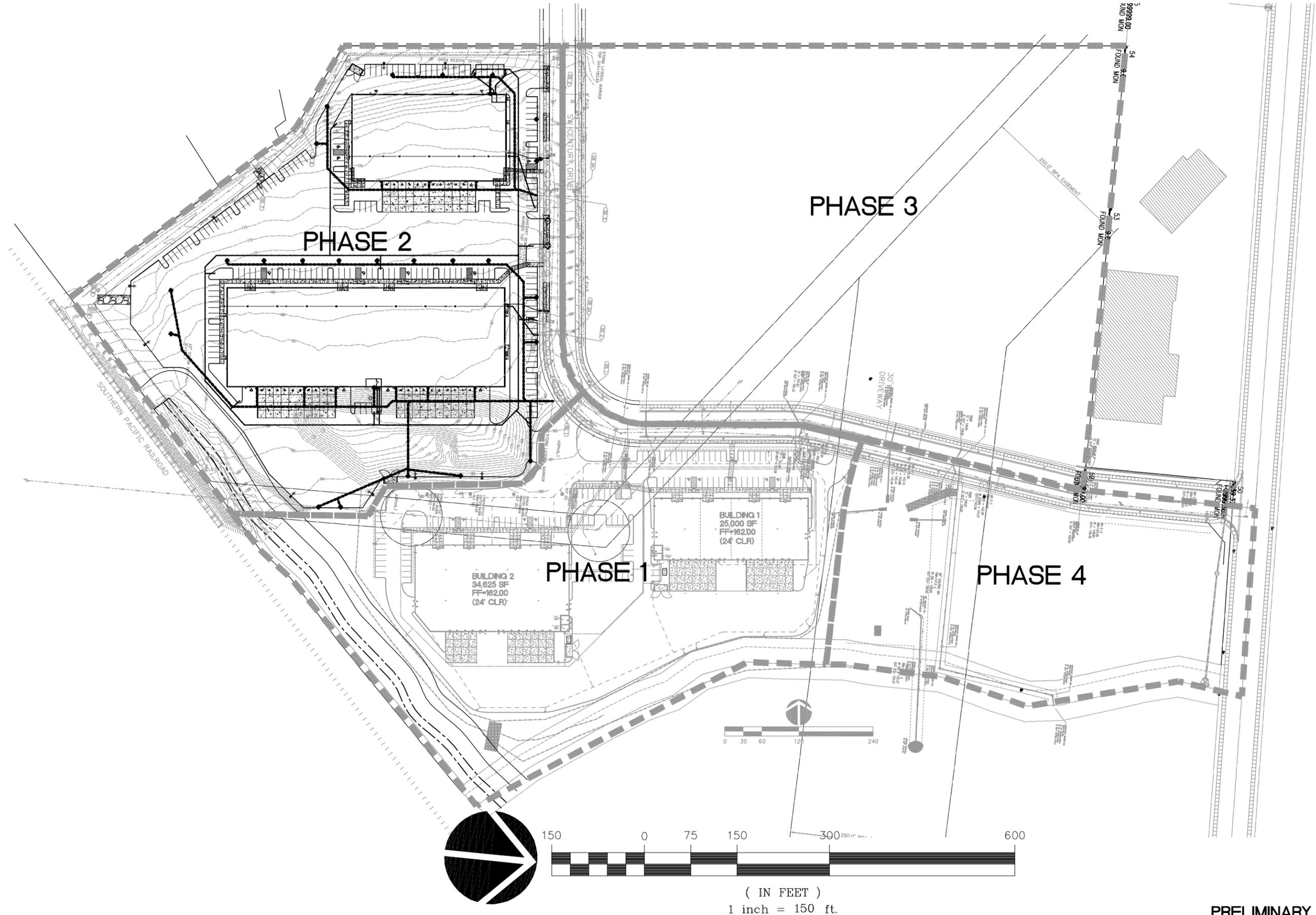
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SHEET:

EX1

JOB NO:
2130096.00

PRELIMINARY ONLY
213009600\CIVIL\096-PSITE.DWG BTS 09/06/13 10:58 1:30.00



Land Use: 770 Business Park

Description

Business parks consist of a group of flex-type or incubator one- or two-story buildings served by a common roadway system. The tenant space is flexible and lends itself to a variety of uses; the rear side of the building is usually served by a garage door. Tenants may be start-up companies or small mature companies that require a variety of space. The space may include offices, retail and wholesale stores, restaurants, recreational areas and warehousing, manufacturing, light industrial, or scientific research functions. The average mix is 20 to 30 percent office/commercial and 70 to 80 percent industrial/warehousing. Industrial park (Land Use 130), warehousing (Land Use 150), general office building (Land Use 710), corporate headquarters building (Land Use 714), single tenant office building (Land Use 715), office park (Land Use 750) and research and development center (Land Use 760) are related uses.

Additional Data

The sites were surveyed between the 1980s and the 2000s throughout the United States.

Trip Characteristics

The trip generation for the A.M. and P.M. peak hours of the generator typically coincided with the peak hours of the adjacent street traffic; therefore, only one A.M. peak hour and one P.M. peak hour, which represent both the peak hour of the generator and the peak hour of the adjacent street traffic, are shown for business parks.

Source Numbers

155, 211, 212, 213, 216, 407, 423, 715, 728

Business Park (770)

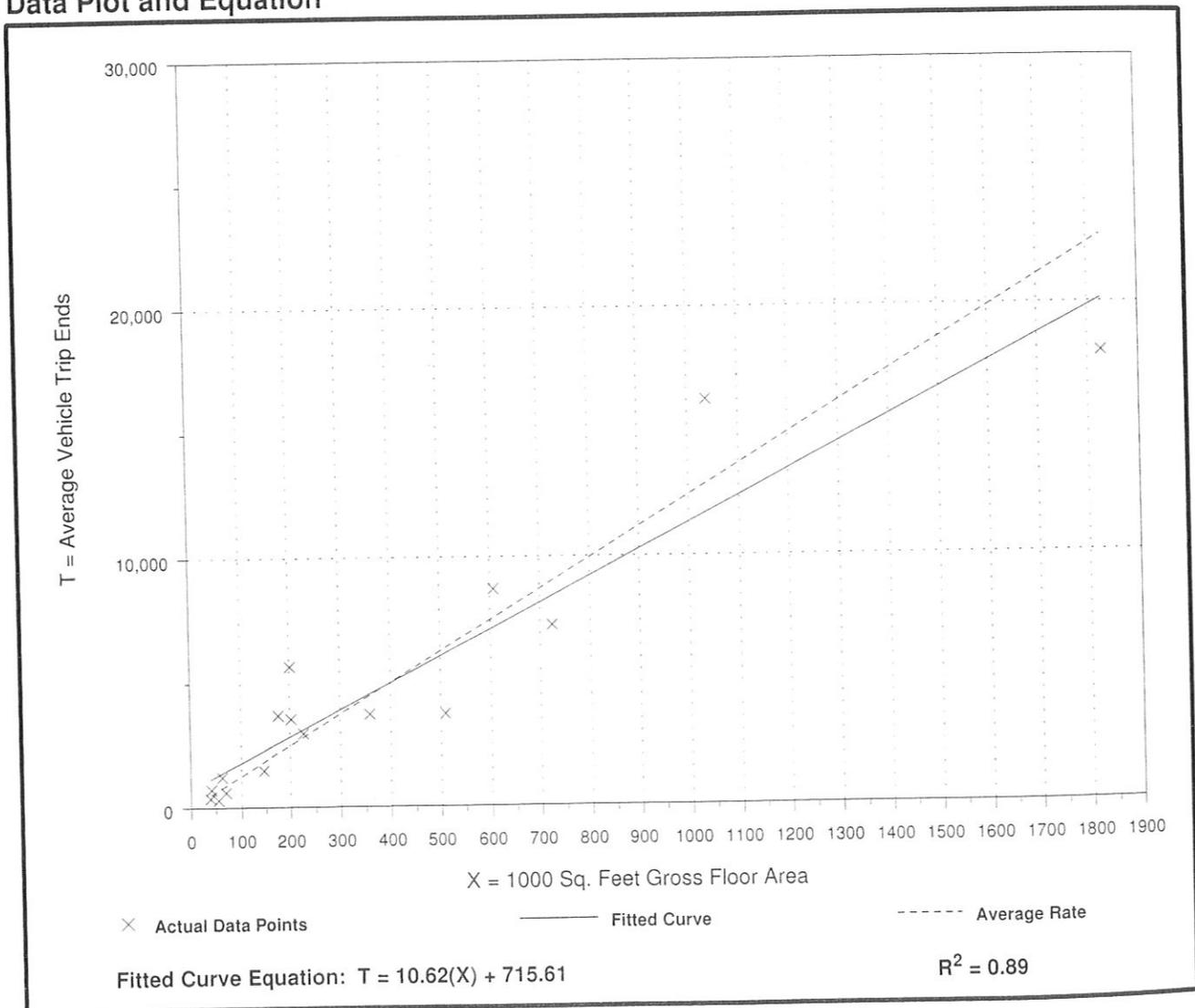
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday

