DOLAN&DEAN
CONSULTING ENGINEERS, LLC
181 WEST HIGH STREET
SOMERVILLE, NJ 08876

908 927 0100 p
908 927 0181 f

January 5, 2021

Marlboro Township Planning Board
1979 Township Drive
Marlboro, NJ 07746

Re: SPG Marlboro, LLC -"Stone Rise"
137 Texas Road
Block 111, Lots 4, 10, 11, 12, 13
Marlboro, Monmouth County

Dear Planning Board Members:

Dolan & Dean Consulting Engineers, LLC (D&D) has been retained by the above-noted applicant to prepare this traffic impact assessment for the proposed development of a mostly vacant site located at 137 Texas Road in Marlboro Township, Monmouth County, New Jersey. The applicant proposes to construct a new 280-unit residential apartment complex with 560 total parking spaces. Site access is proposed via two full-movement driveways located along Texas Road. This traffic report provides an assessment of the existing roadway conditions, a projection of future site-generated traffic, potential traffic impacts caused by the development, and an assessment of the proposed parking supply.

EXISTING CONDITIONS

As noted and shown on the photograph, the subject property is located at 137 Texas Road and is designated as Block 111, Lots 4, and 10-13 in the Township of Marlboro. The site is located along northbound Texas Road and is mostly vacant, except for the area currently occupied by Baron's/P&J Auto Wrecking, which will be removed. Greenwood Road intersects Texas Road at a signalized 4-leg intersection southwest of the subject site.

Texas Road is under municipal jurisdiction and has a general northeast/southwest orientation. The roadway provides one lane in each travel direction without curbs or shoulders and operates with a posted speed limit of 40 miles per hour within the general site vicinity. On-street parking is prohibited along Texas Road.

EXISTING TRAFFIC VOLUMES

To assess existing traffic conditions along Texas Road, this letter report references data collected by NJDOT in January of 2019. The data was collected using an automatic traffic recorder which continuously recorded hourly traffic volumes along the roadway from 9:00 a.m. on Tuesday, January 8, 2019 until 9:00 a.m. on Thursday, January 10, 2019.

Based on data from Wednesday, January 9, 2019, the morning peak hour occurred from 7:00 to 8:00 a.m. with 444 total, two-way vehicles of which 204 vehicles traveled northbound and 240 traveled southbound. The evening peak hour occurred from 5:00 p.m. to 6:00 p.m. with 533 total, two-way vehicles with 325 vehicles traveling northbound and 208 vehicles traveling southbound. The traffic count data sheets are appended to this report.

While the current auto wrecking use may generate traffic, for this study no counts were available, thus no credit was taken for the removal of this traffic as part of the site development for residential use.

TRAFFIC CHARACTERISTICS OF THE PROPOSED USE

Estimates of peak hour trip generation associated with the redevelopment were prepared using the 10th Edition of the Trip Generation Manual by the Institute of Transportation Engineers (ITE). For the apartments, ITE "Multifamily Housing (Low-Rise)" rates are applicable. The trip generation is summarized in Table I.

TABLE I
TRIP GENERATION PROJECTIONS
280 APARTMENTS

PEAK HOUR	ENTER	EXIT	TOTAL
Weekday Morning	30	99	129
Weekday Evening	99	58	157

As shown, peak hour activity associated with the proposed residential development can be considered modest. However, given the multiple locations of access, the additional traffic is not expected to result in any undesirable conditions, particularly given the relatively low ambient traffic volumes along Texas Road. Projected peak hour, site-generated traffic volumes are shown on appended Figure 2.

FUTURE TRAFFIC CONDITIONS

The COVID-19 pandemic has significantly affected travel patterns in 2020 as traffic volumes – particularly during peak commuting hours – have been sharply reduced due to the current work-from-home restrictions for many businesses and schools. Unknown at this time is whether some of

these changes, along with more e-commerce shopping, will continue to keep traffic volumes well below "pre-COVID" levels. Given that some business will continue to promote work-from-home environments, (with many companies choosing to either not renew office leases or reduce their footprint), it is likely to be several (or more) years before roadway volumes again reach those levels that existed pre pandemic. As such, the use of the 2019 NJDOT traffic volume data for this analysis can be considered conservative.

