

May 22, 2024

Mr. Will Lopes
Marcor Builders
28 Atlantic Avenue, Suite 218
Boston, MA 02110

Re: **Traffic Engineering Services**
Coddington Cove Commons
Middletown, Rhode Island
Pare Project No.: 24057.00

Dear Mr. Lopes:

Per your request, Pare Corporation (Pare) has completed an investigation into the potential impact on the traffic conditions for the surrounding roadway network due to a proposed construction of a 57,600 square foot light industrial development located on A.P. 103, Lot 103, Coddington Highway, in Middletown, Rhode Island. Within the property, there are four buildings proposed, each with a gross floor area of 14,400 square feet. Access to the property is to be provided through the existing driveways previously used at the site. Figure 1 shows the site location. Figure 2 shows the proposed site plan.

EXISTING CONDITIONS

The existing site is currently used to store various materials such as scrap metal, debris, and rocks. Overgrown vegetation is also present and scattered within the project site. A driveway exists on the northern perimeter of the site, as well as concrete sidewalks along Coddington Highway.

Data Collection

A field review of the study area was conducted with geometric measurements and other field observations recorded along the roadways and at the driveways of the site on Wednesday, March 20, 2024. The information obtained was used in the understanding of the operations of the study area.

Coddington Highway: Coddington Highway is a state-owned and maintained road that runs in the general north-south direction within the City of Newport, and curves to run in the general east-west direction within the Town of Middletown and along the site frontage. Along the site frontage, Coddington Highway consists of one 11-foot-wide travel lane, a two-foot paved shoulder and vertical granite curb for each direction, separated by a 12-foot-wide two-way left-turn lane. Along its northern side, there is a approximately six-foot grass buffer behind the curb and a 14-foot wide two-way paved sidepath for bicyclists and pedestrians. Along its southern side, a six-foot-wide sidewalk is present adjacent to the back of the curb.



 = STUDY INTERSECTION



PROJECT NO. 24057.00

DATE: MAY 2024

FIGURE 1
LOCUS MAP

CODDINGTON HIGHWAY
MIDDLETOWN, RHODE ISLAND

SAFETY ANALYSES

On April 23, 2024, vehicular speeds were collected along Coddington Highway near the site driveway using an Automatic Traffic Recorder (ATR). Information collected is used to assess driving speeds along it. A summary of the speed data results is shown in Table 1 below. The complete data log can be found attached. The most notable metric presented is the 85th percentile speed, which was utilized for the sight distance analysis. The largest 85th percentile speed of 44 miles per hour was rounded up to a design speed of 45 miles per hour to provide a more conservative analysis.

Table 1: Coddington Highway Speed Study Summary

	Posted Speed	Average Speed	True Median (50 th Percentile)	85 th Percentile	10 MPH Pace	% over Posted
Coddington Highway						
Eastbound	25	33	34	39	31-40	87.8
Westbound	25	38	38	44	36-45	93.7

According to the latest editions of the American Association of State Highway and Transportation Officials (AASHTO) publication *A Policy on the Geometric Design of Highways and Streets*, the minimum safe stopping sight distance for 45 miles per hour is 360 feet. The required intersection sight distance to avoid a collision is equal to the stopping sight distance. In addition, AASHTO gives guidance for a more desirable intersection sight distance (ISD) for this speed, which will not only avoid collisions, but maintain vehicular flow of at least 70 percent of the original operating speed. Meeting the desirable criteria for sight distance is more applicable to heavily traveled, high-velocity roadways, where maintaining steady traffic flow along the major road is important. A summary of the sight distance for both driveways can be seen in Table 2.

Table 2: Site Driveway Intersection Sight Distance Summary

		Required ISD (ft)	Desirable ISD (ft)	Measured ISD (ft)
Coddington Highway Driveway	Looking East (left)	360	430	215
	Looking West (right)	360	500	>500

The sight distance looking left of the driveway is limited due to the presence of overgrown vegetation. To improve the sight lines to meet minimum requirements, it is recommended to prune or remove overgrown vegetation. Without this vegetation present, it is anticipated that sight distance of 500 feet or more would be available. Looking right from the driveway, the sight line extends for at least 500 feet.



Photo 1. Sight line looking east (left) from the driveway



Photo 2. Sight line looking west (right) from the driveway

Crash Data Analysis

In addition to the sight distance analysis, crash data was requested from the Middletown Police Department and Newport Police Department for the most recent three-year period for the area defined as the length of Coddington Highway between West Main Road and John Chafee Boulevard. A breakdown of the crashes based on type and severity is listed in Table 3 below.

Table 3: Crash Data Summary

Roadways/Intersection	Total Crashes	Crash Severity		Crash Type					
		Non-Fatal Injuries	Fatalities	Rear End	Sideswipe	Head On	Single Vehicle	Angle	Other/Unknown
Coddington Highway	23	7	0	7	3	2	6	5	0

A total of 23 crashes occurred within the most recent three years along Coddington Highway within the study area. Of the 23 crashes, 30% of these were rear-end crashes, 26% were single vehicle crashes, 22% were angle crashes, and the remaining crashes were a combination of sideswipe and head-on crashes. A total of seven of the 23 crashes resulted in non-fatal injury, while no fatalities were reported. Within the study area, there are several minor intersecting roadways to access residential areas. Most of the rear-end and angle crashes occurred near these intersections. Overall, an average of almost eight crashes occurred annually within the approximately 3,800-foot (approximately 0.7-mile) study area. Given the variety of crash types over the area, there does not appear to be any particular pattern to the crashes that would indicate a need for mitigation.

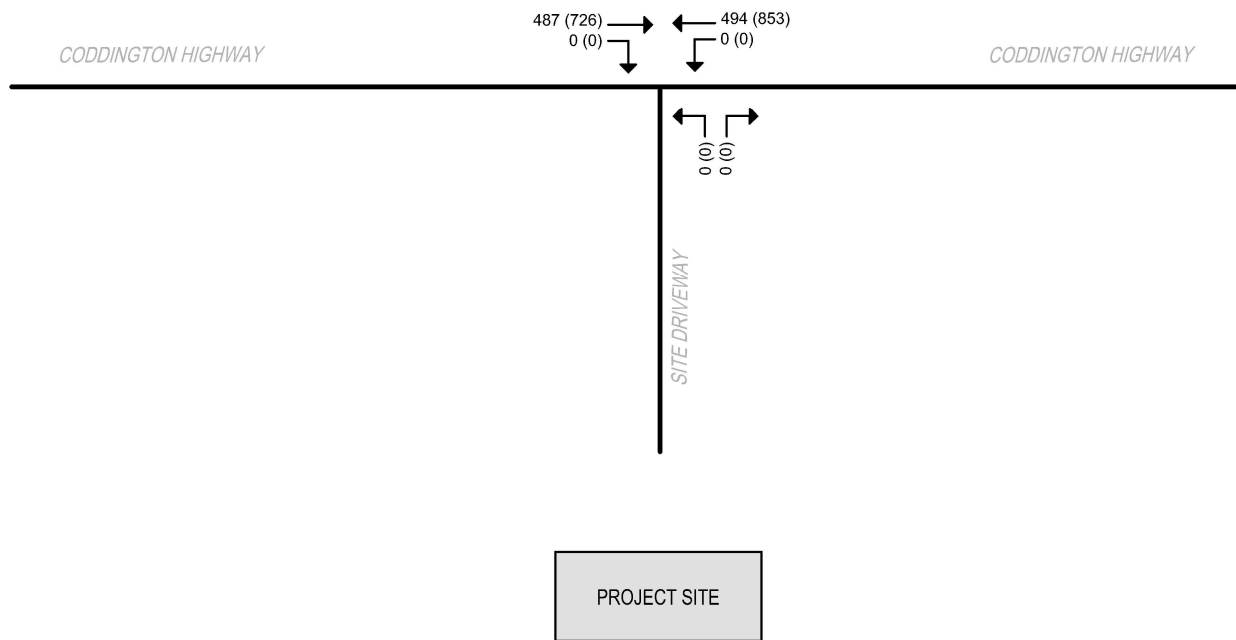
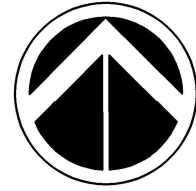
EXISTING TRAFFIC VOLUMES