Number of Studies: 16
Average 1000 Sq. Feet GFA: 393
Directional Distribution: 50% entering, 50% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
12.44	5.56 - 27.96	5.61

Data Plot and Equation



Business Park (770)

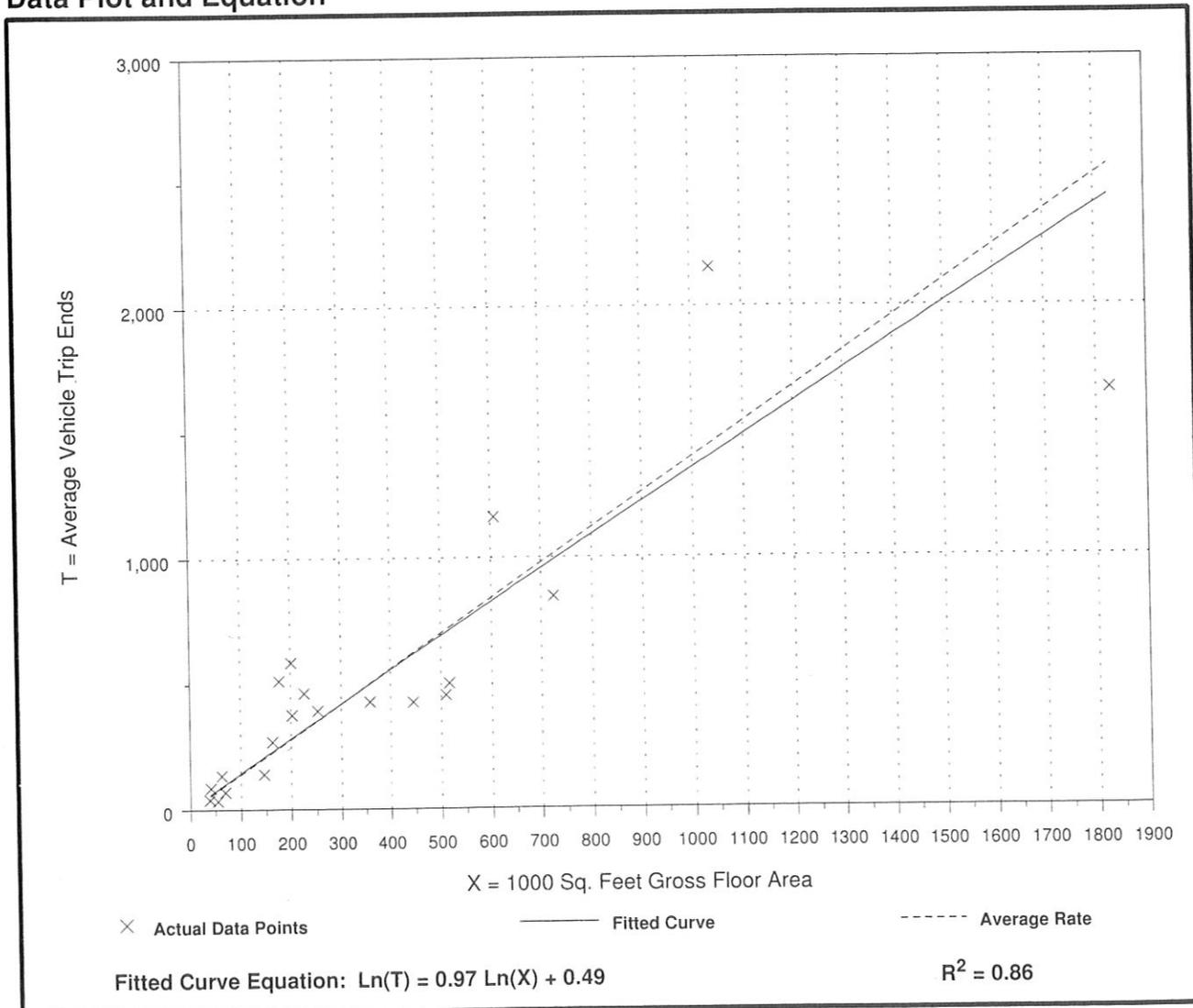
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday,
A.M. Peak Hour

Number of Studies: 20
 Average 1000 Sq. Feet GFA: 384
 Directional Distribution: 85% entering, 15% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
1.40	0.65 - 2.90	1.32

Data Plot and Equation



Business Park (770)