The future "build" traffic volumes were developed by adding the projected peak hour site trips for the proposed development to the data collected by NJDOT in 2019. These build volumes are shown on appended Figure 3.

Level of Service analyses were conducted for the future "build" weekday morning and evening peak hour traffic volumes at the location of the proposed site driveways using the Highway Capacity Computer Software. The results of the analyses are summarized on Figure 4.

By definition, capacity represents the maximum number of vehicles that can be accommodated given the constraints of roadway geometry, environment, traffic characteristics, and controls. Intersections are usually the critical point in any road network since it is at such points that conflicts exist between through, crossing, and turning traffic. It is at these locations where congestion is most likely to occur. A description of intersection Levels of Service is noted below:

Levels of Service and Expected Delay for Signalized Intersections

Level of Service	Delay per Vehicle (seconds)
A	< 10.0
B	>10.0 and <20.0
C	>20.0 and < 35.0
D	>35.0 and < 55.0
E	>55.0 and < 80.0
F	> 80.0

Levels of Service and Expected Delay for Unsignalized Intersections

Level of Service	Delay per Vehicle (seconds)
A	<0-10
B	>10 to <15
C	>15 to <25
D	> 25 to <35
E	> 35 to <50
F	>50

As shown on Figure 4, the site driveways are projected to operate at favorable Levels of Service "B" or better during both peak hours. Delays will be relatively short for the driveways and projected to be 15 seconds or less. As such, this study therefore demonstrates that the proposed development will not have a negative impact on the roadway network. The analyzed volumes are conservative as the forecasted ambient street volumes may never be achieved due to the lifestyle changes created by the

COVID-19 pandemic. It is expected that due to the continued reliance on online shopping delivery services and remote employee work, ambient street traffic and future growth may not reach those projected in this study.

With favorable Levels of Service expected and following a review of the proposed access design, site traffic will be able to safely and efficiently enter and exit during all hours.

PARKING

The required on-site parking is based on rates contained in the Residential Site Improvement Standards (RSIS). Based on RSIS, the 11 one-bedroom apartments require 19.8 parking spaces (1.8 parking spaces/unit), the 257 two-bedroom apartments require 514 parking spaces (2 parking spaces/unit) and the 12 three-bedroom units require 25.2 parking spaces (2.1 parking spaces/unit) for a total required parking supply of 559 spaces.

Parenthetically, the noted RSIS requirements also include guest/visitor parking at a ratio of 0.5 spaces per unit for 140 spaces. The plan proposes 560 spaces and therefore provides the required amount of parking.

Standard parking spaces are proposed at 9' wide by 18' deep with 24' two-way aisles meeting RSIS design standards and will provide efficient on-site traffic flow for passenger vehicles, service/delivery trucks and emergency vehicles.

We look forward to presenting these findings at the appropriate planning board meeting and addressing any concerns of the Board or interested members of the public.

Very truly yours,

DOLAN & DEAN
CONSULTING ENGINEERS, LLC

Gary W. Dean, P.E., P.P.

EIC\lrc

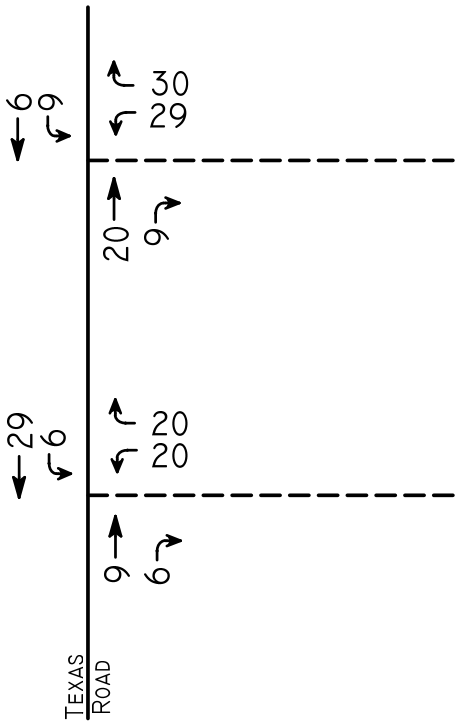
cc: Eric Ballou, P.E. Eric@insiteeng.net
Peter Mercatili pmercatili@aol.com
Donna Jennings djennings@wilentz.com