On April 23, 2024, vehicle data was collected along Coddington Highway near the site driveway using an automatic traffic recorder (ATR). The ATR was utilized to collect data such as traffic volumes, speeds, and vehicle classification. Existing traffic volumes at the site driveway are shown in Figure 3.

NO-BUILD CONDITIONS

Future no-build traffic volumes are determined by projecting the existing traffic volumes based on a determined annual growth rate and including known potential developments within the study area. The Middletown Planning Department and Newport Planning Department were contacted to determine if there are currently any developments proposed within the vicinity of the site whose trip generation information should be included in this study; none were reported.

To account for background growth along the roadways within the vicinity of the project site, the existing traffic volumes were projected forward over a five-year horizon from 2024 to 2029. Recent census data was reviewed to determine the appropriate background growth rate. The census data showed a population increase of approximately 0.56% per year from 2010 to 2020 for the Town of Middletown. Therefore, a growth rate of 1.0 % per year was used for the five-year projection. Figure 4 shows the 2029 no-build volumes.



AM VOLUMES (PM VOLUMES)

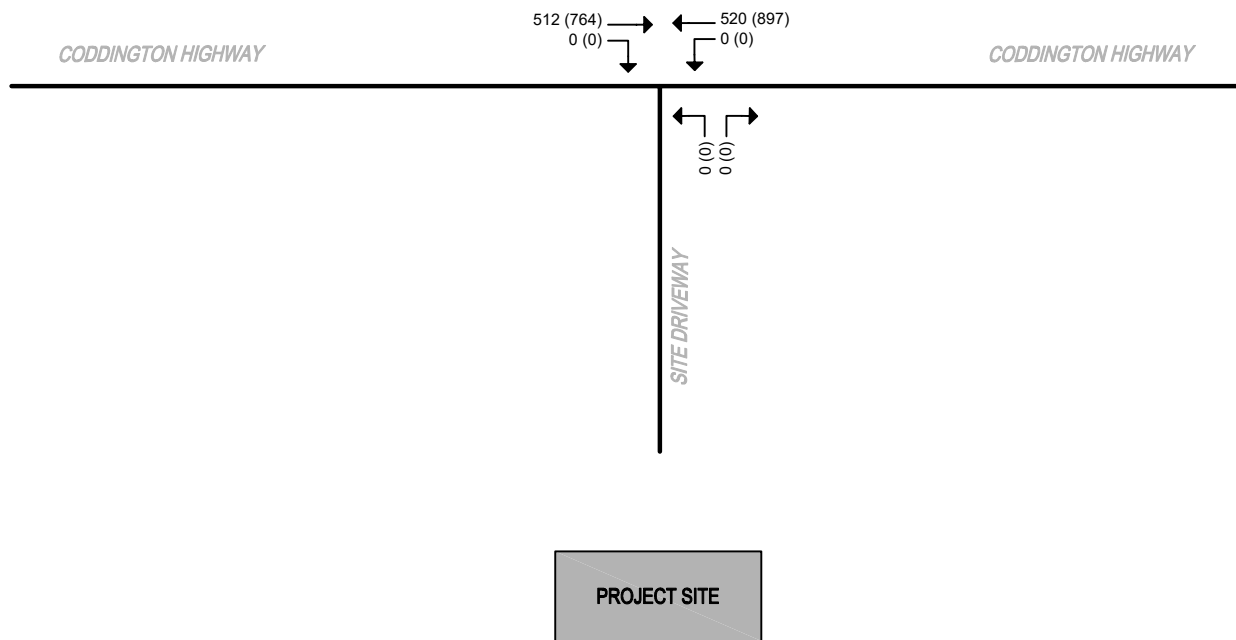
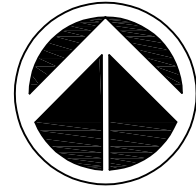


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FIGURE 3
EXISTING (2024) TRAFFIC VOLUMES
CODDINGTON COVE COMMONS

MIDDLETOWN, RHODE ISLAND



PROJECT SITE

AM VOLUMES (PM VOLUMES)

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DATE: APRIL 2024



FIGURE 4
NO BUILD (2029) TRAFFIC VOLUMES
CODDINGTON COVE COMMONS

MIDDLETOWN, RHODE ISLAND

BUILD CONDITIONS

The future 2029 build conditions represent the future 2029 no-build condition plus the anticipated trips due to the proposed development.

Trip Generation

Trip generation for the proposed development was completed using the industry standard *Trip Generation, 11th Edition*, published by the Institute of Transportation Engineers (ITE). The Trip Generation Manual provides traffic generation information for various land uses compiled from studies conducted by members nationwide. The proposed project consists of the construction of a 57,600 square foot area light industrial development. To determine the approximate trips generated with the proposed use contrary to its previous use, trips were calculated using Land Use Code (LUC) 110 – General Light Industrial.