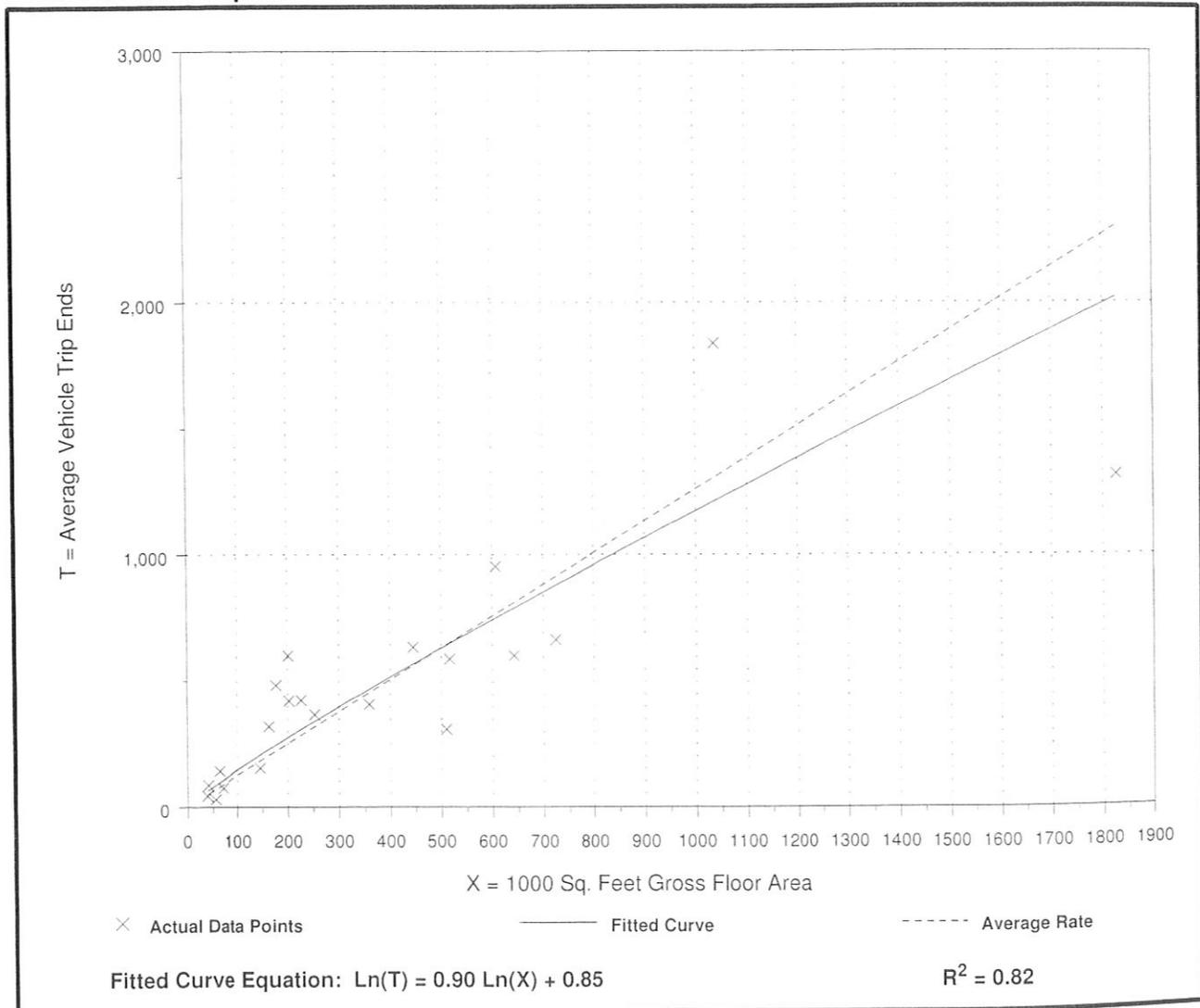
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday,
P.M. Peak Hour

Number of Studies: 21
Average 1000 Sq. Feet GFA: 396
Directional Distribution: 26% entering, 74% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
1.26	0.55 - 2.97	1.26

Data Plot and Equation



Business Park (770)