STONE RISE
TOWNSHIP OF MARLBORO
MONMOUTH COUNTY, NEW JERSEY

FIGURE 1

DOLAN&DEAN
CONSULTING ENGINEERS, LLC

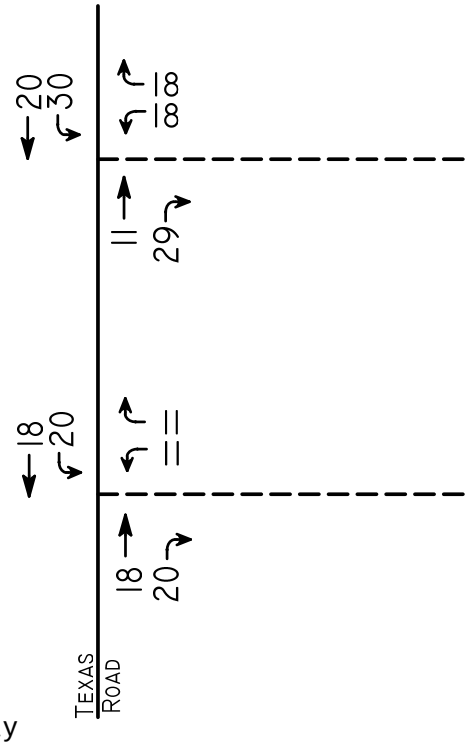
SITE LOCATION MAP



SITE

ENTER 30 EXIT 99

MORNING PEAK HOUR
7:00 A.M. TO 8:00 A.M.



SITE

ENTER 99 EXIT 58

EVENING PEAK HOUR
5:00 P.M. TO 6:00 P.M.

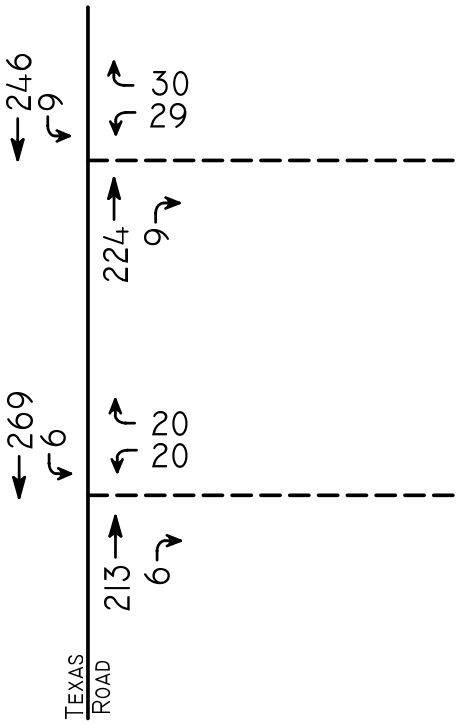
Legend
— = Existing Roadway
-- = Proposed Driveway

