MEMORANDUM

Date: June 27, 2018 Job No.: 5636

To: Casey O'Donnell, O'Donnell Law

Cc:

From: Joe Rimiller, PE, PTOE

Subject: TD Bank Oakwood Soccer Park Traffic and Parking Data

Introduction

On February 1, 2018 the City of Stamford's Transportation, Traffic and Parking (TTP) Department issued a memorandum to the City Zoning Board based on a preliminary review of the materials provided for the Special Exception use of Athletic Club and Special Exception Approval to operate an Athletic Club at 2517 Long Ridge Road. The TTP Department's comments including a condition that the applicant provides parking demand data for a similar Soccer Club within the region.

TenSoccer Foundation Inc., through O'Donnell Law, retained BETA Group, Inc. to identify a similar site and collect traffic and parking data. TD Bank Oakwood Soccer Park in Portland, Connecticut was selected. Like the proposed Long Ridge Soccer Club, TD Bank Oakwood Soccer Park consists of two turf fields. It also includes a parking lot, floodlights, toilet facilities, team changing rooms, snack bar and seasonal soccer store.

Traffic data was collected at TD Bank Oakwood Soccer Park on Saturday, June 9th from 10:00 AM to 12:00 PM and on Tuesday, June 12th from 5:00 PM to 7:00 PM. These dates were selected in order to obtain data on a weekend and on a weekday when both fields were being utilized for multiple games. These timeframes were selected in order to capture the turnover period between back to back games, when parking demand would be at its peak.

Parking

Parking occupancy data at TD Bank Oakwood Soccer Park on each date is included in Attachment A. On Saturday, June 9th the highest number of parked vehicles observed was 121. This occurred at 11:15 AM when games on both fields were nearing completion and additional vehicles associated with subsequent games were arriving. On Saturday, June 12th parking occupancy peaked at 125 vehicles. This occurred at 6:15 PM under similar conditions.

The Institute of Transportation Engineers' (ITEs') Parking Generation, 4th Edition defines Soccer Complexes as 'outdoor parks that are used for non-professional soccer games. They may consist of one or more fields, and the size of each field within the land use may vary to accommodate games for different age groups. Ancillary amenities may include a fitness trail, activities shelter, aquatic center, picnic grounds, basketball and tennis courts and a playground.' ITE examined data from twelve study sites. Based on the parking demand at these sites ITE identified an average peak parking demands of 38.30 vehicles per field on weekdays, 58.80 vehicles per field on Saturdays, and 56.30 vehicles per field on Sundays. Data from ITE's Parking Generation is included in Attachment B. Based on this data, a typical soccer club containing two fields could anticipate a peak parking demand of 118 vehicles (occurring on a Saturdays).

The site plan for Long Ridge Soccer Club identifies 129 planned parking spaces. This exceeds both the 125 vehicle peak demand observed at TD Bank Oakwood Soccer Park and the 118 vehicle peak estimated by ITE.

Trips

In addition to parking data, turning movement counts were performed at TD Bank Oakwood Soccer Park's lone driveway, located on Route 17. Turning movement count data is included in Attachment C. On Saturday, June 9th the peak number of trips occurred between 10:45 AM and 11:45 AM when 105 vehicles either entered or exited the site. On Tuesday, June 12th the peak number of trips occurred between 5:00 PM and 6:00 PM when 73 vehicles entered or exited the site.

ITE's Trip Generation Manual, 10th Edition provides trip generation per field for the peak hour of the complex based on observations at five Soccer Complexes (see Attachment D). An average rate of 16.90 vehicles per field was calculated for a weekday afternoon. For a complex with two fields 34 vehicle trips could be anticipated. Similar observations were made at ten soccer complexes on a Saturday and a rate of 40.10 trips per field was calculated (80 trips for a two field complex). For a Sunday a rate of 28.78 trips per field was determined (58 trips for a two field complex).

BETA's April 2017 Traffic Impact Assessment analyzed the impacts of expected site generated traffic on traffic operations at Long Ridge Road and the site driveway based on the anticipated operations schedule of the proposed soccer club. Based on the schedule 70 trips were forecast during the weekday afternoon peak hour and 80 trips were forecast during the Saturday peak hour. The number of weekday afternoon site generated trips used for the Assessment is consistent with the number of trips observed at TD Bank Oakwood Soccer Park and exceeds the number of trips based on ITE's Trip Generation Manual. The number of Saturday site generated trips used for the Assessment is less than the number of trips observed at TD Bank Oakwood Soccer Park but consistent with the number of trips provided in ITE's Trip Generation Manual.

ATTACHMENT A
TD Oakwood Park Parking Demand Data

Parking Occupancy Data (Oakwood Soccer Park)

Location: TD Oakwood Soccer

Date: 6/9/2018

Interval	# of Parked Vehicles
10:00	**87**
10:15	**89**
10:30	**101**
10:45	**108**
11:00	**119**
11:15	**121**
11:30	**78**
11:45	**63**
12:00	**62**

Location: TD Oakwood Soccer

Date: 6/12/2018

Interval	# of Parked Vehicles
5:00	**74**
5:15	**90**
5:30	**93**
5:45	**97**
6:00	**115**
6:15	**125**
6:30	**89**
6:45	**58**
7:00	**64**

ATTACHMENT B
ITE Parking Generation Data

Land Use: 488
Soccer Complex

Description

Soccer complexes are outdoor parks that are used for non-professional soccer games. They may consist of one or more fields, and the size of each field within the land use may vary to accommodate games for different age groups. Ancillary amenities may include a fitness trail, activities shelter, aquatic center, picnic grounds, basketball and tennis courts and a playground.

Database Description

The database consisted of all suburban sites.

- Average parking supply ratio: 38 spaces per field (12 study sites).

The majority of the sites included in this land use provided only a single-hour count between the hours of 1:00 and 8:00 p.m. One site with four soccer fields was observed for three nonconsecutive hours between 11:00 a.m. and 12:00 p.m. and 2:00 and 4:00 p.m. The peak parking demand for this site occurred between 3:00 and 4:00 p.m. Another site with two soccer fields was observed for two consecutive hours between 7:00 and 9:00 p.m. The peak parking demand for this site occurred between 8:00 and 9:00 p.m. More continuous time studies are needed to better define peaking characteristics for this land use.

Study Sites/Years

Portland, OR (2005); Beaverton, OR (2006); Silverton, OR (2006); Clackamas, OR (2007); Happy Valley, OR (2007); Hillsboro, OR (2007); Redmond, WA (2007); Beaverton, OR (2008); Corvallis, OR (2008); Lake Oswego, OR (2008); Redmond, WA (2008); West Linn, OR (2008); Beaverton, OR (2009)