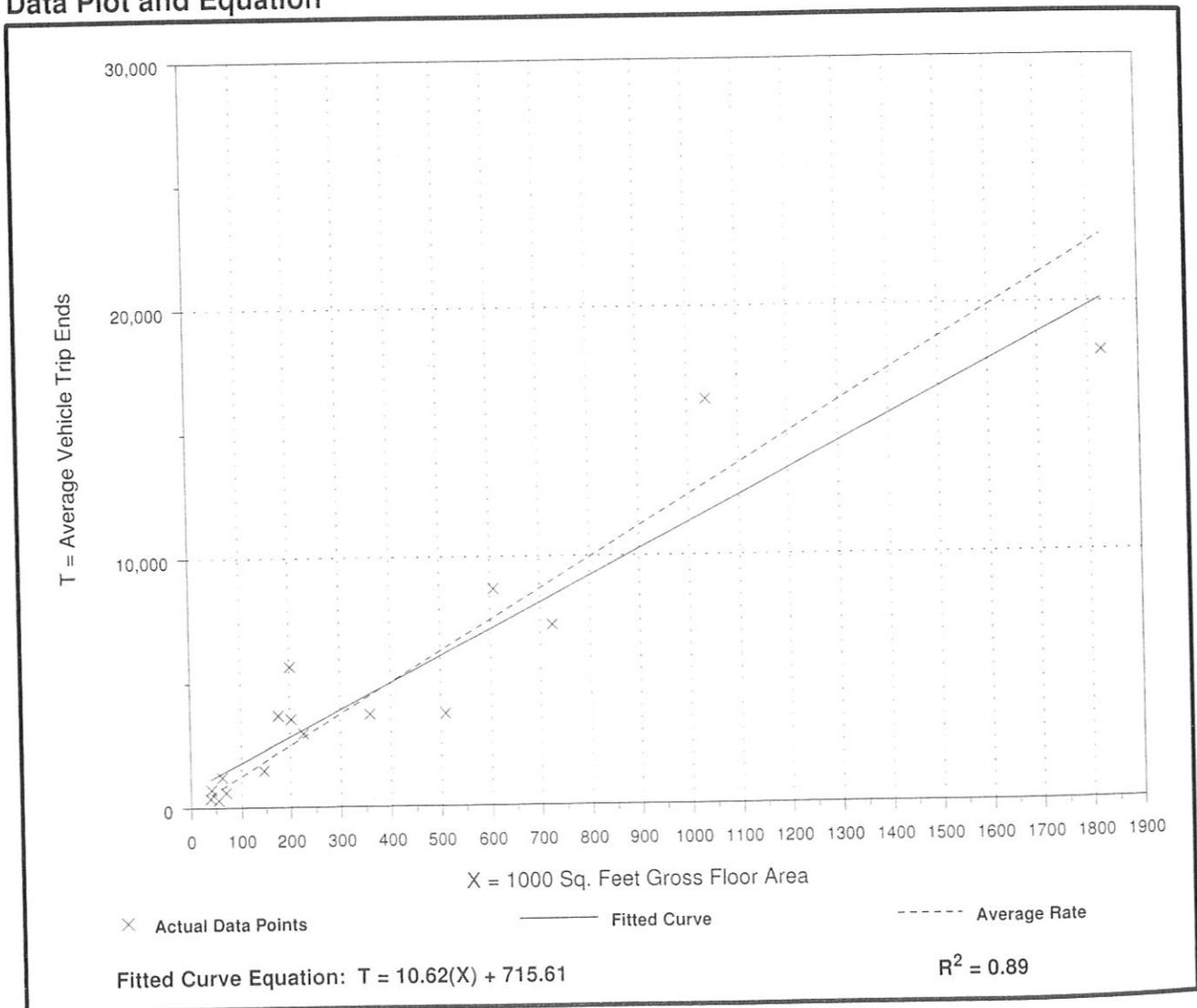
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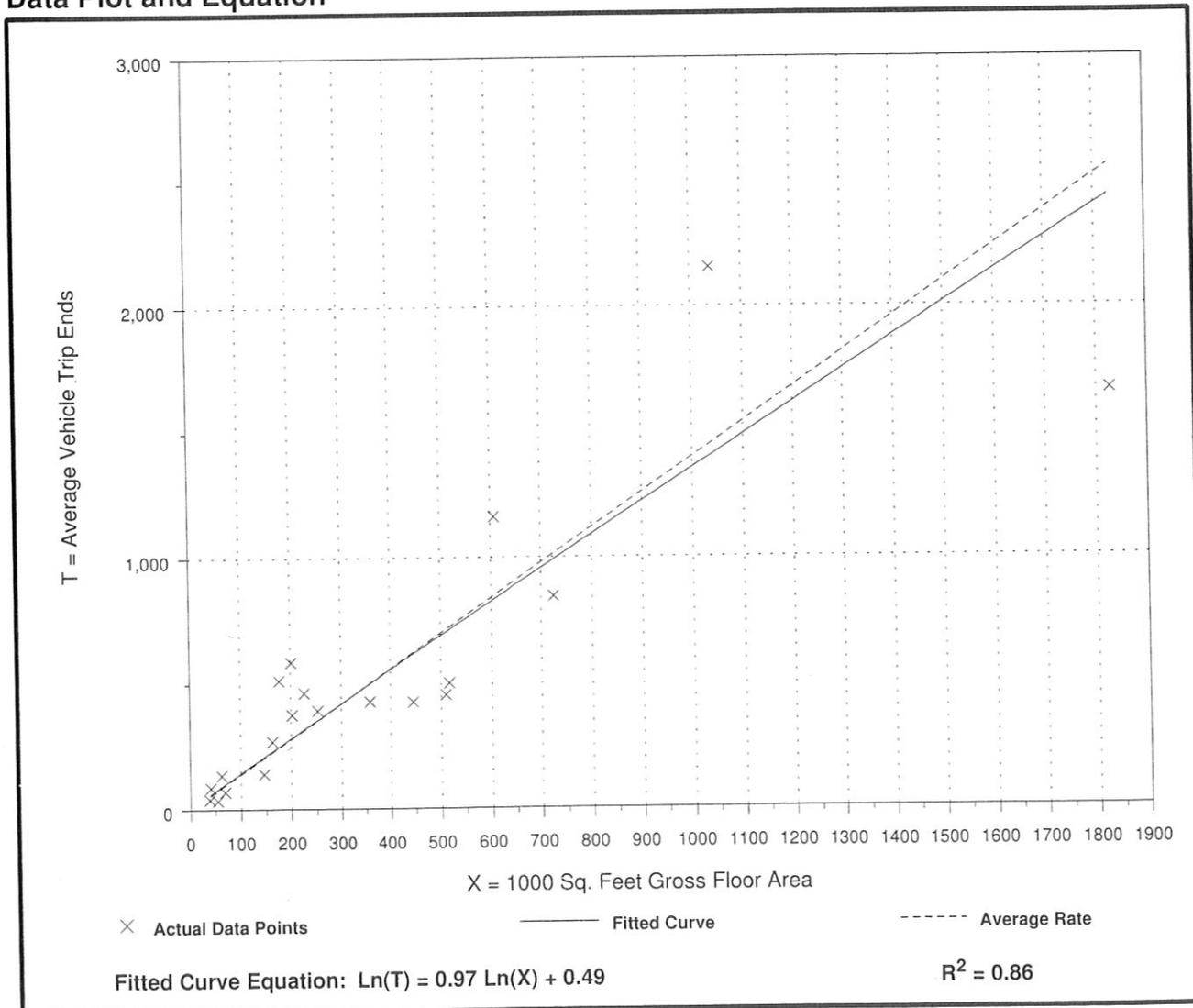
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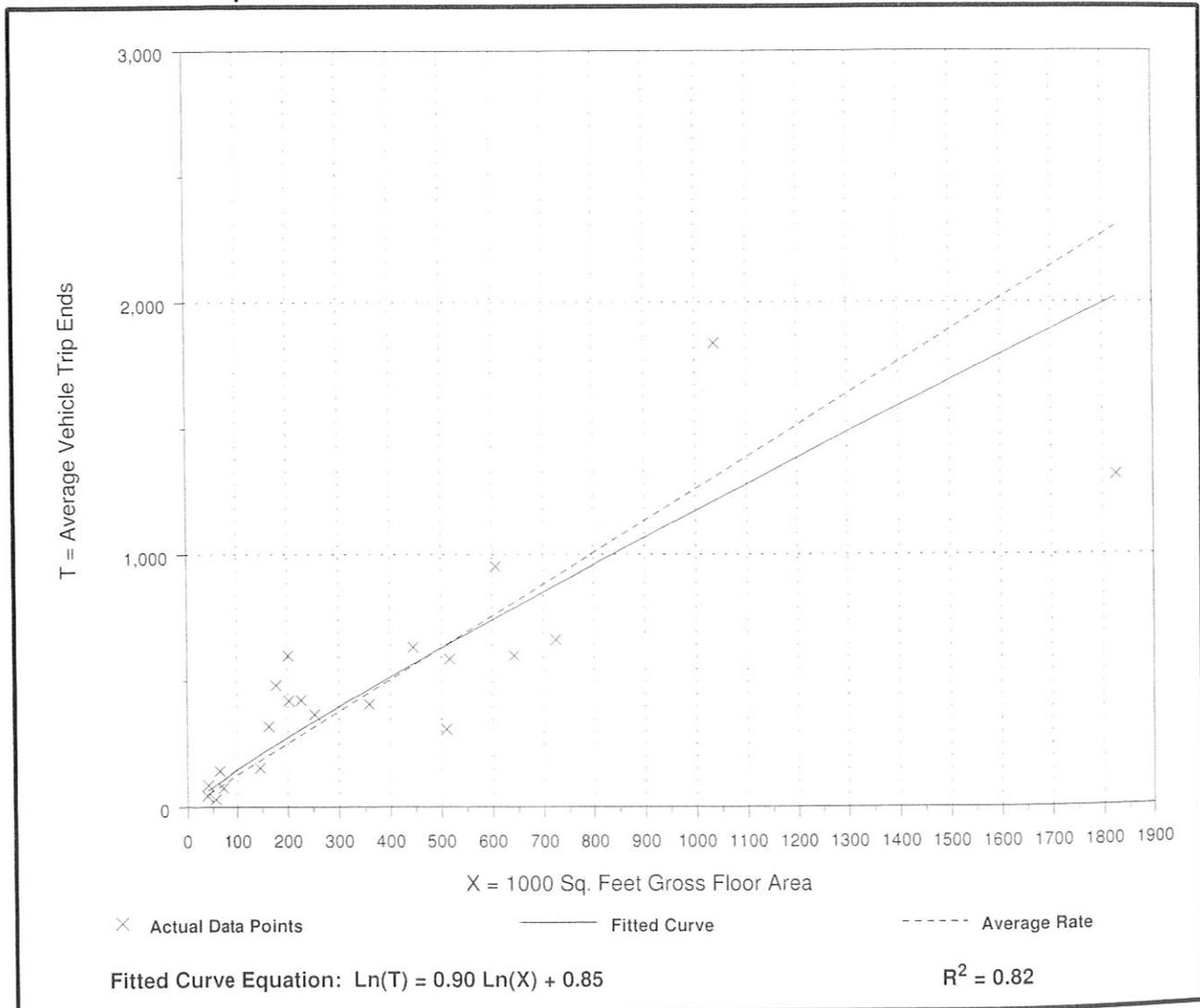