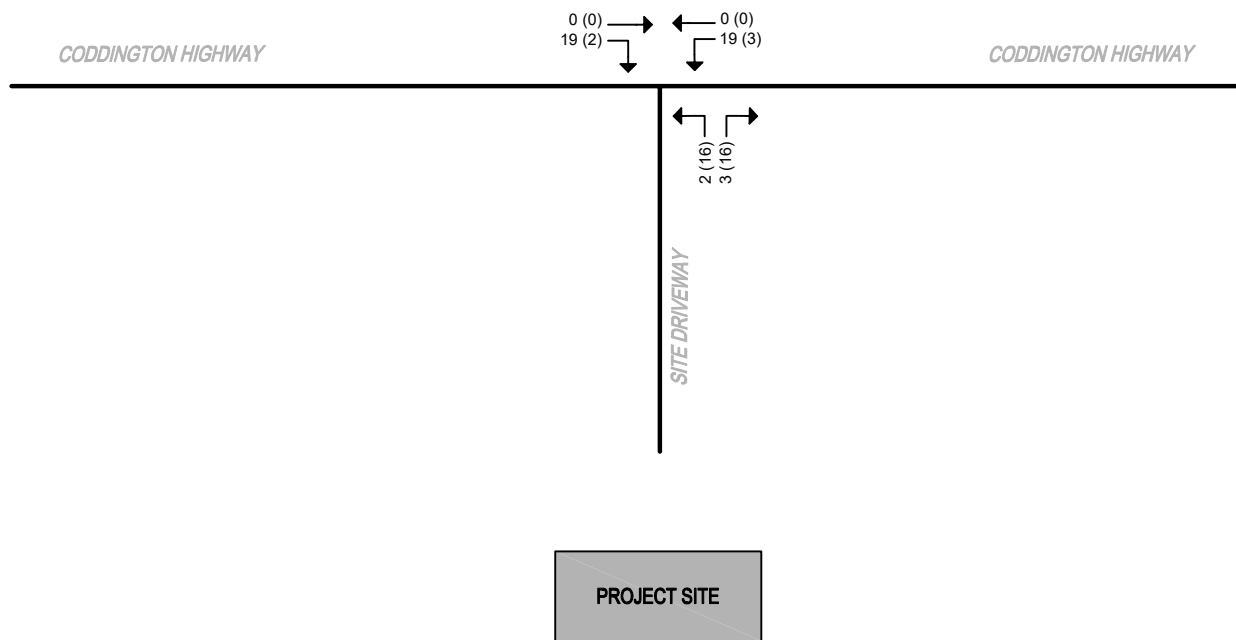
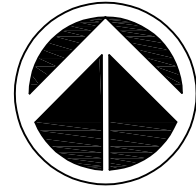
A summary of the anticipated site-generated trips from the site is provided in Table 4 below. Copies of the trip generation worksheets are enclosed. The proposed site is anticipated to generate less than 45 trips for the morning peak hour and the afternoon peak hour. Over a 24-hour period on an average weekday, the proposed site is anticipated to generate less than 300 trips.

Table 4: Trip Generation Summary

Land Use		Weekday, AM Peak Hour of Adjacent Street Traffic	Weekday, PM Peak Hour of Adjacent Street Traffic	Weekday, All Day
LUC 110: General Light Industrial – 57,600 SF	Enter	38	5	141
	Exit	5	32	141
	Total	43	37	282

Trip Distribution

It is anticipated that the trips will be nearly distributed evenly between those heading to and coming from the East and the West. For this analysis, 50 percent of the trips are entering from and exiting to the east, while the remaining 50 percent are entering from and exiting to the west. Site generated traffic volumes are shown in Figure 5, while Figure 6 displays the future (2029) build condition volumes.



AM VOLUMES (PM VOLUMES)

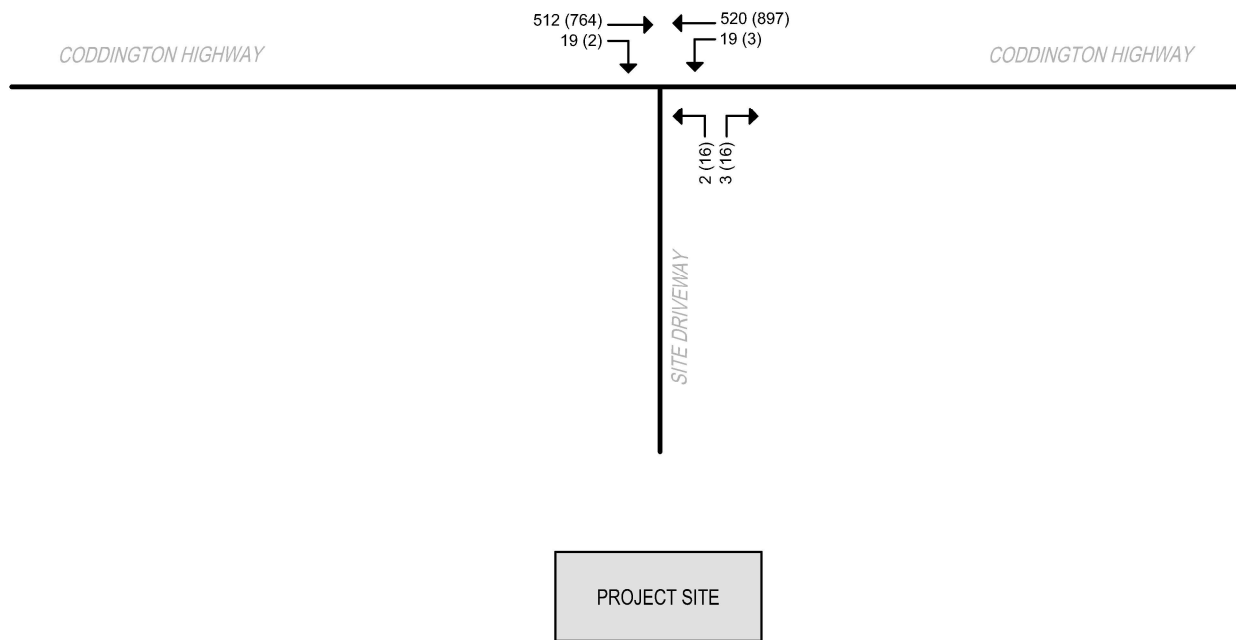
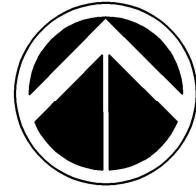
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FIGURE 5
SITE GENERATED TRAFFIC VOLUMES
CODDINGTON COVE COMMONS

MIDDLETOWN, RHODE ISLAND



AM VOLUMES (PM VOLUMES)

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FIGURE 6
BUILD (2029) TRAFFIC VOLUMES
CODDINGTON COVE COMMONS

MIDDLETOWN, RHODE ISLAND

CAPACITY ANALYSES

Capacity analyses were completed at the driveway access for only future build conditions, as the site is all but vacant today. Capacity analyses characterize intersections based on their level of service (LOS). LOS is a quality measure describing operational conditions within a traffic stream, generally in terms of service measures such as speed, travel times, traffic interruptions, etc. Six LOS values, from A to F, are defined for each type of facility, with A representing the best operating conditions and F representing the worst operating conditions. The LOS criteria for unsignalized intersections are provided in Table 5 below. Tables 6 and 7 summarize the capacity analysis results for the morning and afternoon peak hours, respectively.

Table 5: LOS Criteria for Unsignalized Intersections

LOS	Unsignalized Intersection
	Delay Time (sec/veh)
A	0-10
B	> 10-15
C	> 15-25
D	> 25-35
E	> 35-50
F	> 50

Table 6: Morning Peak Hour LOS Summary

Intersection	Movement		Future (2029) Build	
			LOS (Delay ¹)	Queue Length ²
Site Driveway	WB	L	C (16.2)	< 25
	NB	L	A (8.7)	< 25

1. Delay shown in seconds per vehicle.
2. Queue Length shown in feet, assuming 25 feet per vehicle at unsignalized intersections.