STONE RISE
TOWNSHIP OF MARLBORO
MONMOUTH COUNTY, NEW JERSEY

FIGURE 2

DOLAN&DEAN CONSULTING ENGINEERS, LLC

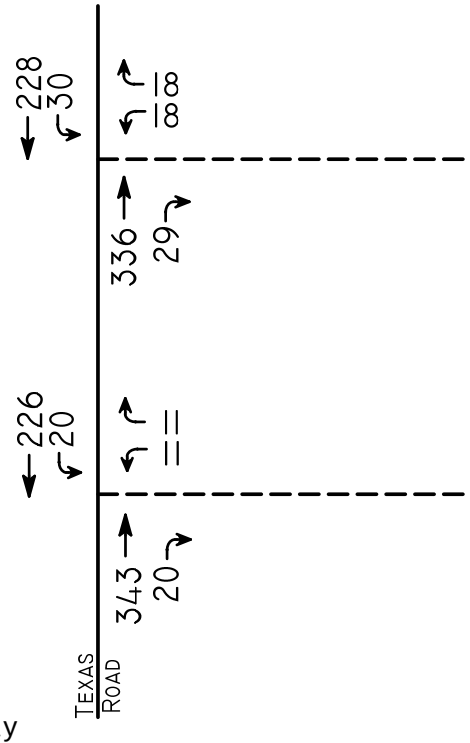
SITE GENERATED TRAFFIC VOLUMES



SITE

ENTER	EXIT
30	99

MORNING PEAK HOUR
7:00 A.M. TO 8:00 A.M.



SITE

ENTER	EXIT
99	58

Legend
— = Existing Roadway
-- = Proposed Driveway

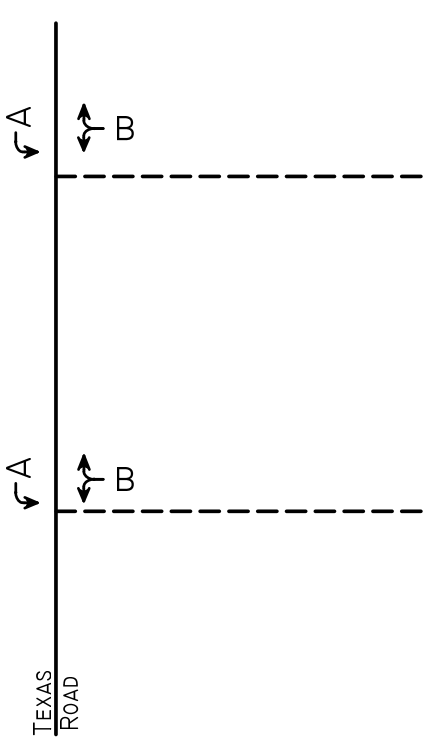
EVENING PEAK HOUR
5:00 P.M. TO 6:00 P.M.

STONE RISE
TOWNSHIP OF MARLBORO
MONMOUTH COUNTY, NEW JERSEY

FIGURE 3

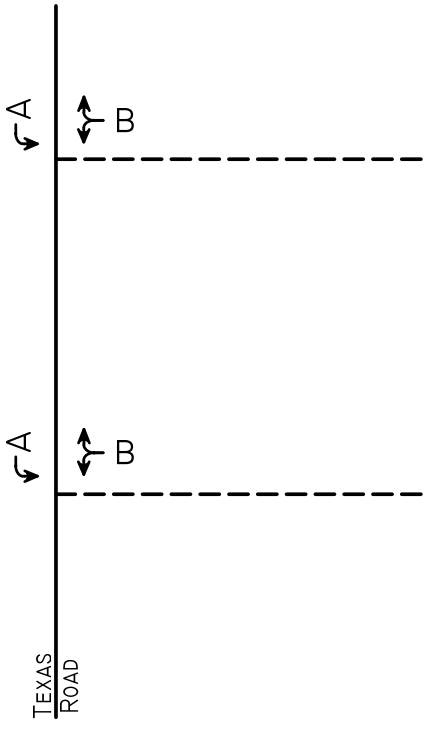
DOLAN&DEAN CONSULTING ENGINEERS, LLC

BUILD TRAFFIC VOLUMES



SITE

MORNING PEAK HOUR
7:00 A.M. TO 8:00 A.M.



SITE

Legend
— = Existing Roadway
-- = Proposed Driveway

EVENING PEAK HOUR
5:00 P.M. TO 6:00 P.M.