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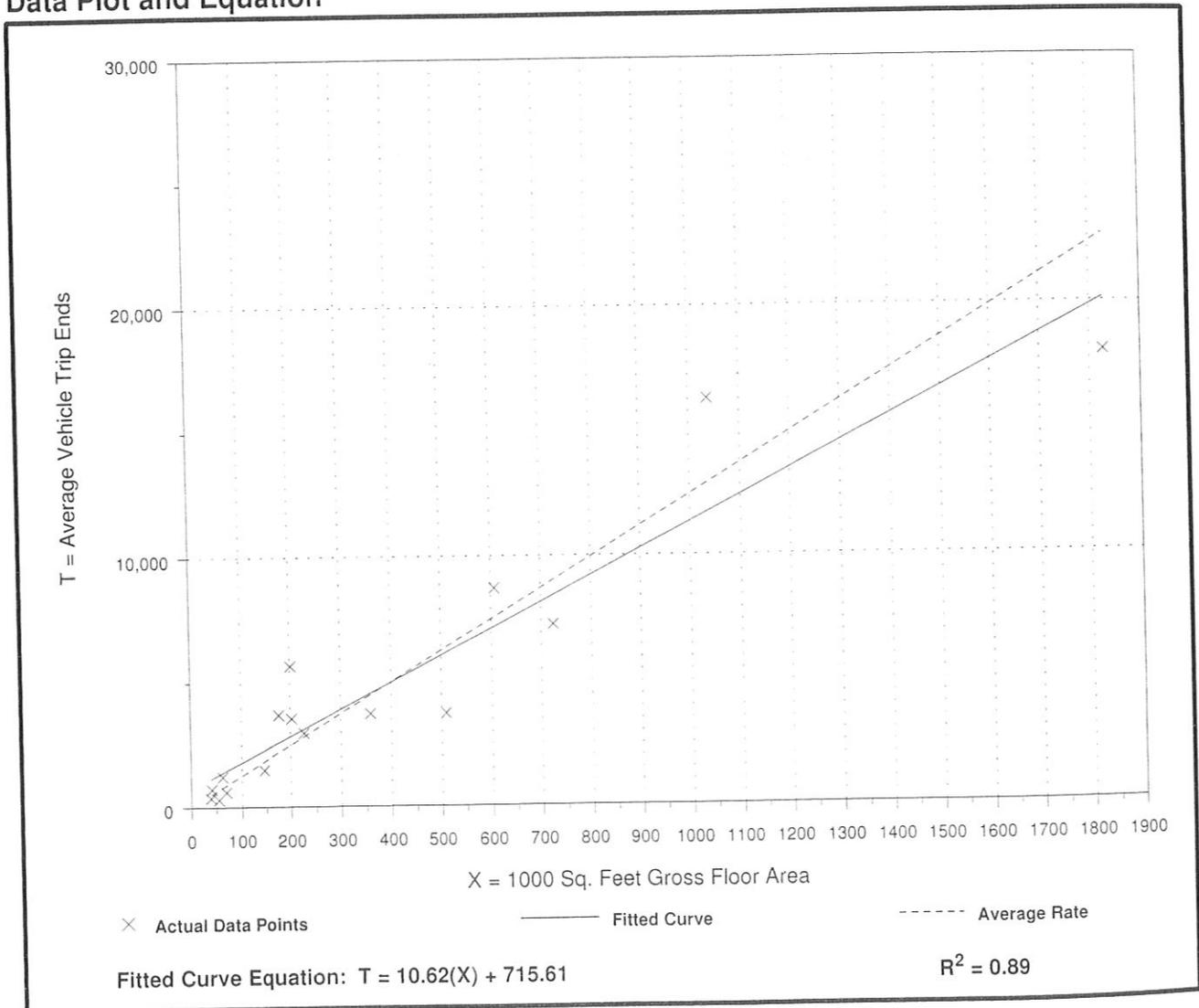
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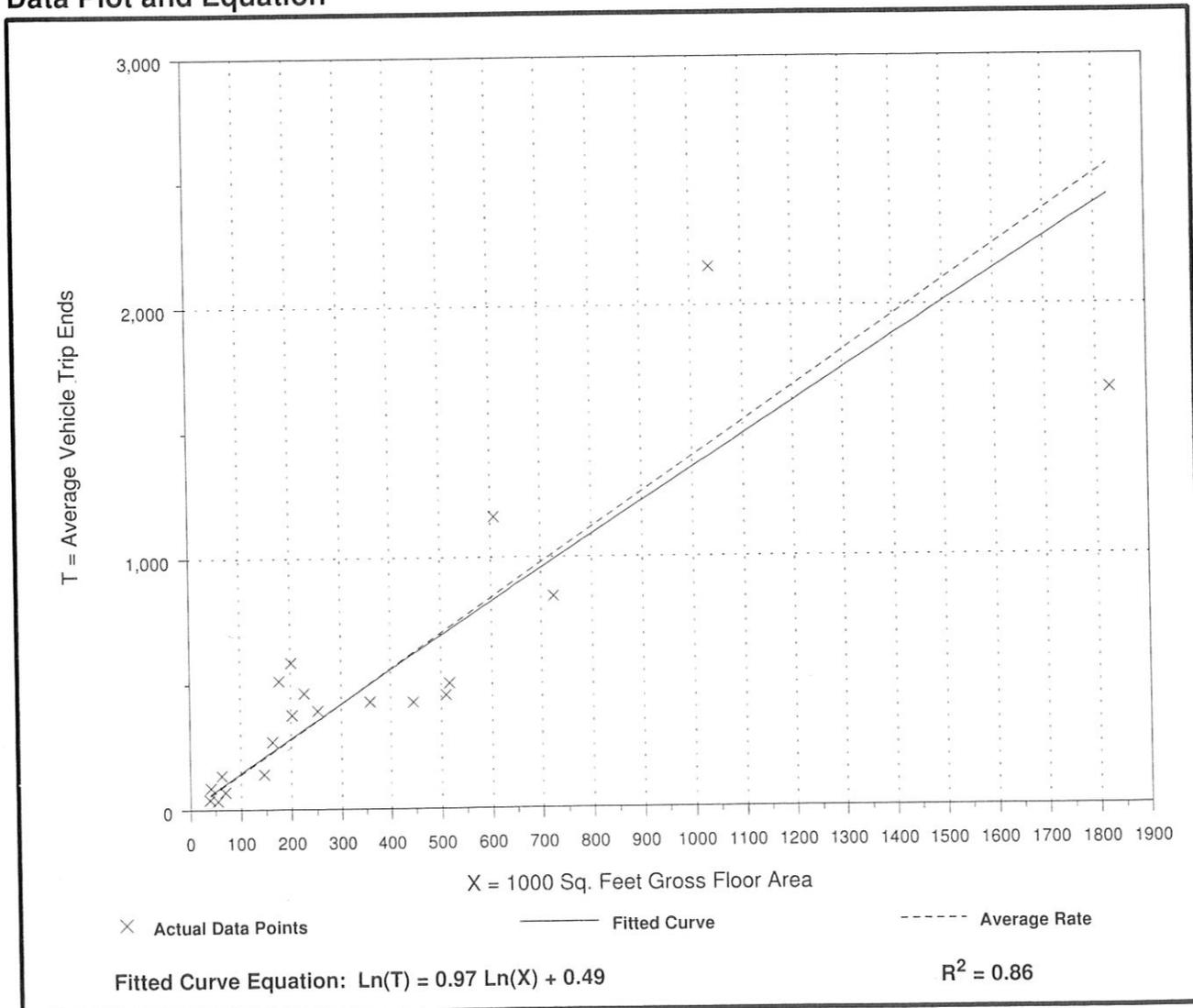