As the intersection created by the site driveway forms a three-legged intersection, the conflicting movements are vehicles entering the driveway from the west, and those exiting the driveway to the left. As shown on the tables below, there are currently no delays at the intersection as it is not active. The anticipated trips due to this development will result in an LOS C and LOS E or better for the morning peak hour and the afternoon peak hour, respectively. However, vehicle queues are anticipated to be less than 25 feet in length for these movements, indicating there is enough capacity to meet the demand. Further, the analysis does not take into consideration that the left turn from the site can be taken in two stages, as the two-way left turn lane allows vehicles to wait for gaps in eastbound and westbound traffic separately, which will reduce the delays experienced.

Table 7: Afternoon Peak Hour LOS Summary

Intersection	Movement		Future (2029) Build	
			LOS (Delay ¹)	Queue Length ²
Site Driveway	WB	L	E (38.7)	< 25
	NB	L	A (9.5)	< 25

1. Delay shown in seconds per vehicle.
 2. Queue Length shown in feet, assuming 25 feet per vehicle at unsignalized intersections.

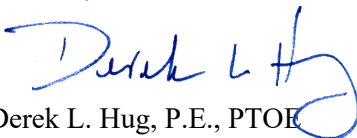
CONCLUSIONS

Based on the efforts described above, the following conclusions can be made regarding the proposed industrial use:

- The proposed development of light industrial use is anticipated to generate trips of 43 vehicles and 37 vehicles for the morning peak hour and afternoon peak hour, respectively.
- An average of approximately eight crashes occurred within the study area annually but the volumes anticipated to be contributed by the new development are not expected to significantly exacerbate these conditions.
- There is currently insufficient sight distance for vehicles looking west (left) from the driveway, however, with the removal of overgrown vegetation along the site frontage, sight distance can be increased to meet desirable guidelines.
- Results from the capacity conservatively anticipate an LOS C and LOS E for vehicles taking a left from the driveway to exit for the AM Peak Hour and the PM Peak Hour, respectively. However, vehicle queue lengths are anticipated to remain quite short within the site.

In summary, Pare is of the opinion that the proposed development will not have any significant impact on the capacity and safety of the surrounding roadway network. We are available to discuss our findings at your convenience. Please feel free to contact me if you have any questions or need additional information.

Sincerely,



Derek L. Hug, P.E., PTOE
 Managing Engineer



6/20/2024

Enclosures:

- Automatic Traffic Recorder Data
- Trip Generation Worksheets
- Capacity Analysis

DLH/BSO/kl

Transportation Data Corporation

Mario Perone, mperone1@verizon.net

tel (781)587-0086 cell (781)439-4999

Coddington Highway
west of Bayview Park
City, State: Middletown, RI
Client: Pare/Buen Orbiso

05838Avolume
Site Code: 24057.00

Start Time	23-Apr-24 Tue		EB		WB		Combined		24-Apr Wed	EB		WB		Combined	
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.		A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	10	109	1	83	11	192	*	*	*	*	*	*	*	*	
12:15	6	91	1	90	7	181	*	*	*	*	*	*	*	*	
12:30	4	121	0	97	4	218	*	*	*	*	*	*	*	*	
12:45	4	103	1	105	5	208	*	*	*	*	*	*	*	*	
01:00	3	115	0	130	3	245	*	*	*	*	*	*	*	*	
01:15	4	117	3	134	7	251	*	*	*	*	*	*	*	*	
01:30	2	110	2	170	4	280	*	*	*	*	*	*	*	*	
01:45	2	121	3	158	5	279	*	*	*	*	*	*	*	*	
02:00	7	121	0	175	7	296	*	*	*	*	*	*	*	*	
02:15	2	118	2	157	4	275	*	*	*	*	*	*	*	*	
02:30	3	117	2	210	5	327	*	*	*	*	*	*	*	*	
02:45	1	173	1	165	2	338	*	*	*	*	*	*	*	*	
03:00	6	172	1	224	7	396	*	*	*	*	*	*	*	*	
03:15	8	130	2	216	10	346	*	*	*	*	*	*	*	*	
03:30	4	171	0	207	4	378	*	*	*	*	*	*	*	*	
03:45	5	186	4	189	9	375	*	*	*	*	*	*	*	*	
04:00	4	190	4	241	8	431	*	*	*	*	*	*	*	*	
04:15	8	179	5	207	13	386	*	*	*	*	*	*	*	*	
04:30	8	142	3	177	11	319	*	*	*	*	*	*	*	*	
04:45	21	138	14	164	35	302	*	*	*	*	*	*	*	*	
05:00	18	182	12	208	30	390	*	*	*	*	*	*	*	*	
05:15	19	143	13	179	32	322	*	*	*	*	*	*	*	*	
05:30	48	114	29	133	77	247	*	*	*	*	*	*	*	*	
05:45	52	123	40	144	92	267	*	*	*	*	*	*	*	*	
06:00	62	110	50	128	112	238	*	*	*	*	*	*	*	*	
06:15	90	108	71	126	161	234	*	*	*	*	*	*	*	*	
06:30	78	97	80	104	158	201	*	*	*	*	*	*	*	*	
06:45	112	91	87	92	199	183	*	*	*	*	*	*	*	*	
07:00	105	96	89	66	194	162	*	*	*	*	*	*	*	*	
07:15	101	67	119	83	220	150	*	*	*	*	*	*	*	*	
07:30	138	70	97	67	235	137	*	*	*	*	*	*	*	*	
07:45	89	58	109	55	198	113	*	*	*	*	*	*	*	*	
08:00	139	57	123	47	262	104	*	*	*	*	*	*	*	*	
08:15	114	50	121	48	235	98	*	*	*	*	*	*	*	*	
08:30	96	52	132	42	228	94	*	*	*	*	*	*	*	*	
08:45	136	47	118	30	254	77	*	*	*	*	*	*	*	*	
09:00	141	44	105	32	246	76	*	*	*	*	*	*	*	*	
09:15	96	20	120	33	216	53	*	*	*	*	*	*	*	*	
09:30	107	42	103	15	210	57	*	*	*	*	*	*	*	*	
09:45	118	27	111	21	229	48	*	*	*	*	*	*	*	*	
10:00	97	35	104	17	201	52	*	*	*	*	*	*	*	*	
10:15	91	17	83	19	174	36	*	*	*	*	*	*	*	*	
10:30	95	20	81	13	176	33	*	*	*	*	*	*	*	*	
10:45	75	23	70	15	145	38	*	*	*	*	*	*	*	*	
11:00	101	17	82	5	183	22	*	*	*	*	*	*	*	*	
11:15	99	9	89	5	188	14	*	*	*	*	*	*	*	*	
11:30	113	14	98	6	211	20	*	*	*	*	*	*	*	*	
11:45	115	9	92	4	207	13	*	*	*	*	*	*	*	*	
Total	2757	4466	2477	5036	5234	9502	0	0	0	0	0	0	0	0	
Day Total	7223		7513		14736		0		0		0		0		
% Total	18.7%	30.3%	16.8%	34.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Peak	-	08:15	03:30	08:00	03:15	08:00	03:30	-	-	-	-	-	-	-	
Vol.	-	487	726	494	853	979	1570	-	-	-	-	-	-	-	
P.H.F.	0.863	0.955	0.936	0.885	0.934	0.911									
ADT	ADT 14,736	AADT 14,736													