4th Edition Source Number

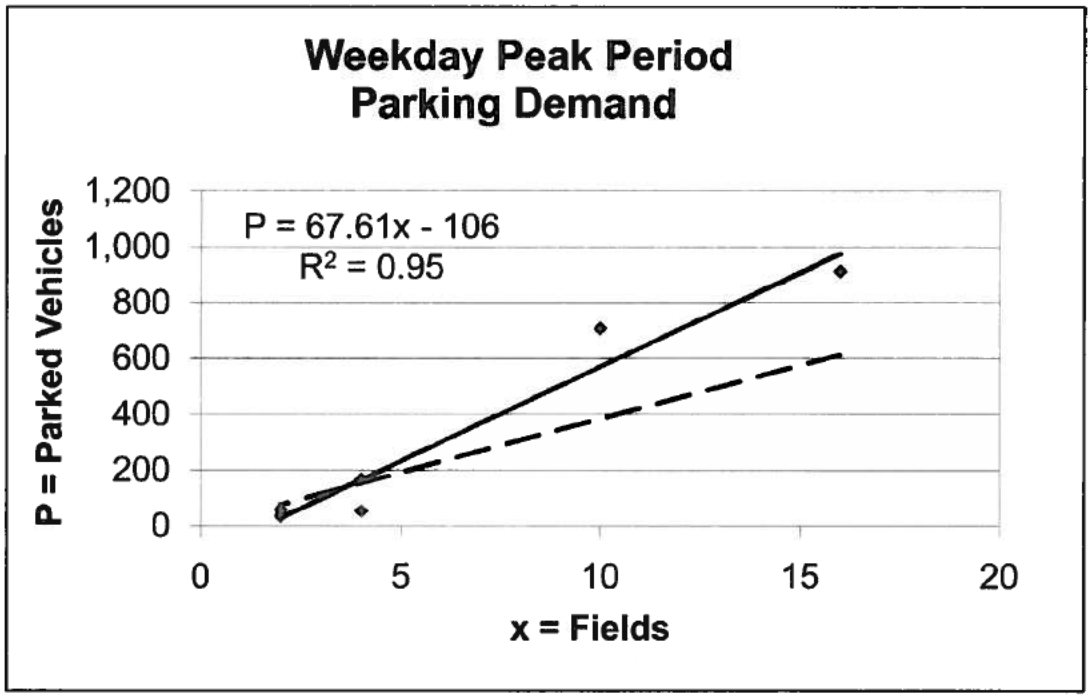
1101

Land Use: 488
Soccer Complex

Average Peak Period Parking Demand vs. Fields
On a: Weekday

Statistic	Peak Period Demand
Peak Period	Varies*
Number of Study Sites	6
Average Size of Study Sites	6 fields
Average Peak Period Parking Demand	38.30 vehicles per field
Standard Deviation	22.67
Coefficient of Variation	59%
Range	13.30–70.80 vehicles per field
85th Percentile	60.50 vehicles per field
33rd Percentile	25.00 vehicles per field

**** Caution—refer to "Database Description" section for discussion on limitations of data regarding the peak period.***

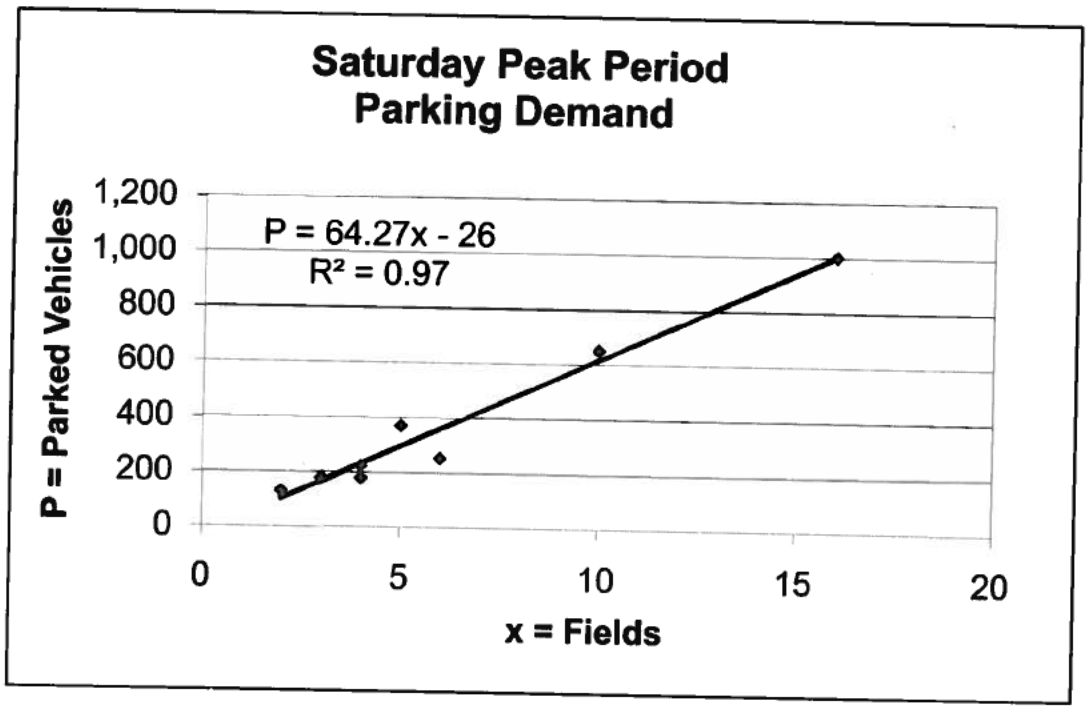


◆ Actual Data Points ——— Fitted Curve - - - - Average Rate

Land Use: 488
Soccer Complex

Average Peak Period Parking Demand vs. Fields
On a: Saturday

Statistic	Peak Period Demand
Peak Period	12:00–1:00 p.m.; 3:00–5:00 p.m.; 6:00–7:00 p.m.
Number of Study Sites	9
Average Size of Study Sites	6 fields
Average Peak Period Parking Demand	58.80 vehicles per field
Standard Deviation	10.10
Coefficient of Variation	17%
Range	42.00–74.00 vehicles per field
85th Percentile	65.20 vehicles per field
33rd Percentile	58.30 vehicles per field

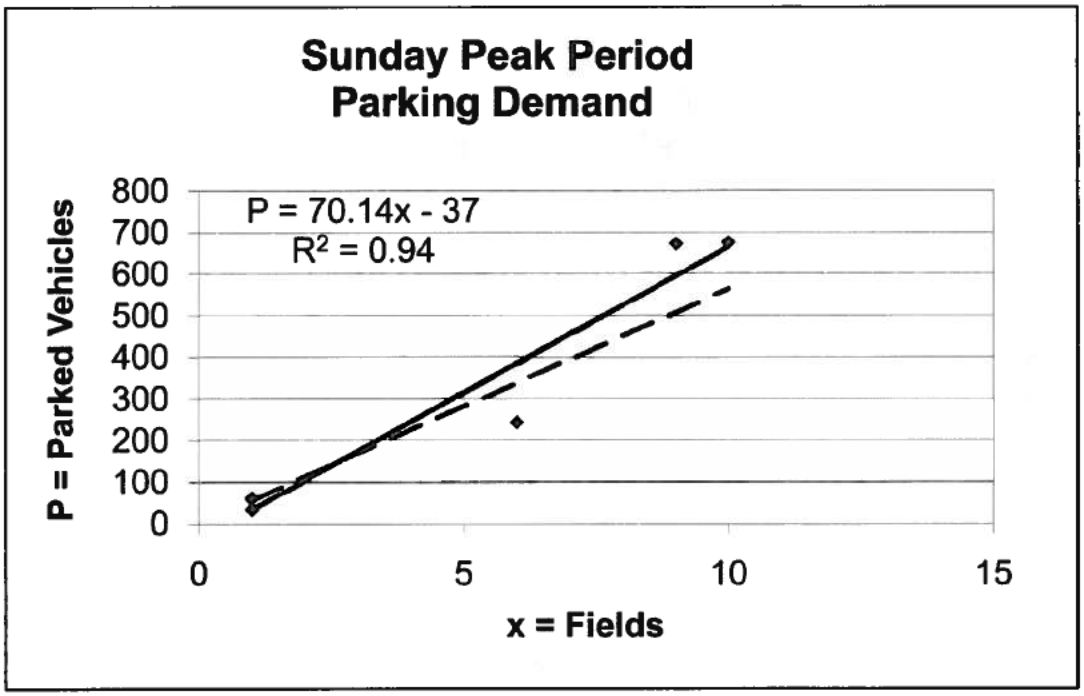


◆ Actual Data Points ——— Fitted Curve/Average Rate

Land Use: 488
Soccer Complex

Average Peak Period Parking Demand vs. Fields
On a: Sunday

Statistic	Peak Period Demand
Peak Period	11:00 a.m.–12:00 p.m.; 1:00–2:00 p.m.
Number of Study Sites	6
Average Size of Study Sites	5 fields
Average Peak Period Parking Demand	56.30 vehicles per field
Standard Deviation	15.80
Coefficient of Variation	28%
Range	34.00–74.70 vehicles per field
85th Percentile	69.30 vehicles per field
33rd Percentile	52.50 vehicles per field



◆ Actual Data Points ——— Fitted Curve - - - - Average Rate

Land Use: 490
Tennis Courts

Description

Tennis courts are indoor or outdoor facilities specifically designed for playing tennis. Tennis courts can either be public or private facilities and do not typically include any ancillary facilities other than limited spectator seating. Racquet/tennis club (Land Use 491) is a related use.