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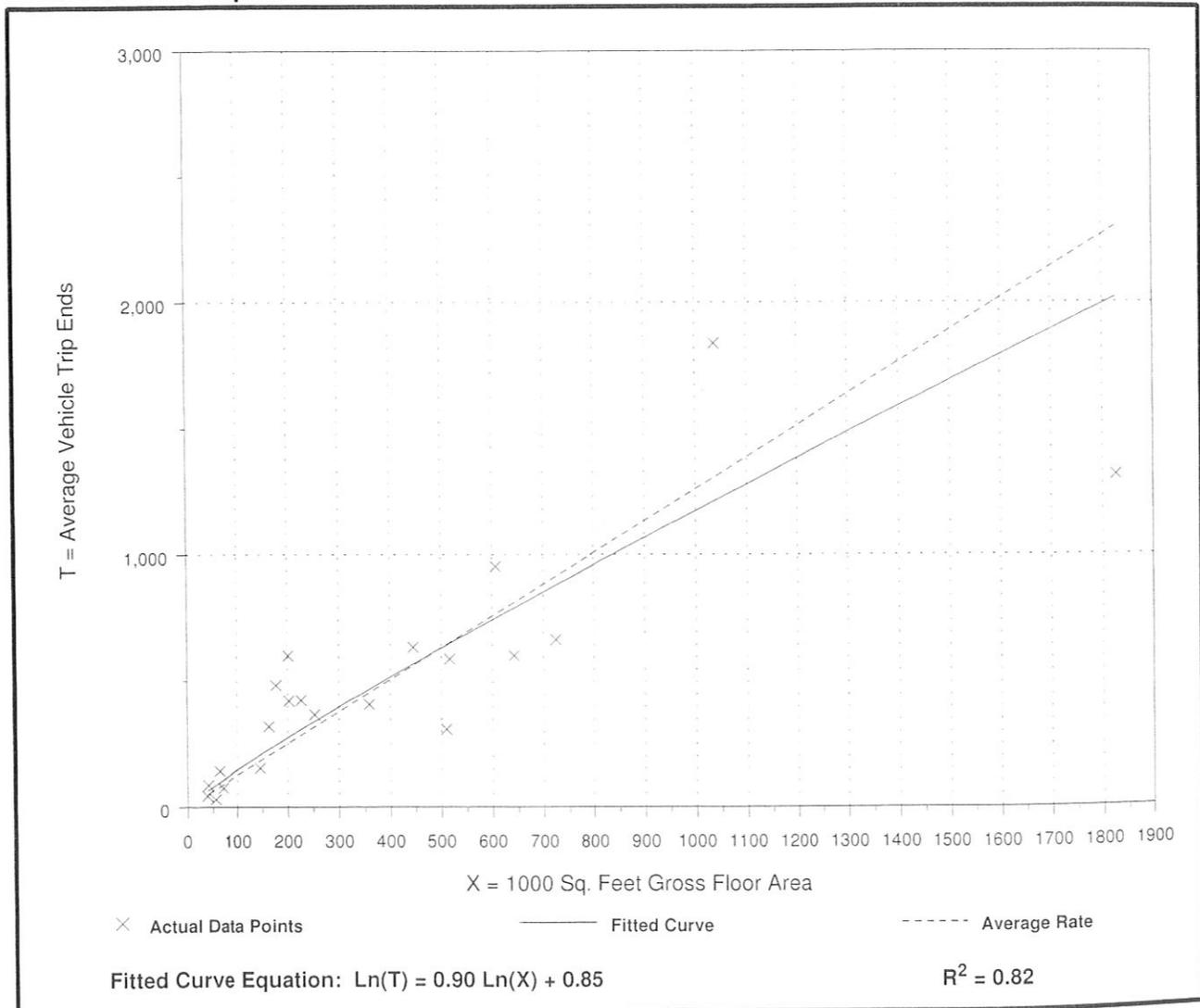
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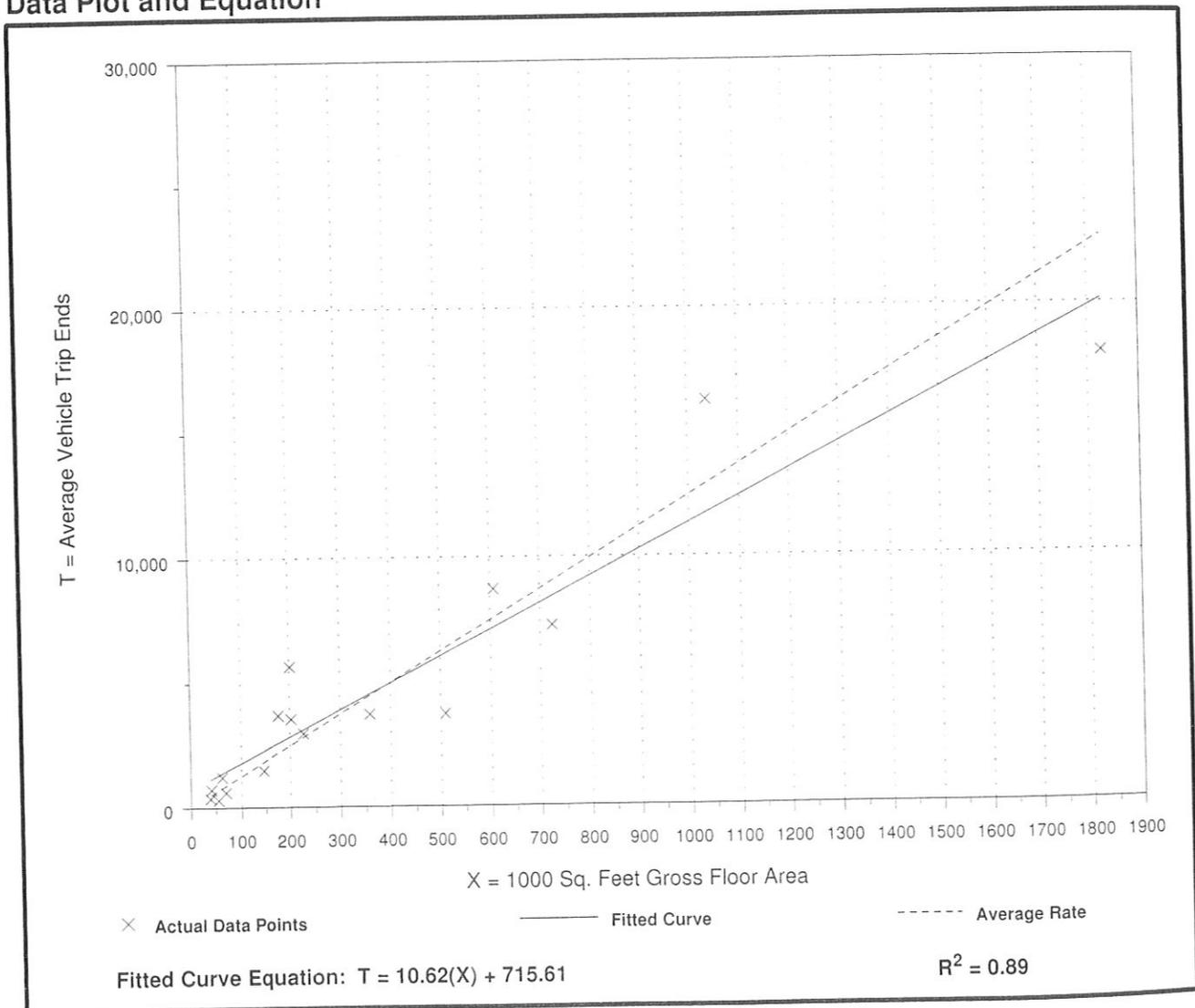
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