Transportation Data Corporation

Mario Perone, mperone1@verizon.net

tel (781)587-0086 cell (781)439-4999

Coddington Highway
west of Bayview Park
City, State: Middletown, RI
Client: Pare/Buen Orbiso

05838Avolume
Site Code: 24057.00

Start Time	23-Apr-24 Tue	EB		Hour Totals		WB		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		10	109			1	83				
12:15		6	91			1	90				
12:30		4	121			0	97				
12:45		4	103	24	424	1	105	3	375	27	799
01:00		3	115			0	130				
01:15		4	117			3	134				
01:30		2	110			2	170				
01:45		2	121	11	463	3	158	8	592	19	1055
02:00		7	121			0	175				
02:15		2	118			2	157				
02:30		3	117			2	210				
02:45		1	173	13	529	1	165	5	707	18	1236
03:00		6	172			1	224				
03:15		8	130			2	216				
03:30		4	171			0	207				
03:45		5	186	23	659	4	189	7	836	30	1495
04:00		4	190			4	241				
04:15		8	179			5	207				
04:30		8	142			3	177				
04:45		21	138	41	649	14	164	26	789	67	1438
05:00		18	182			12	208				
05:15		19	143			13	179				
05:30		48	114			29	133				
05:45		52	123	137	562	40	144	94	664	231	1226
06:00		62	110			50	128				
06:15		90	108			71	126				
06:30		78	97			80	104				
06:45		112	91	342	406	87	92	288	450	630	856
07:00		105	96			89	66				
07:15		101	67			119	83				
07:30		138	70			97	67				
07:45		89	58	433	291	109	55	414	271	847	562
08:00		139	57			123	47				
08:15		114	50			121	48				
08:30		96	52			132	42				
08:45		136	47	485	206	118	30	494	167	979	373
09:00		141	44			105	32				
09:15		96	20			120	33				
09:30		107	42			103	15				
09:45		118	27	462	133	111	21	439	101	901	234
10:00		97	35			104	17				
10:15		91	17			83	19				
10:30		95	20			81	13				
10:45		75	23	358	95	70	15	338	64	696	159
11:00		101	17			82	5				
11:15		99	9			89	5				
11:30		113	14			98	6				
11:45		115	9	428	49	92	4	361	20	789	69
Total		2757	4466			2477	5036			5234	9502
Percent		38.2%	61.8%			33.0%	67.0%			35.5%	64.5%
Grand Total		2757	4466			2477	5036			5234	9502
Percent		38.2%	61.8%			33.0%	67.0%			35.5%	64.5%

ADT ADT 14,736 AADT 14,736

Transportation Data Corporation

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tel (781)587-0086 cell (781)439-4999

Coddington Highway
west of Bayview Park
City, State: Middletown, RI
Client: Pare/Buen Orbiso
Eastbound

05838Aclass
Site Code: 24057.00

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
04/23/24	3	17	4	0	0	0	0	0	0	0	0	0	0	24
01:00	0	9	1	0	0	0	0	0	1	0	0	0	0	11
02:00	1	11	1	0	0	0	0	0	0	0	0	0	0	13
03:00	2	14	4	0	1	2	0	0	0	0	0	0	0	23
04:00	3	33	4	0	0	0	0	0	1	0	0	0	0	41
05:00	3	101	26	1	5	1	0	0	0	0	0	0	0	137
06:00	5	266	61	1	5	1	0	1	2	0	0	0	0	342
07:00	4	351	53	2	17	3	0	2	1	0	0	0	0	433
08:00	10	368	68	3	28	0	0	2	6	0	0	0	0	485
09:00	6	342	76	6	25	3	0	0	3	0	1	0	0	462
10:00	8	282	43	2	17	2	1	1	2	0	0	0	0	358
11:00	7	350	49	1	17	4	0	0	0	0	0	0	0	428
12 PM	8	335	52	3	20	3	1	0	2	0	0	0	0	424
13:00	2	315	91	5	39	6	1	0	4	0	0	0	0	463
14:00	2	368	102	6	47	1	2	0	1	0	0	0	0	529
15:00	3	449	127	10	58	5	0	3	4	0	0	0	0	659
16:00	8	477	117	1	38	4	0	3	1	0	0	0	0	649
17:00	6	436	86	5	23	3	0	1	1	1	0	0	0	562
18:00	8	310	64	2	19	1	0	1	1	0	0	0	0	406
19:00	9	233	40	2	7	0	0	0	0	0	0	0	0	291
20:00	6	164	22	1	13	0	0	0	0	0	0	0	0	206
21:00	4	113	15	0	1	0	0	0	0	0	0	0	0	133
22:00	2	82	6	0	3	0	0	2	0	0	0	0	0	95
23:00	2	44	1	0	1	0	0	1	0	0	0	0	0	49
Day Total	112	5470	1113	51	384	39	5	17	30	1	1	0	0	7223
Percent	1.6%	75.7%	15.4%	0.7%	5.3%	0.5%	0.1%	0.2%	0.4%	0.0%	0.0%	0.0%	0.0%	
AM Peak	08:00	08:00	09:00	09:00	08:00	11:00	10:00	07:00	08:00		09:00			08:00
Vol.	10	368	76	6	28	4	1	2	6		1			485
PM Peak	19:00	16:00	15:00	15:00	15:00	13:00	14:00	15:00	13:00	17:00				15:00
Vol.	9	477	127	10	58	6	2	3	4	1				659
Grand Total	112	5470	1113	51	384	39	5	17	30	1	1	0	0	7223
Percent	1.6%	75.7%	15.4%	0.7%	5.3%	0.5%	0.1%	0.2%	0.4%	0.0%	0.0%	0.0%	0.0%	

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781)587-0086 cell (781)439-4999

Coddington Highway
west of Bayview Park
City, State: Middletown, RI
Client: Pare/Buen Orbiso
Westbound