Database Description

The database consisted of one suburban site, counted in 2001 and again in 2007.

- The site had six tennis courts.
- Parking supply ratio: 6.0 spaces per court.
- The 2001 count reported a Saturday peak period parking demand ratio of 3.16 vehicles per tennis court; the 2007 count reported a Saturday peak period parking demand ratio of 2.50 vehicles per tennis court.

Parking demand data counts were submitted for nearly continuous time periods between 9:00 a.m. and 7:00 p.m. on two Saturdays. The peak parking demand occurred between 9:00 and 10:00 a.m. and between 3:00 and 4:00 p.m.

Study Site/Years

Santa Barbara, CA (2001); Santa Barbara, CA (2007)

4th Edition Source Number

1015

ATTACHMENT C
TD Oakwood Park Turning Movement Count

RHS Consulting Design, LLC

Engineering - Surveying - Construction Inspection
345 Highland Avenue
Cheshire, CT 06410
203-439-9340

Counter: TMC- Y.
Client: BETA
Job No.: R052-59-118
Intersection: Route 17 at Driveway

Groups Printed- Cars - Heavy Vehicles

	Route 17 From North				TD Oakwood Soccer Driveway From East				Route 17 From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
10:00 AM	43	1	0	44	0	0	0	0	3	34	0	37	81
10:15 AM	75	6	0	81	1	0	0	1	6	45	0	51	133
10:30 AM	48	1	0	49	0	3	0	3	10	50	0	60	112
10:45 AM	57	2	0	59	3	1	0	4	11	62	0	73	136
Total	223	10	0	233	4	4	0	8	30	191	0	221	462
11:00 AM	56	3	0	59	0	1	0	1	3	44	0	47	107
11:15 AM	76	8	0	84	15	15	0	30	2	58	0	60	174
11:30 AM	72	5	0	77	14	21	0	35	1	58	0	59	171
11:45 AM	72	1	0	73	4	2	0	6	0	56	0	56	135
Total	276	17	0	293	33	39	0	72	6	216	0	222	587
Grand Total	499	27	0	526	37	43	0	80	36	407	0	443	1049
Apprch %	94.9	5.1	0		46.2	53.8	0		8.1	91.9	0		
Total %	47.6	2.6	0	50.1	3.5	4.1	0	7.6	3.4	38.8	0	42.2	
Cars	499	27	0	526	37	43	0	80	36	407	0	443	1049
% Cars	100	100	0	100	100	100	0	100	100	100	0	100	100
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0

RHS Consulting Design, LLC

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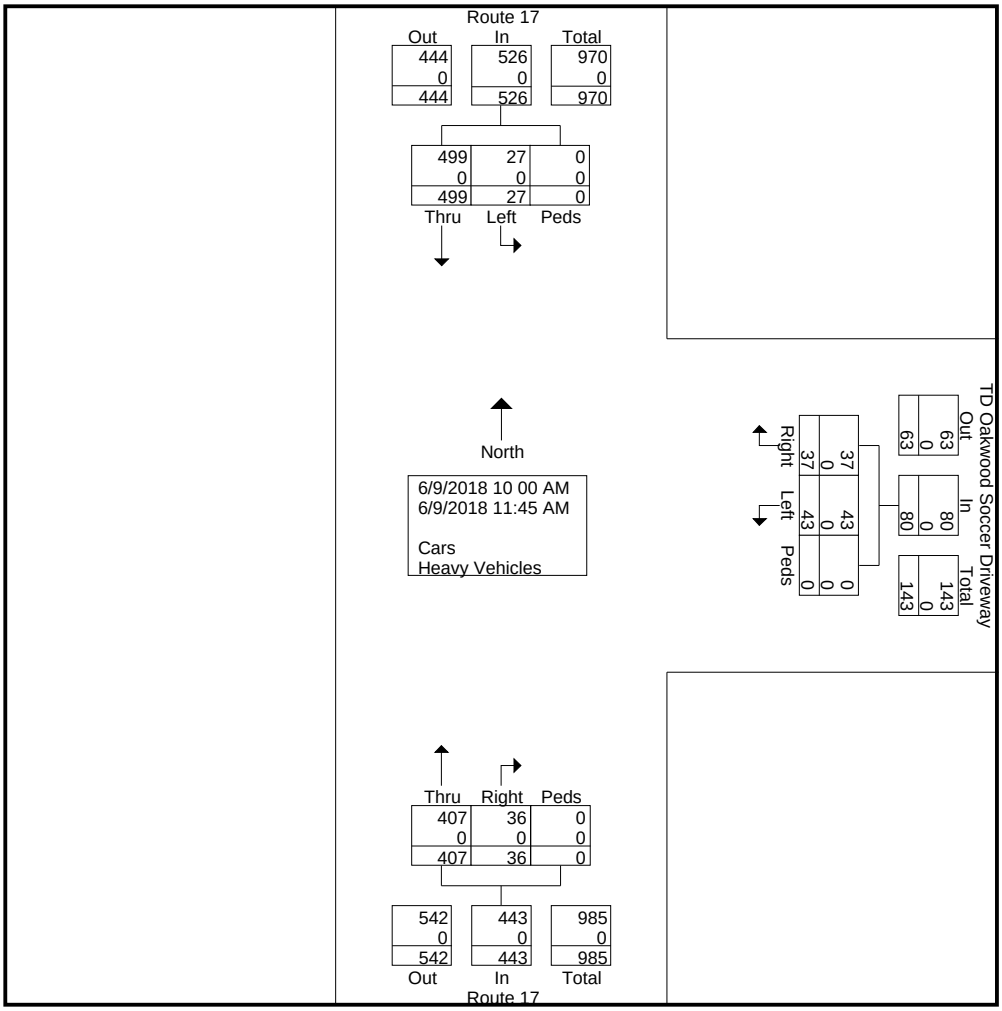
345 Highland Avenue
Cheshire, CT 06410
203-439-9340

Counter: TMC- Y.
Client: BETA
Job No.: R052-59-118
Intersection: Route 17 at Driveway