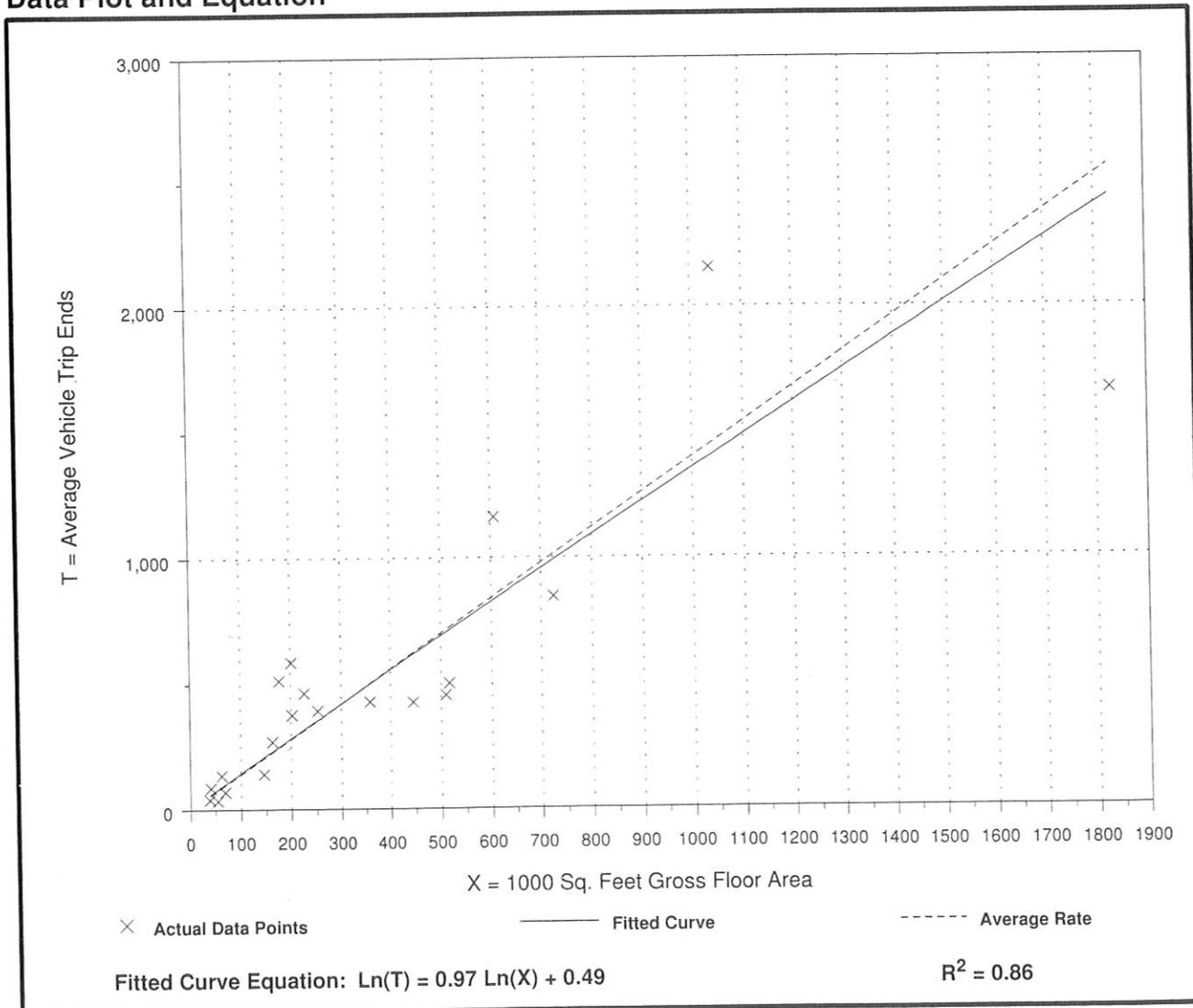
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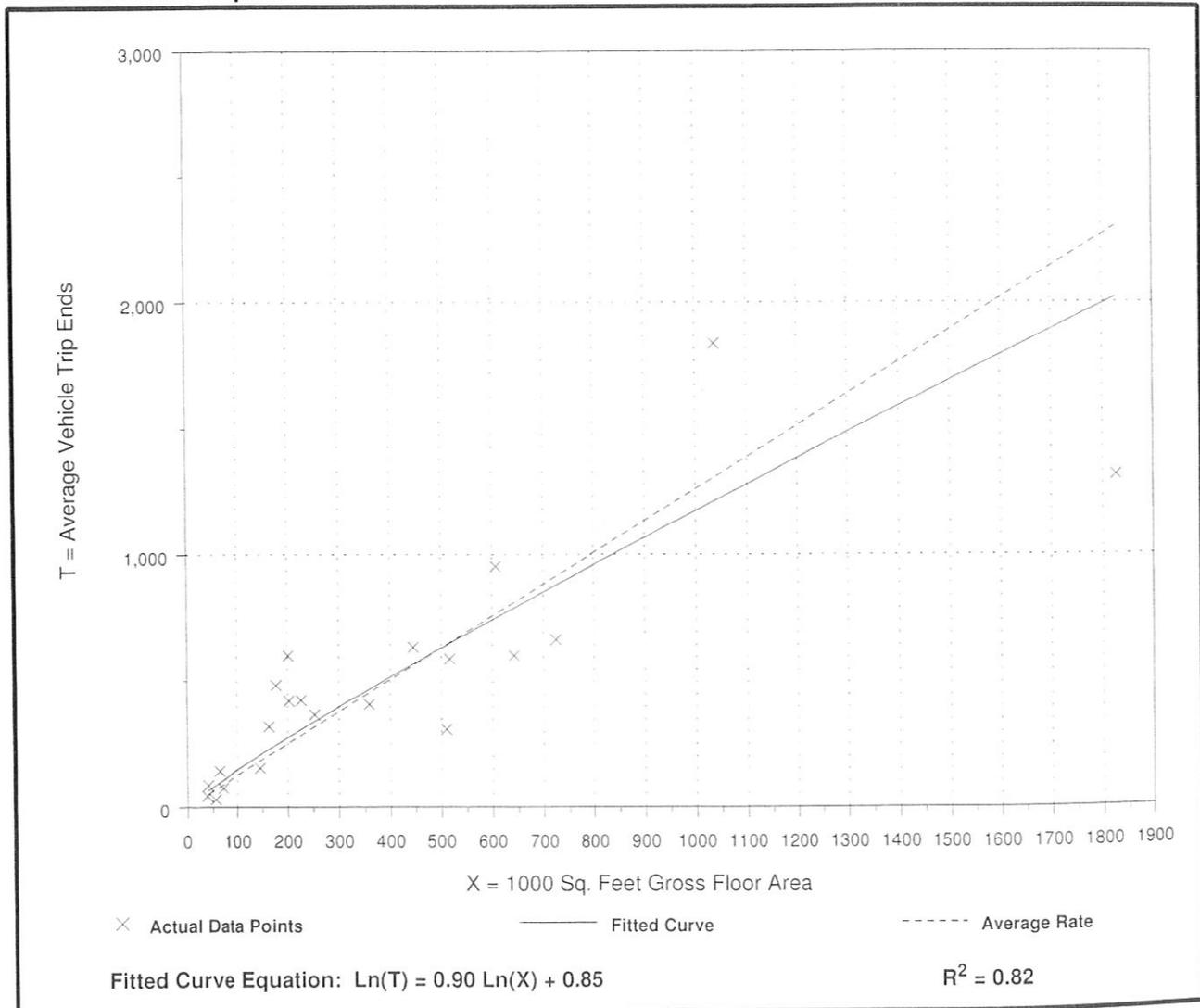
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Data Plot and Equation