05838Aclass
Site Code: 24057.00

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
04/23/24	0	2	0	0	1	0	0	0	0	0	0	0	0	3
01:00	0	3	5	0	0	0	0	0	0	0	0	0	0	8
02:00	0	0	4	0	0	1	0	0	0	0	0	0	0	5
03:00	0	1	4	0	2	0	0	0	0	0	0	0	0	7
04:00	0	6	8	0	10	1	0	1	0	0	0	0	0	26
05:00	1	34	36	1	20	1	0	0	1	0	0	0	0	94
06:00	5	173	55	5	42	3	0	3	2	0	0	0	0	288
07:00	5	270	82	4	46	0	1	3	3	0	0	0	0	414
08:00	6	338	97	8	41	1	2	1	0	0	0	0	0	494
09:00	7	282	86	8	51	2	1	0	2	0	0	0	0	439
10:00	7	221	70	5	27	5	0	0	3	0	0	0	0	338
11:00	6	227	83	4	34	1	0	3	3	0	0	0	0	361
12 PM	4	250	81	3	32	3	0	0	2	0	0	0	0	375
13:00	9	413	111	4	42	5	0	5	3	0	0	0	0	592
14:00	9	526	125	3	34	6	0	3	1	0	0	0	0	707
15:00	5	657	123	5	40	2	0	3	1	0	0	0	0	836
16:00	3	640	115	5	23	2	0	1	0	0	0	0	0	789
17:00	4	526	94	3	35	0	0	1	1	0	0	0	0	664
18:00	2	368	57	1	20	1	0	1	0	0	0	0	0	450
19:00	1	213	46	2	9	0	0	0	0	0	0	0	0	271
20:00	1	117	31	2	15	0	0	1	0	0	0	0	0	167
21:00	0	67	26	3	5	0	0	0	0	0	0	0	0	101
22:00	1	35	23	1	3	1	0	0	0	0	0	0	0	64
23:00	0	6	10	1	3	0	0	0	0	0	0	0	0	20
Day Total	76	5375	1372	68	535	35	4	26	22	0	0	0	0	7513
Percent	1.0%	71.5%	18.3%	0.9%	7.1%	0.5%	0.1%	0.3%	0.3%	0.0%	0.0%	0.0%	0.0%	
AM Peak	09:00	08:00	08:00	08:00	09:00	10:00	08:00	06:00	07:00					08:00
Vol.	7	338	97	8	51	5	2	3	3					494
PM Peak	13:00	15:00	14:00	15:00	13:00	14:00		13:00	13:00					15:00
Vol.	9	657	125	5	42	6		5	3					836
Grand Total	76	5375	1372	68	535	35	4	26	22	0	0	0	0	7513
Percent	1.0%	71.5%	18.3%	0.9%	7.1%	0.5%	0.1%	0.3%	0.3%	0.0%	0.0%	0.0%	0.0%	

Transportation Data Corporation

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Coddington Highway
 west of Bayview Park
 City, State: Middletown, RI
 Client: Pare/Buen Orbiso
 Eastbound

05838Aspeed
 Site Code: 24057.00

Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	Total
04/23/24	4	0	1	2	8	4	5	0	0	0	0	0	0	24
01:00	0	0	0	1	5	4	0	1	0	0	0	0	0	11
02:00	1	0	0	4	3	3	2	0	0	0	0	0	0	13
03:00	3	0	0	2	9	7	2	0	0	0	0	0	0	23
04:00	14	1	0	2	11	9	3	1	0	0	0	0	0	41
05:00	27	0	1	4	21	56	27	1	0	0	0	0	0	137
06:00	74	0	5	23	58	105	60	15	2	0	0	0	0	342
07:00	81	4	6	31	117	129	49	13	2	0	0	1	0	433
08:00	73	1	19	75	158	123	32	4	0	0	0	0	0	485
09:00	63	3	16	67	164	101	42	5	0	1	0	0	0	462
10:00	58	0	11	53	122	86	22	5	1	0	0	0	0	358
11:00	38	0	13	72	153	123	26	3	0	0	0	0	0	428
12 PM	35	1	15	60	158	120	31	3	0	1	0	0	0	424
13:00	11	0	3	29	136	192	77	12	2	1	0	0	0	463
14:00	18	0	4	41	164	198	85	18	1	0	0	0	0	529
15:00	24	1	17	64	169	244	111	24	5	0	0	0	0	659
16:00	26	1	0	50	190	270	96	13	2	0	0	1	0	649
17:00	33	1	10	38	172	220	74	13	0	0	1	0	0	562
18:00	43	0	0	28	92	145	78	15	3	1	0	0	1	406
19:00	36	2	1	31	79	100	36	6	0	0	0	0	0	291
20:00	28	0	5	45	70	46	12	0	0	0	0	0	0	206
21:00	20	0	0	22	51	26	11	3	0	0	0	0	0	133
22:00	17	1	0	14	28	24	9	1	0	1	0	0	0	95
23:00	9	1	0	12	10	11	6	0	0	0	0	0	0	49
Total	736	17	127	770	2148	2346	896	156	18	5	1	2	1	7223
Grand Total	736	17	127	770	2148	2346	896	156	18	5	1	2	1	7223

15th Percentile : 26 MPH
 50th Percentile : 34 MPH
 85th Percentile : 39 MPH
 95th Percentile : 44 MPH

Statistics
 Mean Speed(Average) : 33 MPH
 10 MPH Pace Speed : 31-40 MPH
 Number in Pace : 4494
 Percent in Pace : 62.2%
 Number of Vehicles > 25 MPH : 6343
 Percent of Vehicles > 25 MPH : 87.8%

Transportation Data Corporation

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Coddington Highway
west of Bayview Park
City, State: Middletown, RI
Client: Pare/Buen Orbiso
Westbound

05838Aspeed
Site Code: 24057.00

Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	Total
04/23/24	1	0	0	0	0	0	2	0	0	0	0	0	0	3
01:00	1	0	0	1	0	0	4	1	1	0	0	0	0	8
02:00	0	0	0	0	0	2	2	1	0	0	0	0	0	5
03:00	1	0	0	0	0	0	0	3	1	1	1	0	0	7
04:00	2	0	0	0	2	3	5	6	3	5	0	0	0	26
05:00	8	0	0	0	10	18	26	18	10	2	2	0	0	94
06:00	31	0	0	10	20	53	87	45	27	12	2	1	0	288
07:00	29	0	0	14	60	109	112	68	15	4	2	1	0	414
08:00	34	1	2	19	75	171	125	46	18	2	0	1	0	494
09:00	32	0	0	23	60	150	110	45	14	4	0	1	0	439
10:00	29	0	1	27	56	99	77	30	13	5	1	0	0	338
11:00	33	0	2	19	59	101	94	32	13	5	2	1	0	361
12 PM	24	4	4	20	53	118	104	29	11	6	2	0	0	375
13:00	27	0	2	40	116	239	133	27	7	1	0	0	0	592
14:00	22	3	2	47	127	308	170	23	3	2	0	0	0	707
15:00	47	4	19	32	127	339	225	37	6	0	0	0	0	836
16:00	45	0	0	16	102	350	221	49	4	2	0	0	0	789
17:00	36	0	1	28	95	237	212	42	10	2	0	1	0	664
18:00	15	0	0	1	43	148	143	74	21	4	1	0	0	450
19:00	6	0	0	5	34	69	90	45	15	6	1	0	0	271
20:00	3	0	0	11	19	40	50	35	7	2	0	0	0	167
21:00	1	0	0	5	7	27	27	20	7	7	0	0	0	101
22:00	0	0	0	6	3	9	17	16	9	3	1	0	0	64
23:00	1	1	1	0	1	2	7	1	3	2	0	1	0	20
Total	428	13	34	324	1069	2592	2043	693	218	77	15	7	0	7513
Grand Total	428	13	34	324	1069	2592	2043	693	218	77	15	7	0	7513

15th Percentile : 31 MPH
50th Percentile : 38 MPH
85th Percentile : 44 MPH
95th Percentile : 49 MPH

Statistics
Mean Speed(Average) : 38 MPH
10 MPH Pace Speed : 36-45 MPH
Number in Pace : 4635
Percent in Pace : 61.7%
Number of Vehicles > 25 MPH : 7038
Percent of Vehicles > 25 MPH : 93.7%

General Light Industrial (110)