RHS Consulting Design, LLC

Engineering - Surveying - Construction Inspection

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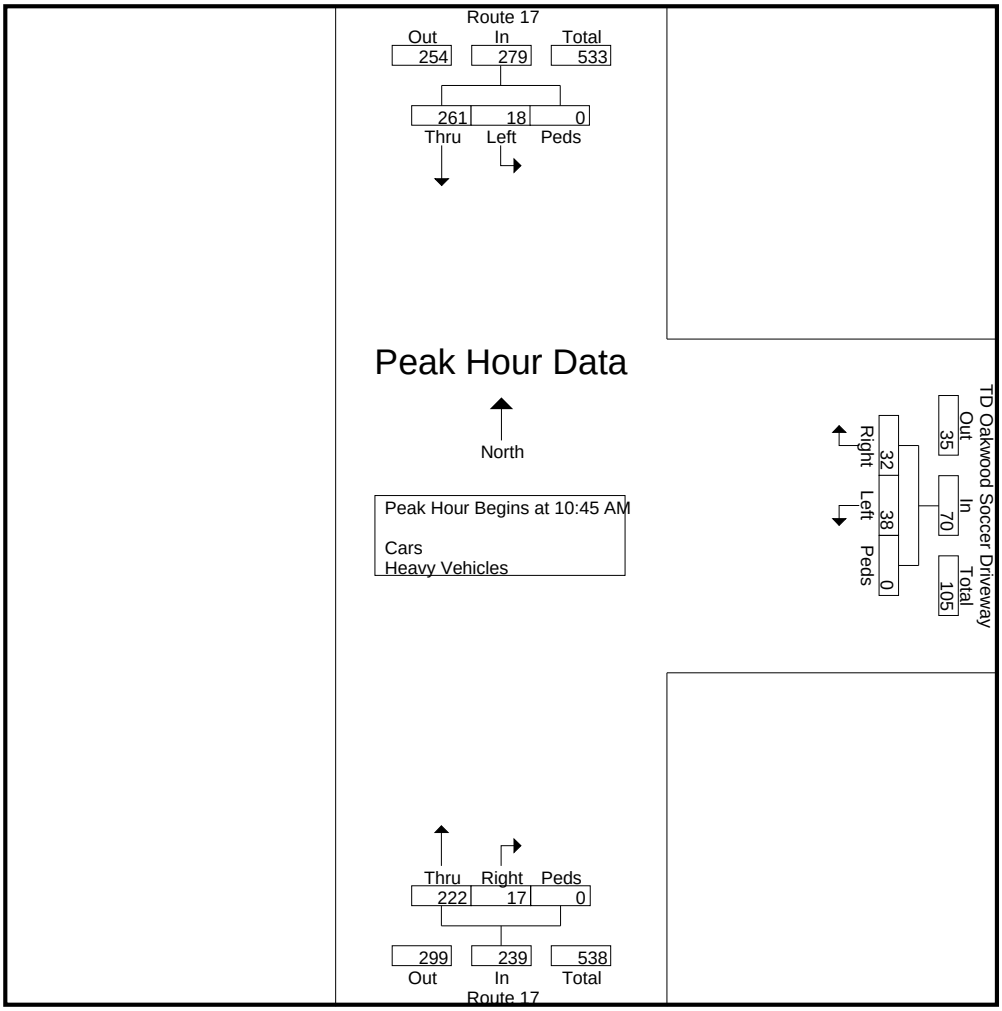
203-439-9340

Counter: TMC- Y.
Client: BETA
Job No.: R052-59-118
Intersection: Route 17 at Driveway

	Route 17 From North				TD Oakwood Soccer Driveway From East				Route 17 From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 11:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 10:45 AM													
10:45 AM	57	2	0	59	3	1	0	4	**11**	**62**	0	**73**	136
11:00 AM	56	3	0	59	0	1	0	1	3	44	0	47	107
11:15 AM	**76**	**8**	0	**84**	**15**	15	0	30	2	58	0	60	**174**
11:30 AM	72	5	0	77	14	**21**	0	**35**	1	58	0	59	171
Total Volume	261	18	0	279	32	38	0	70	17	222	0	239	588
% App. Total	93.5	6.5	0		45.7	54.3	0		7.1	92.9	0		
PHF	.859	.563	.000	.830	.533	.452	.000	.500	.386	.895	.000	.818	.845



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Counter: TMC-Y
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Job No.: R052-59-118
Intersection: Route 17 at Driveway

Groups Printed- Cars - Heavy Vehicles

	Route 17 From North				TD Oakwood Soccer Park Driveway From East				Route 17 From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
05:00 PM	115	12	2	129	2	0	0	2	6	76	0	82	213
05:15 PM	117	5	0	122	0	1	0	1	2	94	0	96	219
05:30 PM	119	4	0	123	4	0	0	4	4	95	0	99	226
05:45 PM	101	14	0	115	6	2	0	8	11	74	0	85	208
Total	452	35	2	489	12	3	0	15	23	339	0	362	866
06:00 PM	70	12	0	82	7	11	0	18	21	68	3	92	192
06:15 PM	78	8	1	87	42	14	0	56	12	66	0	78	221
06:30 PM	84	2	0	86	16	19	0	35	3	67	0	70	191
06:45 PM	66	5	0	71	2	2	0	4	3	52	0	55	130
Total	298	27	1	326	67	46	0	113	39	253	3	295	734
Grand Total	750	62	3	815	79	49	0	128	62	592	3	657	1600
Apprch %	92	7.6	0.4		61.7	38.3	0		9.4	90.1	0.5		
Total %	46.9	3.9	0.2	50.9	4.9	3.1	0	8	3.9	37	0.2	41.1	
Cars	749	62	3	814	79	49	0	128	62	591	3	656	1598
% Cars	99.9	100	100	99.9	100	100	0	100	100	99.8	100	99.8	99.9
Heavy Vehicles	1	0	0	1	0	0	0	0	0	1	0	1	2
% Heavy Vehicles	0.1	0	0	0.1	0	0	0	0	0	0.2	0	0.2	0.1

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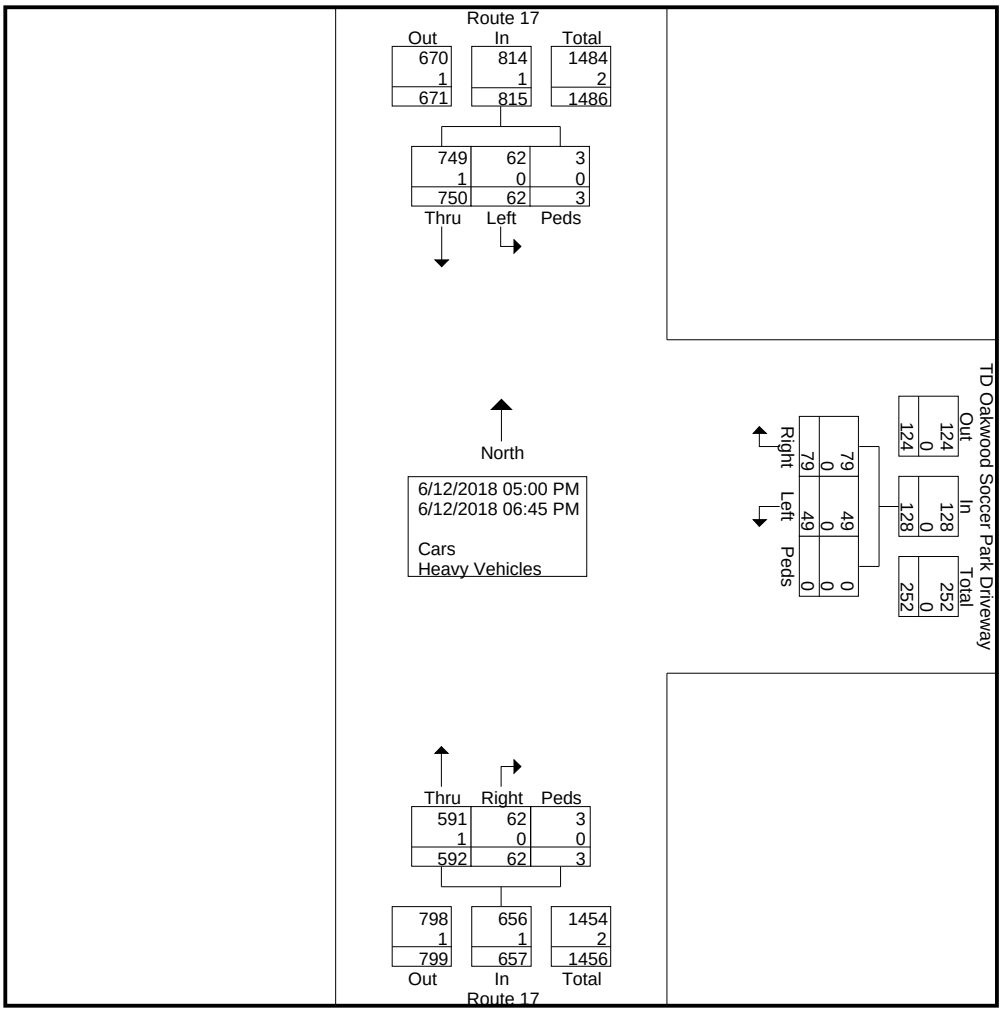