STONE RISE
TOWNSHIP OF MARLBORO
MONMOUTH COUNTY, NEW JERSEY

FIGURE 4

DOLAN&DEAN
CONSULTING ENGINEERS, LLC

BUILD LEVELS OF SERVICE

HCS7 Two-Way Stop-Control Report

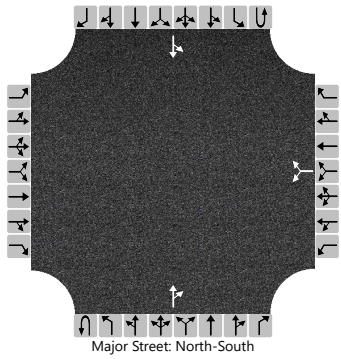
General Information

Analyst	EIC
Agency/Co.	DD
Date Performed	11/20/2020
Analysis Year	2020
Time Analyzed	Am Build
Intersection Orientation	North-South
Project Description	

Site Information

Intersection	Texas Road & N Site Dw
Jurisdiction	
East/West Street	North Site Driveway
North/South Street	Texas Road
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						29		30			224	9		9	246	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.43		6.23						4.13		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							64							10		
Capacity, c (veh/h)							614							1306		
v/c Ratio							0.10							0.01		
95% Queue Length, Q_{95} (veh)							0.3							0.0		
Control Delay (s/veh)							11.5							7.8		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)						11.5								0.3		
Approach LOS						B										

HCS7 Two-Way Stop-Control Report

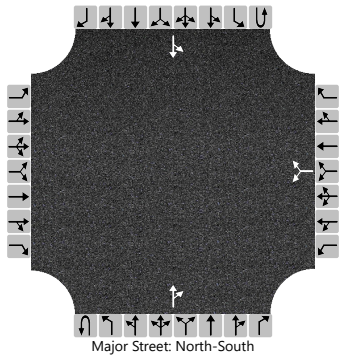
General Information

Analyst	EIC
Agency/Co.	DD
Date Performed	11/20/2020
Analysis Year	2020
Time Analyzed	Am Build
Intersection Orientation	North-South
Project Description	

Site Information

Intersection	Texas Road & S Site Dw
Jurisdiction	
East/West Street	South Site Driveway
North/South Street	Texas Road
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						20		20			213	6		6	269	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.43		6.23						4.13		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							43							7		
Capacity, c (veh/h)							614							1323		
v/c Ratio							0.07							0.00		
95% Queue Length, Q_{95} (veh)							0.2							0.0		
Control Delay (s/veh)							11.3							7.7		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)					11.3								0.2			
Approach LOS					B											

HCS7 Two-Way Stop-Control Report

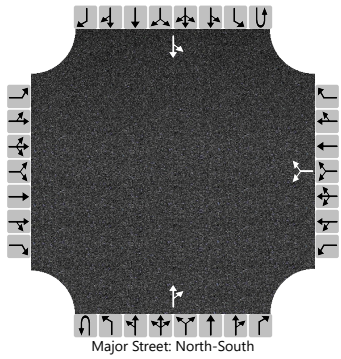
General Information

Analyst	EIC
Agency/Co.	DD
Date Performed	11/20/2020
Analysis Year	2020
Time Analyzed	Pm Build
Intersection Orientation	North-South
Project Description	

Site Information

Intersection	Texas Road & N Site Dw
Jurisdiction	
East/West Street	North Site Driveway
North/South Street	Texas Road
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						18		18			336	29		30	228	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.43		6.23						4.13		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							39							33		
Capacity, c (veh/h)							494							1156		
v/c Ratio							0.08							0.03		
95% Queue Length, Q_{95} (veh)							0.3							0.1		
Control Delay (s/veh)							12.9							8.2		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)						12.9								1.2		
Approach LOS						B										

HCS7 Two-Way Stop-Control Report

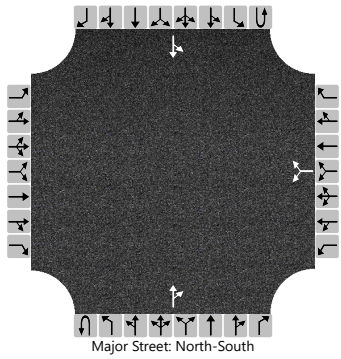
General Information

Analyst	EIC
Agency/Co.	DD
Date Performed	11/20/2020
Analysis Year	2020
Time Analyzed	Pm Build
Intersection Orientation	North-South
Project Description	