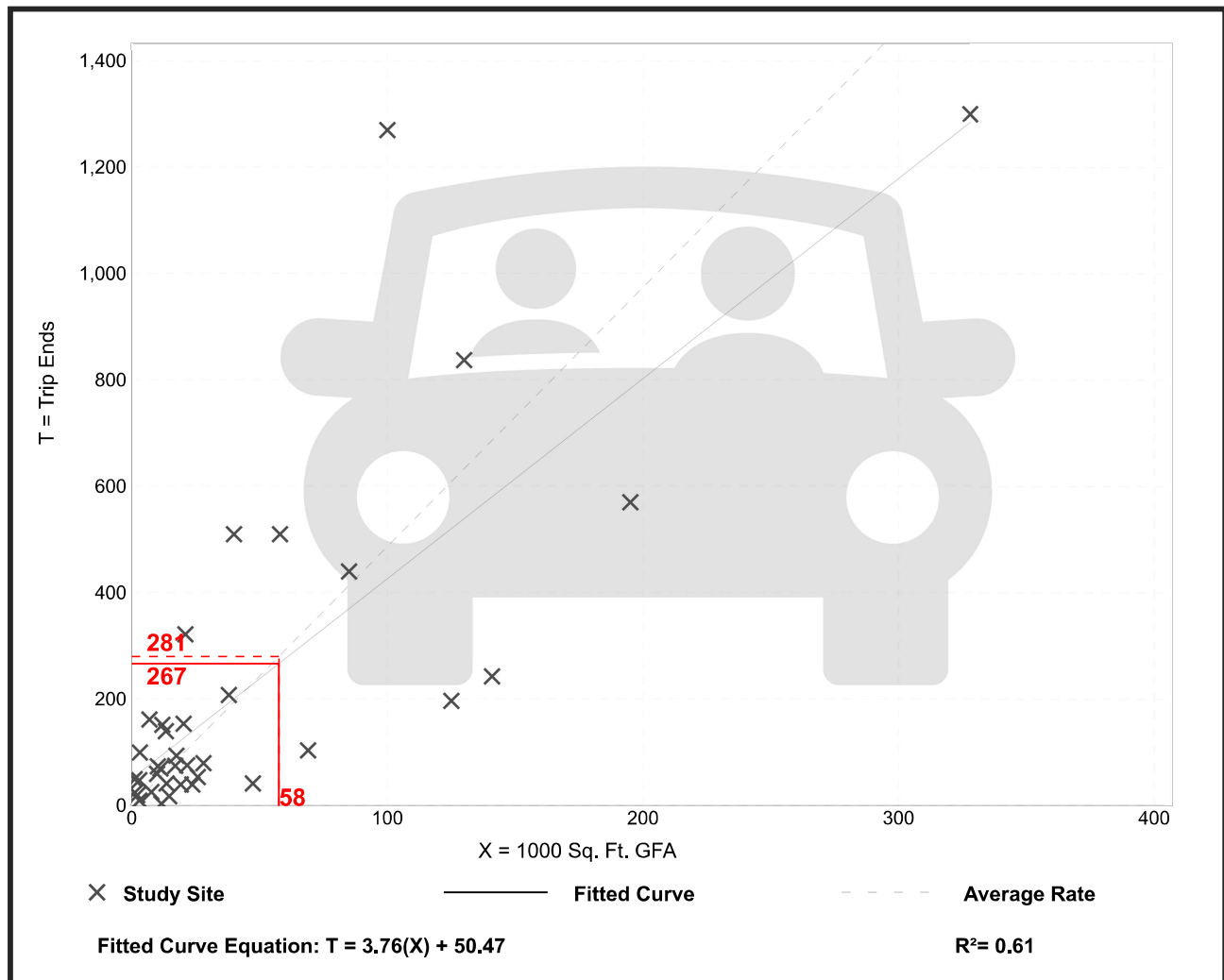
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 37
Avg. 1000 Sq. Ft. GFA: 45
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
4.87	0.34 - 43.86	4.08

Data Plot and Equation



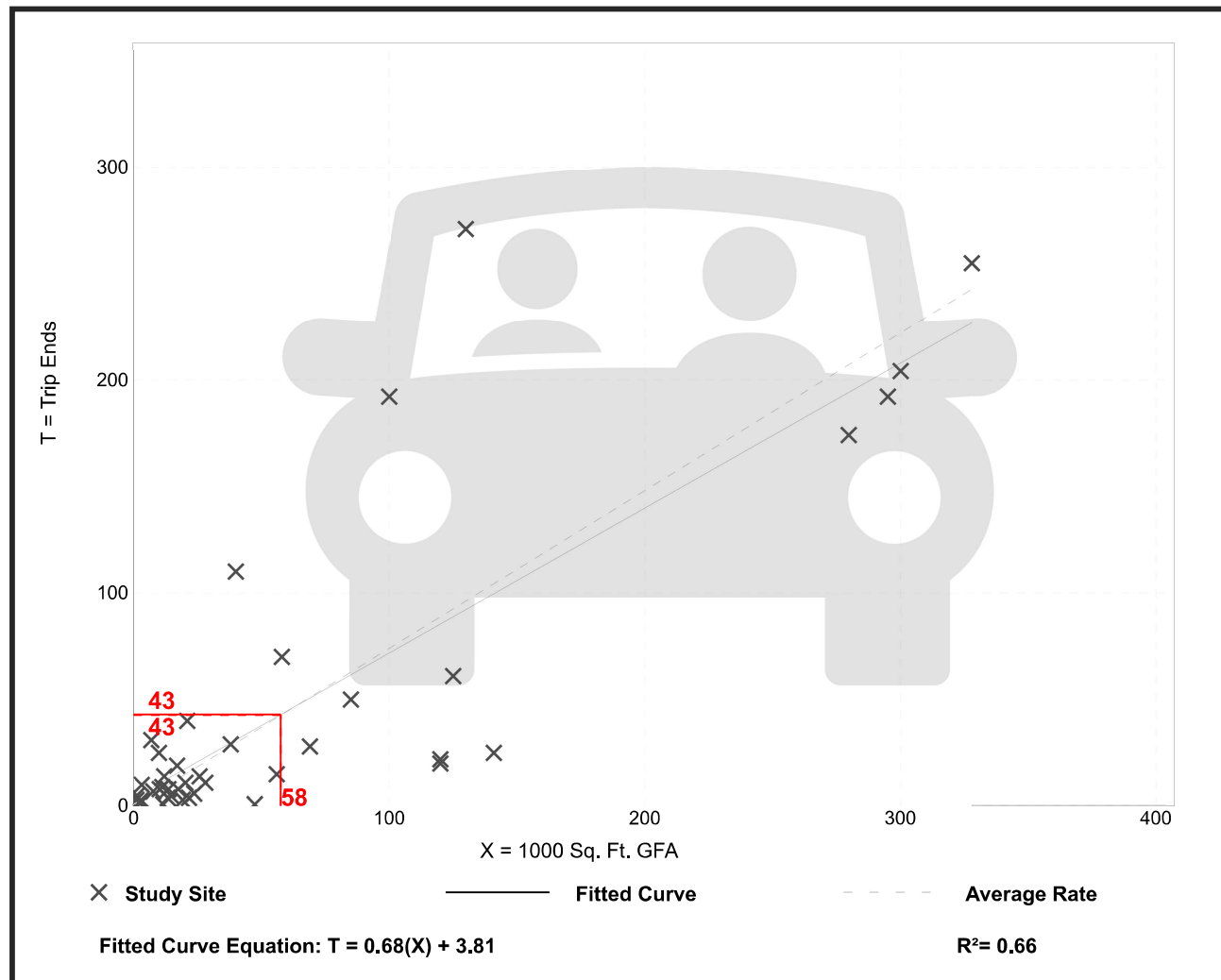
General Light Industrial (110)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
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: 41
 Avg. 1000 Sq. Ft. GFA: 65
 Directional Distribution: 88% entering, 12% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.74	0.02 - 4.46	0.61