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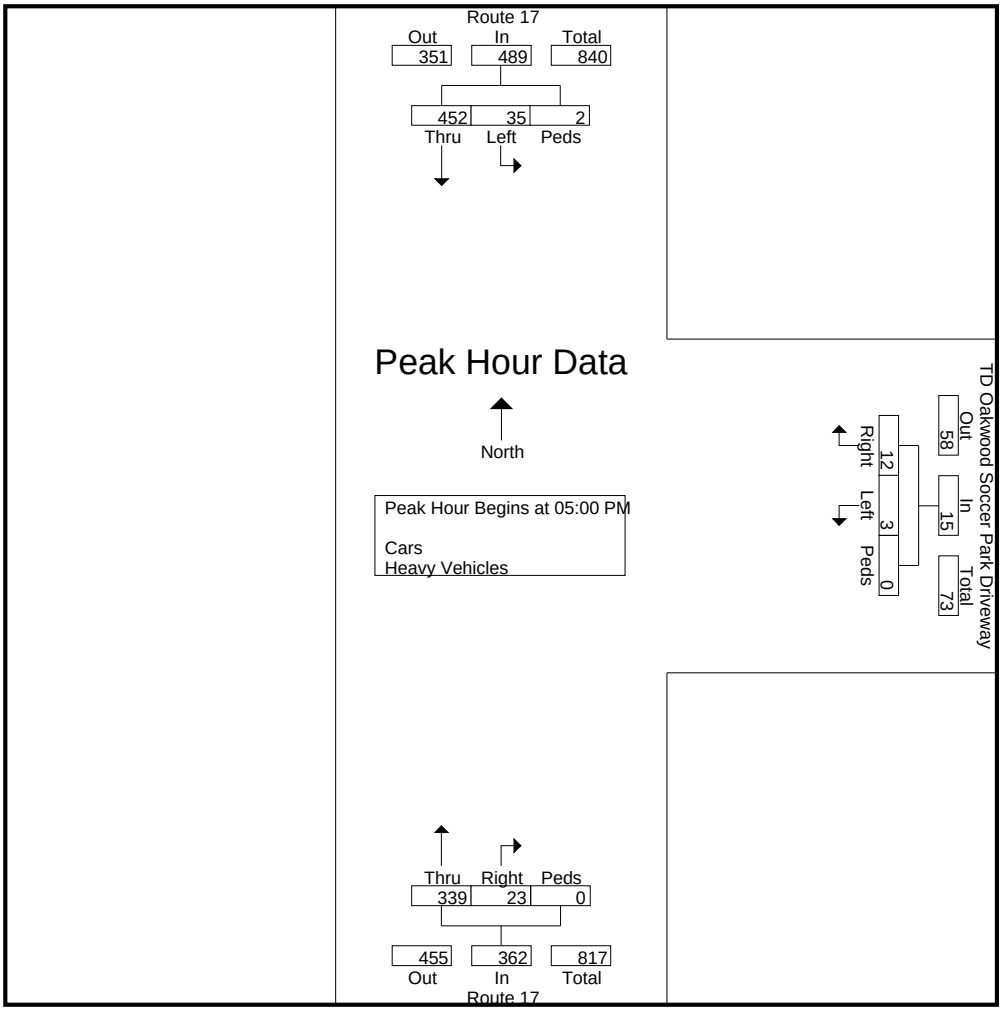
Counter: TMC-Y
Client: BETA
Job No.: R052-59-118
Intersection: Route 17 at Driveway

	Route 17 From North				TD Oakwood Soccer Park Driveway From East				Route 17 From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 06:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	115	12	**2**	**129**	2	0	0	2	6	76	0	82	213
05:15 PM	117	5	0	122	0	1	0	1	2	94	0	96	219
05:30 PM	**119**	4	0	123	4	0	0	4	4	**95**	0	**99**	**226**
05:45 PM	101	**14**	0	115	**6**	**2**	0	**8**	**11**	74	0	85	208
Total Volume	452	35	2	489	12	3	0	15	23	339	0	362	866
% App. Total	92.4	7.2	0.4		80	20	0		6.4	93.6	0		
PHF	.950	.625	.250	.948	.500	.375	.000	.469	.523	.892	.000	.914	.958



ATTACHMENT D
ITE Trip Generation Data

Land Use: 488
Soccer Complex

Description

A soccer complex is an outdoor facility that is used for non-professional soccer games. It may consist of multiple fields. The size of each field within the land use may vary to accommodate games for different age groups. Ancillary amenities may include stadium seating, a fitness trail, an activities shelter, aquatic center, picnic grounds, basketball and tennis courts, and a playground. Public park (Land Use 411) is a related use.

Additional Data

Caution should be used when applying these data. Peaking at soccer complexes typically occurred in time periods shorter than one hour. These peaking periods may have durations of 10 to 15 minutes. To assist in the future analysis of this land use, it is important to collect driveway counts in 10-minute intervals.

Time-of-day distribution data for this land use are presented in Appendix A. For the one site with data, the peak hours for site trips on a weekday, Saturday, and Sunday were between 4:30 and 5:30 p.m., 11:45 a.m. and 12:45 p.m., and 10:15 and 11:15 a.m., respectively.

The sites were surveyed in the 1990s and the 2010s in California, Colorado, Hawaii, Indiana, and Washington.

Source Numbers

377, 519, 565, 722, 856, 908, 952, 956

Soccer Complex
(488)

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

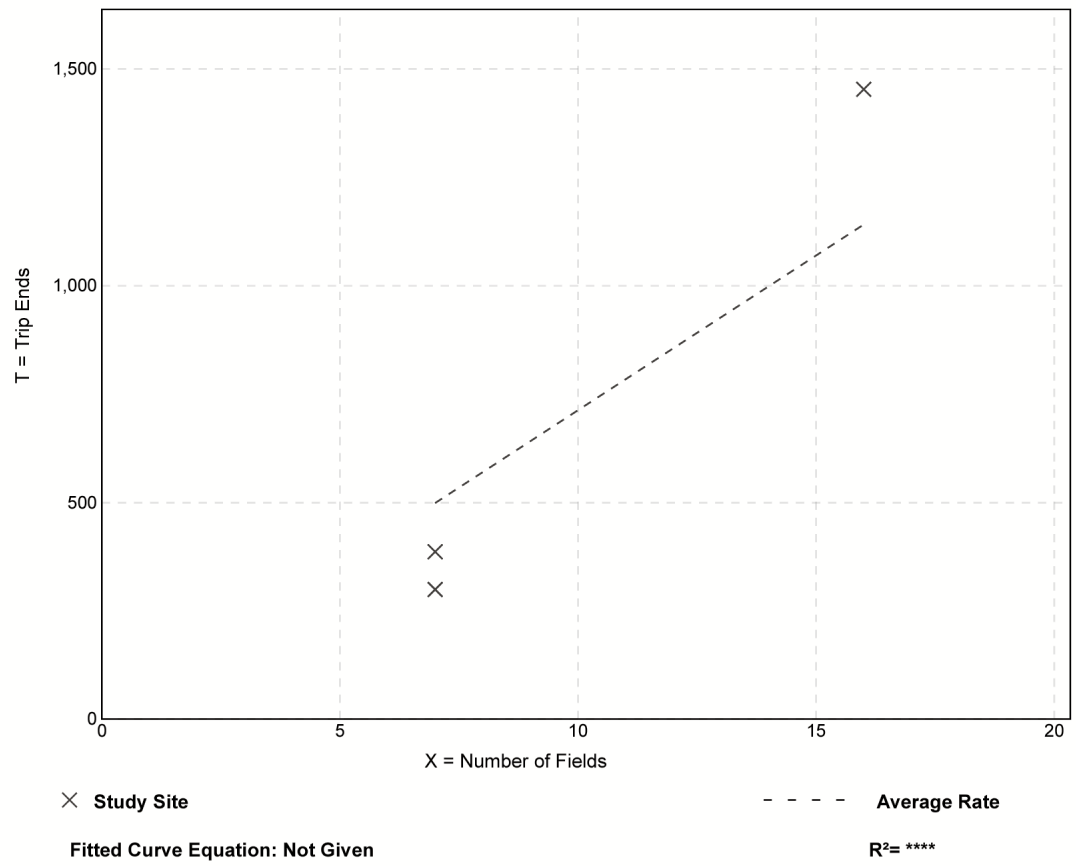
Setting/Location: **General Urban/Suburban**
Number of Studies: 3
Avg. Num. of Fields: 10
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Field