GROUP MACKENZIE

May 5, 2008

City of Sherwood
Attention: Lee Harrington
22560 SW Pine Street
Sherwood, Oregon 97140

Re: **Sherwood Industrial Park – Pad ‘A’**
CAP Trip Analysis Worksheet
Project Number 2080143.00

Dear Mr. Harrington:

The purpose of this letter is to present the assumptions used in the CAP Trip Analysis Worksheet for the proposed Sherwood Industrial Park located on Tualatin-Sherwood Road in the City of Sherwood. While the Industrial Park encompasses a large area (40.85 net acres), the proposed development of Pad ‘A’ only consists of 6.16 acres. This trip analysis primarily addresses Pad ‘A’ trip generation assumptions.

PROPOSED DEVELOPMENT

The proposed development is approximately 60,000 square feet in two buildings on 6.16 acres. The buildings will be located in the southwest corner of the property and will access Tualatin-Sherwood Road via Century Drive.

TRIP GENERATION

Trips generated by the proposed development are based on data contained in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, Seventh Edition. While the exact tenants of the buildings are not known, conservative trip generation estimates have been made. The square footage of the buildings was split into two uses: 70% Light Industrial (110), 30% Warehousing (150). In all cases the average rate was used.

Trip generation estimates for the proposed development are presented in the following table.

Table 1 – Pad ‘A’ Proposed Development Trip Generation					
Land Use (ITE Code)	Size (KSF)	ADT	PM Peak Hour		
			Enter	Exit	Total
Light Industrial (110)	42	293	5	36	41
Warehousing (150)	18	89	2	6	8
Total	60	382	7	42	49

The proposed development is anticipated to generate 49 trips (worksheet line 1B) during the PM peak hour. Build-out trip generation estimates, 592 trips (line 1C) for the remaining 34.69 acres of future development net acreage, were calculated using a 40% building coverage area and applying the Light Industrial (110) ITE trip generation rate.

City of Sherwood
Sherwood Industrial Park – Pad ‘A’
Project Number 2080143.00
May 5, 2008
Page 2

TRIP DISTRIBUTION AND ASSIGNMENT

Site trip distribution is anticipated to be 50% to and from the east and 50% to and from the west on Tualatin-Sherwood Road. Site trip distribution and assignment are presented in attached Figure 1.

CONCLUSIONS

The proposed Pad ‘A’ net trips per acre (10.06), combined with the estimated future development net trips per acre (16.00), are less than the 43 net trips per acre allowed by the City of Sherwood. Therefore, a Preliminary Trip Allocation Certificate should be issued with the Final Trip Allocation Certificate issued as part of the staff report.

Sincerely,



Sean Morrison, P.E., Transportation Engineer
Associate

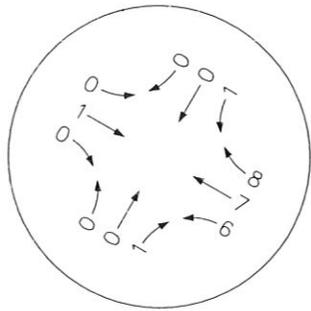
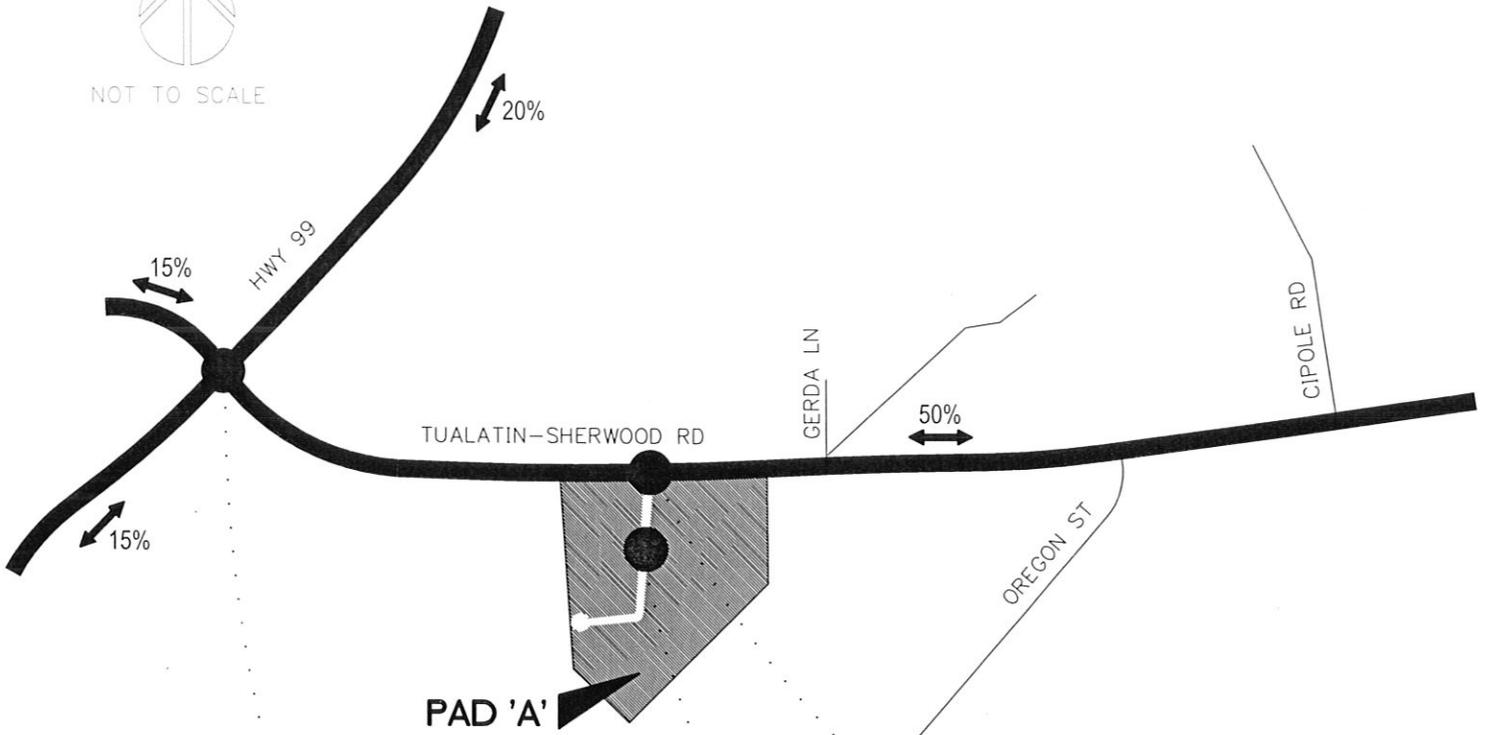
Enclosures: CAP Trip Analysis Worksheet
Figure 1 – Site Trip Distribution and Assignment

c: Jack Steiger – ORWA Sherwood LLC
Bob Thompson – Group Mackenzie



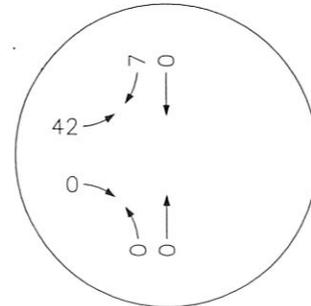
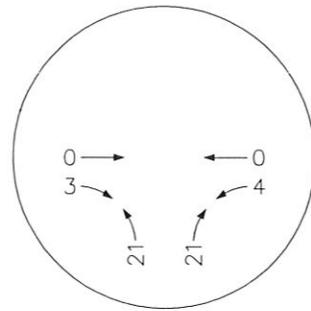


NOT TO SCALE



WEEKDAY PM PEAK
TOTAL TRIPS

ENTER = 7
EXIT = 42



GROUP
MACKENZIE

Portland OR Vancouver WA Seattle WA
503.224.9560 360.995.7879 206.749.9993

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DATE: 7.15.08

DRAWN BY: WSB

CHECKED BY: SM

JOB NO:
2080143.01

TRIP DISTRIBUTION AND TRAFFIC ASSIGNMENT

SHERWOOD INDUSTRIAL PARK
SHERWOOD, OREGON

FIGURE

7