Data Plot and Equation



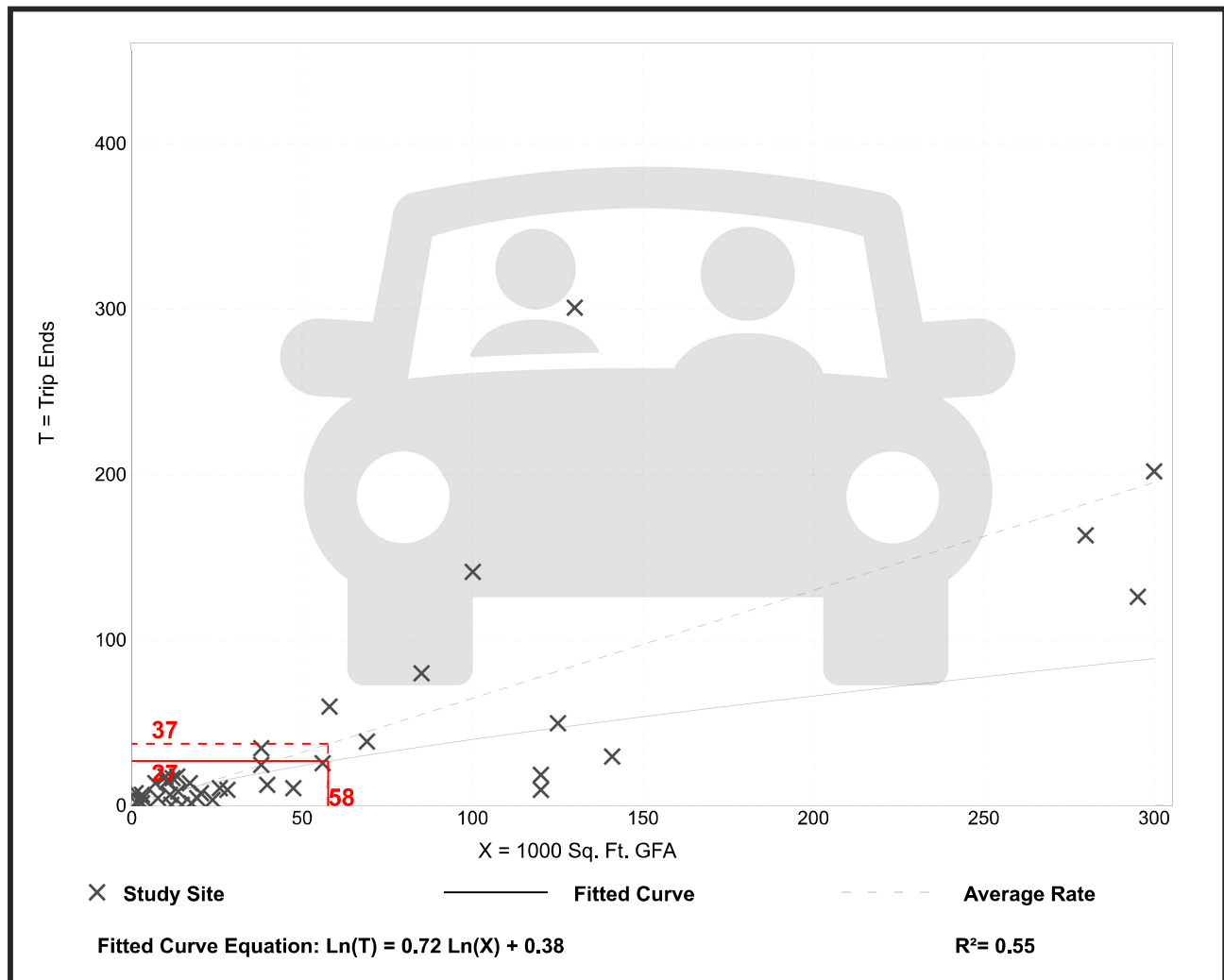
General Light Industrial (110)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
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: 40
 Avg. 1000 Sq. Ft. GFA: 58
 Directional Distribution: 14% entering, 86% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.65	0.07 - 7.02	0.56

Data Plot and Equation



Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↶		↷	↶	↷	↷
Traffic Vol, veh/h	512	19	19	520	2	3
Future Vol, veh/h	512	19	19	520	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	- None		- None		- None	
Storage Length	-	-	0	-	0	-
Veh in Median Storage0#	-	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	23	0	0	28	0	0
Mvmt Flow	557	21	21	565	2	3

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	578	0	1175
Stage 1	-	-	-	-	568
Stage 2	-	-	-	-	607
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1006	-	214
Stage 1	-	-	-	-	571
Stage 2	-	-	-	-	548
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1006	-	210
Mov Cap-2 Maneuver	-	-	-	-	210
Stage 1	-	-	-	-	571
Stage 2	-	-	-	-	536

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	16.2
HCM LOS			C

Minor Lane/Major Mvm	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	328	-	-	1006	-
HCM Lane V/C Ratio	0.017	-	-	0.021	-
HCM Control Delay (s)	16.2	-	-	8.7	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection

Int Delay, s/veh 0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↶		↷	↶	↷	↷
Traffic Vol, veh/h	764	2	3	897	16	16
Future Vol, veh/h	764	2	3	897	16	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	- None		- None		- None	
Storage Length	-	-	0	-	0	-
Veh in Median Storage0#	-	-	0	0	-	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	23	0	0	28	0	0
Mvmt Flow	830	2	3	975	17	17

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0 832	0 1812 831
Stage 1	-	-	- 831 -
Stage 2	-	-	- 981 -
Critical Hdwy	-	- 4.1	- 6.4 6.2
Critical Hdwy Stg 1	-	-	- 5.4 -
Critical Hdwy Stg 2	-	-	- 5.4 -
Follow-up Hdwy	-	- 2.2	- 3.5 3.3
Pot Cap-1 Maneuver	-	- 809	- 87 373
Stage 1	-	-	- 431 -
Stage 2	-	-	- 366 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	- 809	- 87 373
Mov Cap-2 Maneuver	-	-	- 87 -
Stage 1	-	-	- 431 -
Stage 2	-	-	- 365 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	38.7
HCM LOS			E

Minor Lane/Major MvmNBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	141	-	- 809	-
HCM Lane V/C Ratio	0.247	-	-0.004	-
HCM Control Delay (s)	38.7	-	- 9.5	-
HCM Lane LOS	E	-	- A	-
HCM 95th %tile Q(veh)	0.9	-	- 0	-