Average Rate	Range of Rates	Standard Deviation
71.33	42.86 - 90.81	81.06

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= ****

Soccer Complex
(488)

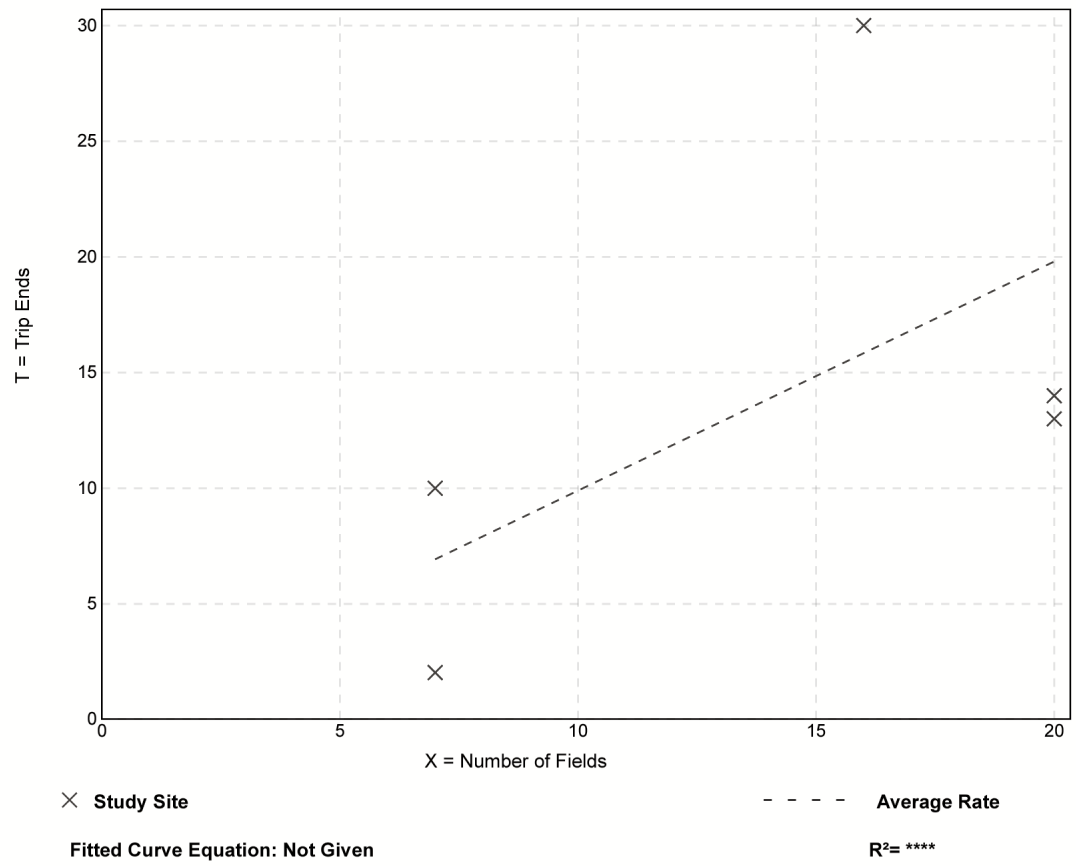
Vehicle Trip Ends vs:	**Fields**
On a:	**Weekday,** **Peak Hour of Adjacent Street Traffic,** **One Hour Between 7 and 9 a.m.**
Setting/Location:	**General Urban/Suburban**
Number of Studies:	5
Avg. Num. of Fields:	14
Directional Distribution:	61% entering, 39% exiting

Vehicle Trip Generation per Field

Average Rate	Range of Rates	Standard Deviation
0.99	0.29 - 1.88	0.62

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= ****

Soccer Complex
(488)

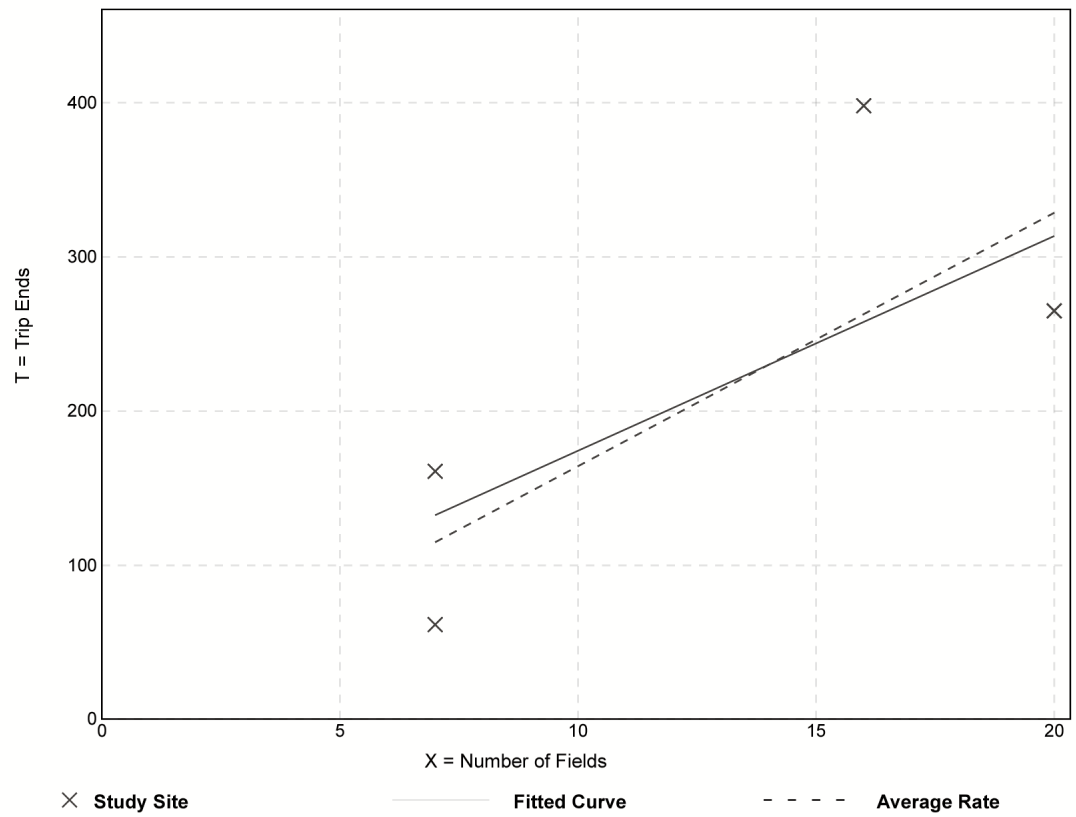
Vehicle Trip Ends vs:	**Fields**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 4 and 6 p.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	5
Avg. Num. of Fields:	14
Directional Distribution:	66% entering, 34% exiting

Vehicle Trip Generation per Field

Average Rate	Range of Rates	Standard Deviation
16.43	8.71 - 24.88	6.36

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: T = 13.92(X) + 35.13

R^2= 0.53

Soccer Complex
(488)