Site Information

Intersection	Texas Road & S Site Dw
Jurisdiction	
East/West Street	South Site Driveway
North/South Street	Texas Road
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						11		11			343	20		20	226	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.43		6.23						4.13		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							24							22		
Capacity, c (veh/h)							506							1159		
v/c Ratio							0.05							0.02		
95% Queue Length, Q_{95} (veh)							0.1							0.1		
Control Delay (s/veh)							12.5							8.2		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)						12.5								0.8		
Approach LOS						B										

New Jersey Department of Transportation

Short-term Hourly Traffic Volume for 01/08/2019 to 01/10/2019

Site names:	c18314,TEXAS ROAD 2.11,13281044__	Seasonal Factor Grp:	rg4_6U
County:	MONMOUTH	Daily Factor Grp:	rg4_6U
Funct Class:	Urban Minor Collector	Axle Factor Grp:	rg4_6U
Location:	BET TYLERS LN & WOOLEYTOWN RD	Growth Factor Grp:	rg4_6U

	Sun, Jan 6, 2019			Mon, Jan 7, 2019			Tue, Jan 8, 2019			Wed, Jan 9, 2019			Thu, Jan 10, 2019			Fri, Jan 11, 2019			Sat, Jan 12, 2019		
	Road	N	S	Road	N	S	Road	N	S	Road	N	S	Road	N	S	Road	N	S	Road	N	S
00:00										22	17	5	27	16	11						
01:00										8	5	3	11	7	4						
02:00										8	2	6	4	3	1						
03:00										15	7	8	14	7	7						
04:00										30	7	23	33	11	22						
05:00										82	18	64	78	22	56						
06:00										224	91	133	222	72	150						
07:00										444	204	240	450	211	239						
08:00										418	191	227	449	210	239						
09:00							283	144	139	310	143	167									
10:00							271	156	115	258	134	124									
11:00							269	137	132	282	146	136									
12:00							325	180	145	296	162	134									
13:00							311	176	135	291	160	131									
14:00							374	206	168	366	188	178									
15:00							409	222	187	447	243	204									
16:00							527	293	234	514	275	239									
17:00							509	312	197	533	325	208									
18:00							434	256	178	430	254	176									
19:00							343	204	139	331	185	146									
20:00							210	120	90	209	127	82									
21:00							142	86	56	125	70	55									
22:00							73	40	33	79	41	38									
23:00							36	16	20	50	34	16									
Total							4,516	2,548	1,968	5,772	3,029	2,743	1,288	559	729						
AM Peak Vol							283	156	139	446	207	240									
AM Peak Fct							.884	.796	.808	.864	.848	.882									
AM Peak Hr							9: 00	10: 00	9: 00	7: 15	7: 15	7: 00									
PM Peak Vol							530	313	234	533	325	248									
PM Peak Fct							.953	.91	.873	.9	.903	.912									
PM Peak Hr							16: 15	16: 30	16: 00	17: 00	17: 00	15: 45									
Seasonal Fct							1.286	1.286	1.286	1.286	1.286	1.286	1.286	1.286	1.286						
Daily Fct							.996	.996	.996	.936	.936	.936	.916	.916	.916						
Axle Fct							.494	.494	.494	.494	.494	.494	.494	.494	.494						
Pulse Fct							2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000						