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

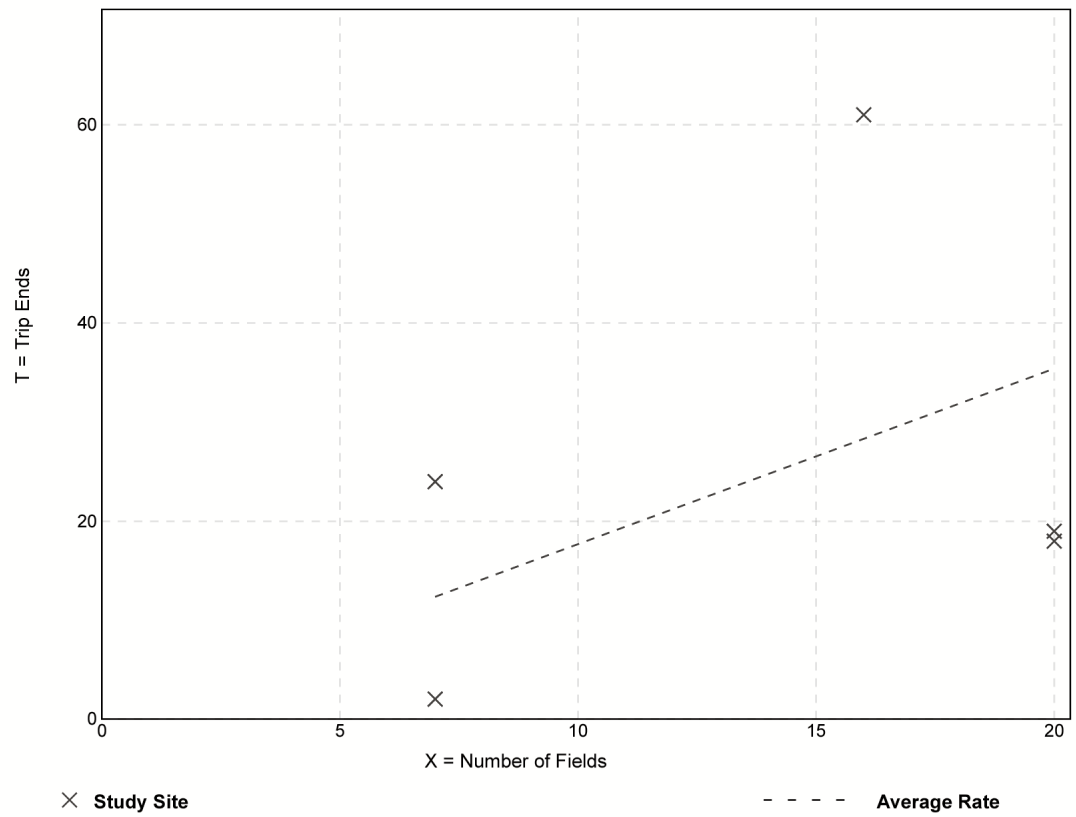
Setting/Location: **General Urban/Suburban**
Number of Studies: 5
Avg. Num. of Fields: 14
Directional Distribution: 53% entering, 47% exiting

Vehicle Trip Generation per Field

Average Rate	Range of Rates	Standard Deviation
1.77	0.29 - 3.81	1.52

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given **R^2= ******

Soccer Complex
(488)

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

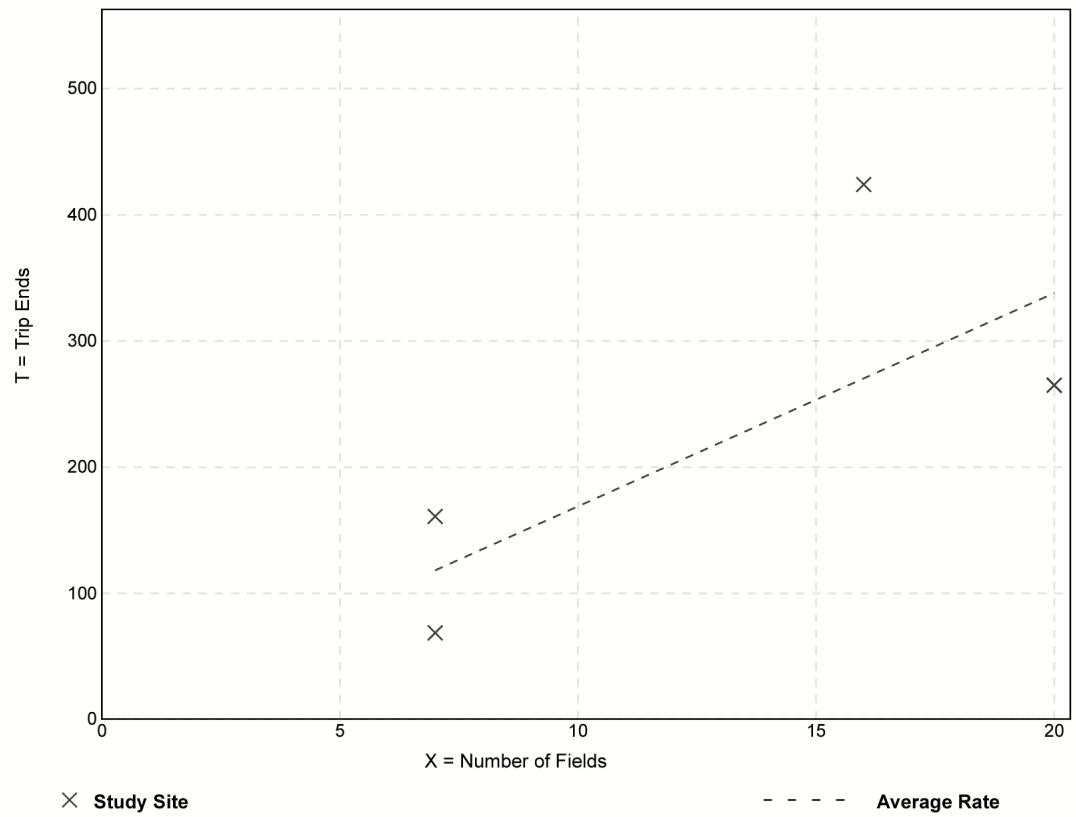
Setting/Location: **General Urban/Suburban**
Number of Studies: 5
Avg. Num. of Fields: 14
Directional Distribution: 47% entering, 53% exiting

Vehicle Trip Generation per Field

Average Rate	Range of Rates	Standard Deviation
16.90	9.71 - 26.50	6.85

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= ****

Soccer Complex
(488)

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

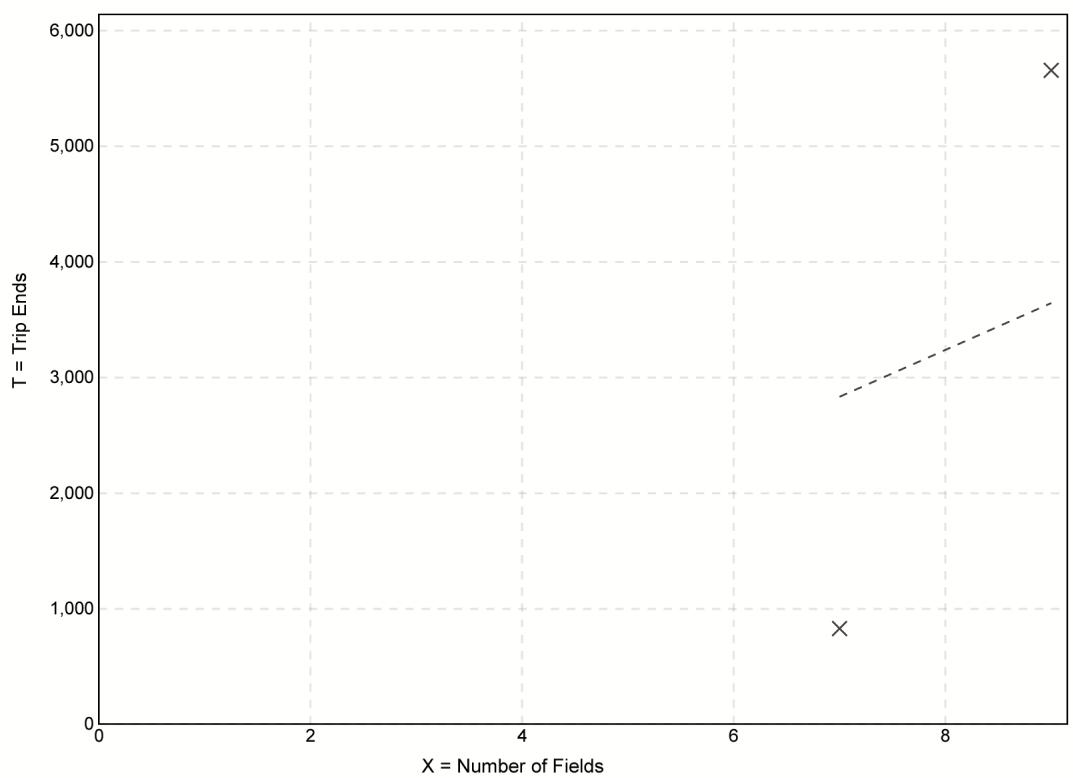
Setting/Location: **General Urban/Suburban**
Number of Studies: 2
Avg. Num. of Fields: 8
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Field

Average Rate	Range of Rates	Standard Deviation
404.88	117.43 - 628.44	*

Data Plot and Equation

Caution – Small Sample Size



× **Study Site** - - - - **Average Rate**

Fitted Curve Equation: Not Given **R^2= ******

Soccer Complex
(488)

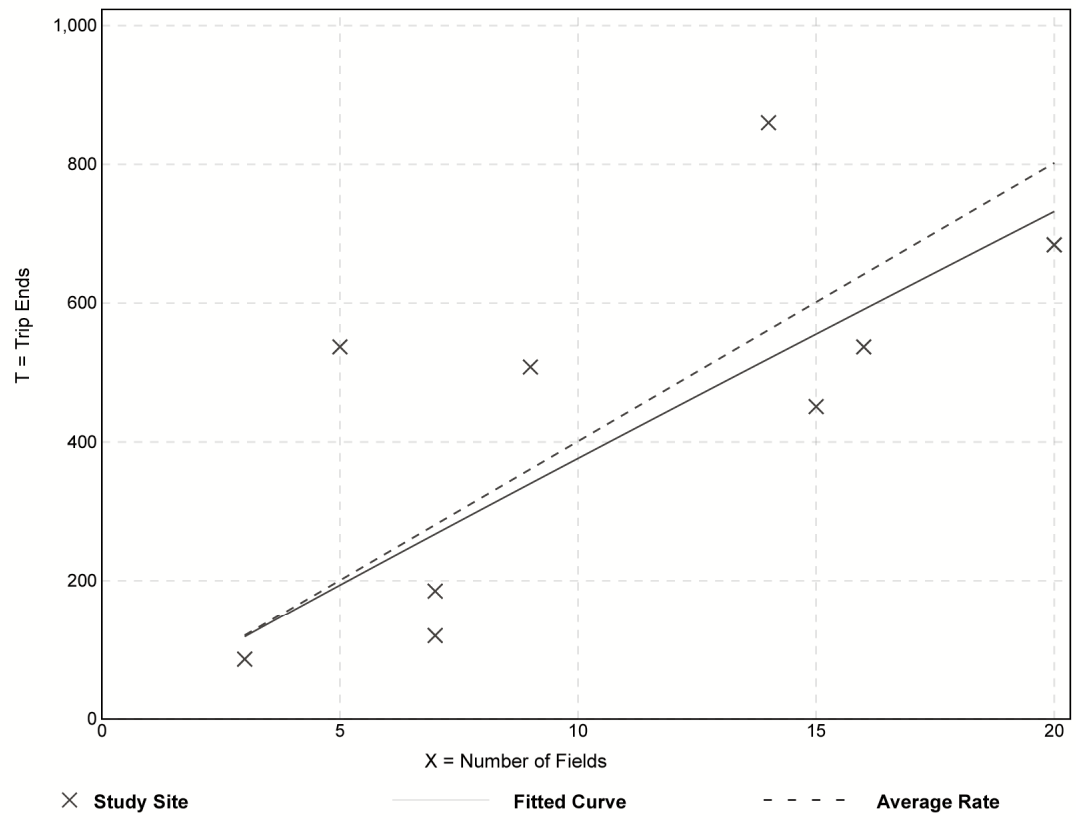
Vehicle Trip Ends vs: **Fields**
On a: **Saturday, Peak Hour of Generator**

Setting/Location: **General Urban/Suburban**
Number of Studies: 10
Avg. Num. of Fields: 12
Directional Distribution: 48% entering, 52% exiting

Vehicle Trip Generation per Field

Average Rate	Range of Rates	Standard Deviation
40.10	17.14 - 107.40	19.67

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.96 Ln(X) + 3.72 **R^2= 0.58**

Soccer Complex
(488)

Vehicle Trip Ends vs: **Fields**
On a: **Sunday, Peak Hour of Generator**

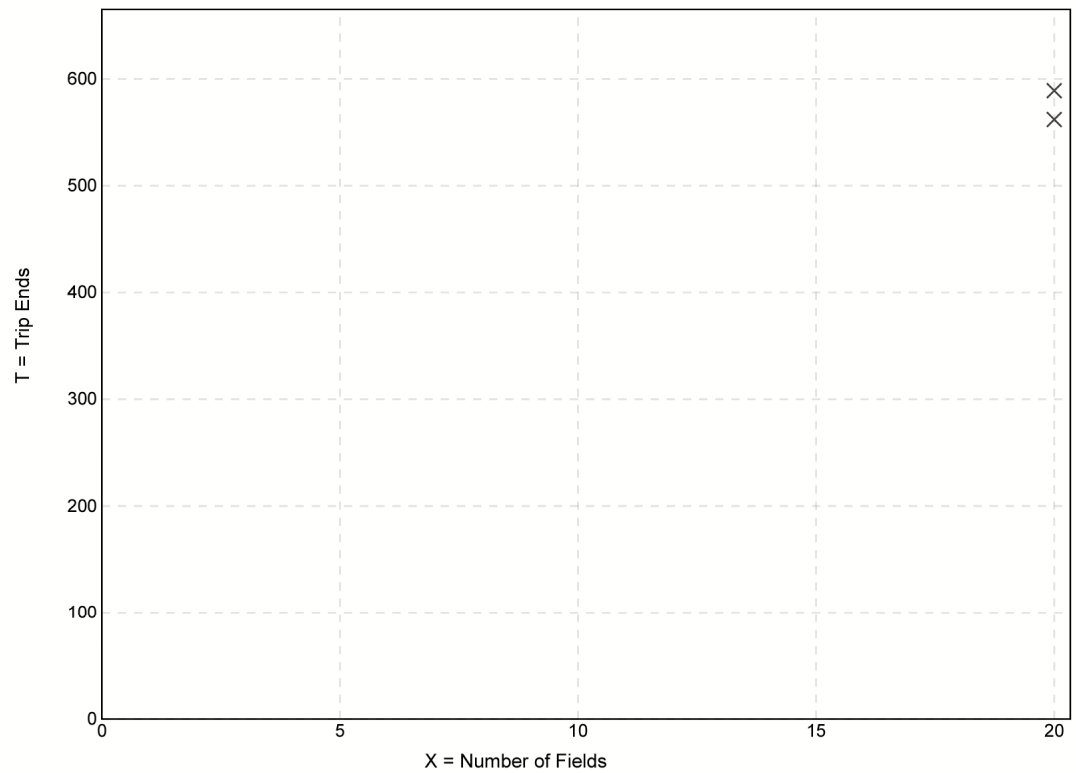
Setting/Location: **General Urban/Suburban**
Number of Studies: 2
Avg. Num. of Fields: 20
Directional Distribution: 46% entering, 54% exiting

Vehicle Trip Generation per Field

Average Rate	Range of Rates	Standard Deviation
28.78	28.10 - 29.45	*

Data Plot and Equation

Caution – Small Sample Size



× **Study Site** - - - - **Average Rate**

Fitted Curve Equation: Not Given **R^2= ******