Created 05/31/2019 4:23 PM ROAD AADT 7,039 NDIR AADT 3,301 PDIR AADT 3,739

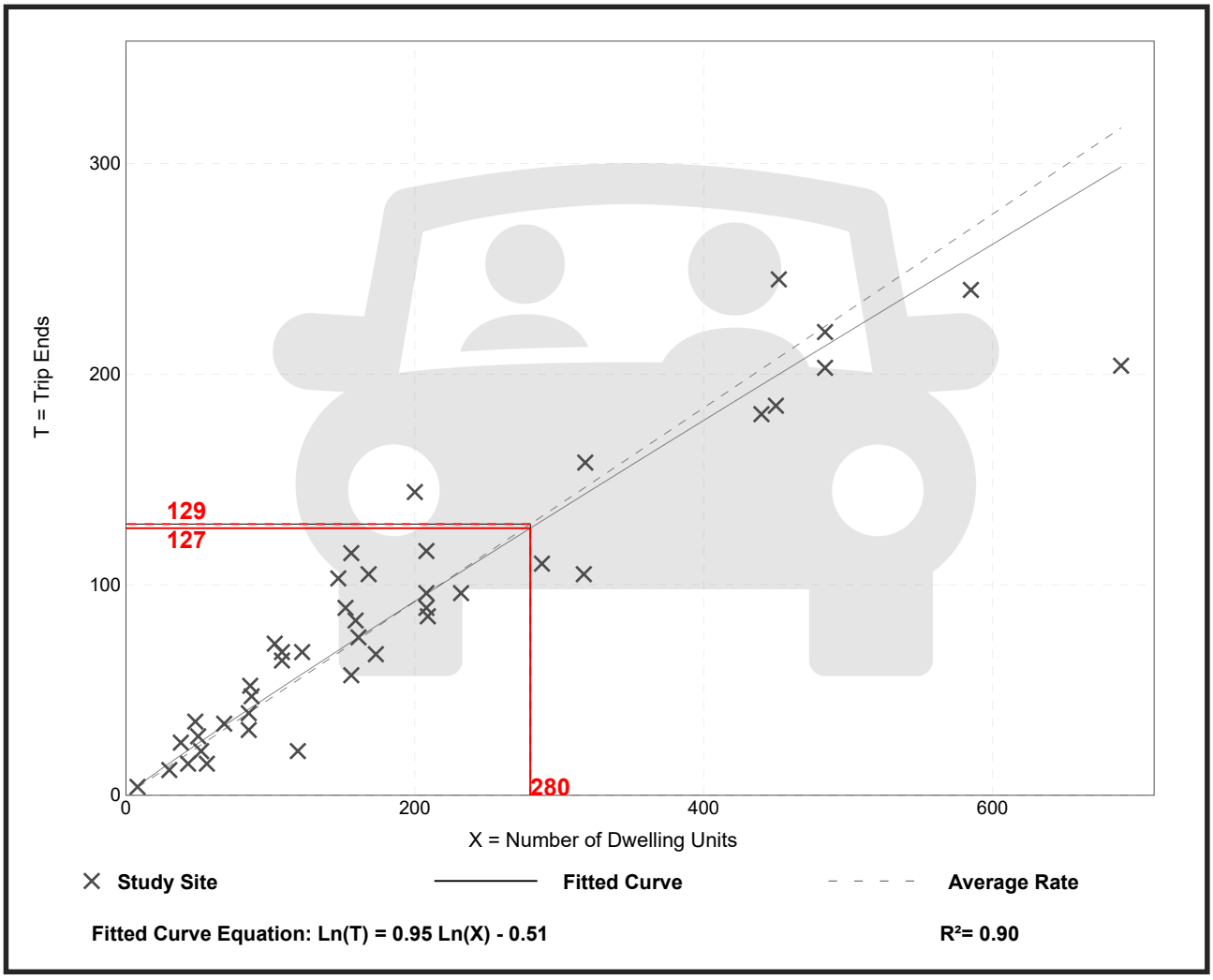
Multifamily Housing (Low-Rise)
(220)

Vehicle Trip Ends vs: **Dwelling Units**
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: 42
Avg. Num. of Dwelling Units: 199
Directional Distribution: 23% entering, 77% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.46	0.18 - 0.74	0.12

Data Plot and Equation



Multifamily Housing (Low-Rise)
(220)

Vehicle Trip Ends vs: **Dwelling Units**
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: 50
Avg. Num. of Dwelling Units: 187
Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.56	0.18 - 1.25	0.16

Data Plot and Equation