

VIA EMAIL

June 15, 2021

Martina Baillie, Esq.
Law Offices of Gerald Muller, P.C.
707 State Road, Suite 212
Princeton, NJ 08540

**RE: Traffic Impact Study & Parking Review
Dada Bhagwan Vignan Institute
SSE 20-02-1680**

Sam Schwartz Consulting, LLC (Sam Schwartz) has reviewed the above referenced application. Specifically, Sam Schwartz has reviewed the following materials with a focus on traffic and parking impacts:

1. Site plan prepared by The Reynolds Group, Inc. last revised 2/12/21
2. Architectural plans by Mistry Design, last revised 9/27/19
3. Traffic Impact Study (TIS) by Dolan & Dean dated 11/21/19
4. Dada Bhagwan Vignan Institute Schedule and attendee report (as of November 2020)

Based on the review of these materials and attendance at the virtual hearings, Sam Schwartz offers the following traffic, parking, and circulation related comments.

Existing Traffic Conditions - South Middlebush Road (Somerset County 615) is a narrow two-lane roadway providing one travel lane in each direction with no shoulders. The travel lanes are less than 12 feet in width. There are heavy traffic volumes on this roadway as it serves as a regional Urban Minor Arterial. The posted speed limit along South Middlebush Road is 45 miles per hour (mph), however, during field visits vehicles speeds were observed over 45 mph on a regular basis in non-peak hours.

Based on traffic volume data provided in the Dolan & Dean TIS, traffic volumes along South Middlebush Road range during the average weekday from 1,000 vehicles per hour (vph) at 6 am to 1,000 vph at 7 pm with temporal variations during the day. **ATTACHMENT A** depicts the traffic data in graphic form. During the Weekday AM Peak Period (from 7 am to 9 am) traffic is steady at 1,800 vph, indicating the roadway is operating at Analytical Capacity and Peak Hour Spreading (peak traffic volumes spill over or occur longer than just one hour). Similarly, during the Weekday PM Peak Period (from 3 pm to 7 pm) traffic is steady at 1,500 vph – 1,800 vph, indicating the roadway is operating at capacity and Peak Hour Spreading is occurring over a longer period. The Saturday traffic volumes are consistently 1,000 vph from 9 am to 7 pm.

Trip Generation for this proposed site, as reported in the Dolan & Dean report dated 11/21/19, was based on client provided information that 150 to 175 people may visit the site between 6:00pm and 10:00pm after the evening rush hour on Fridays.

Re: Traffic Impact Study & Parking Review
Dada Bhagwan Vignan Institute

In addition, the report identifies the twice a year on Saturday and Sunday there will be 225 to 250 people visiting the site. The projected number of new vehicles, estimated in the report, is **“50 vehicles could possibly enter the site during one hour or leave in one hour”**.

This assumes 3 people per vehicle on average which seems to be a high on-average calculation.

Based on the Institute of Transportation Engineers (ITE) Trip Generation Manual, 12th Edition (21,833 gfa). **ATTACHMENT B** contains detailed ITE Trip Generation calculations.

Land Use 562 Mosque

Friday AM Peak	208 (of the Generator) 3.5x higher
Friday PM Peak Hour	401 (of the Generator) 6.5x higher

Land Use 560 Church

Sunday Peak Hour	242 (of the Generator) 4.0x higher
------------------	---

Land Use 561 Synagogue

Sunday Peak Hour	171 (of the Generator) 3.0x higher
------------------	---

Based on ITE, there would be 3 to 6.5 times the estimated new vehicles stated in the traffic report.

The Board could request the applicant prepare revised intersection analyses based on 100 vehicles entering/exiting the site and another using 150 vehicles to fully understand the traffic impacts along South Middlebush Road (SMR).

Access to/from the Site from SMR – Based on applicants TIS, the proposed driveway, specifically the southbound left turn into the site, would operate at an acceptable Level of Service (LOS), however, this does not take into account congestion along SMR, lack of gaps in traffic to complete the left turn, and is based on only 25 vehicles making the left turn. From a qualitative review, if these factors were incorporated into the analysis, along with perhaps 100 vehicles making the left turn into the site, the intersection would have a FAILING LOS (**ATTACHMENT C** provides detailed HCS analyses).

In similar fashion, vehicles exiting the site would also have a difficult time finding gaps in traffic from the proposed one-lane exit.

The SAI DATTA Traffic Impact Study (also prepared by Dolan & Dean) should have been taken into account for this application since the proposed site is only 1,350 feet (approximately) to the north along SMR. The unsignalized proposed driveway intersection is predicted to operate at Level Of Service E, however, the Traffic Impact Study does not indicate how long the queue of vehicles would be extending into the site. Lighting at the proposed site driveway must also be addressed for safety considerations.

On-Site circulation / Safety – could be an issue if many vehicles are exiting the proposed one-lane driveway.

Re: Traffic Impact Study & Parking Review
Dada Bhagwan Vignan Institute

Potential traffic impacts - should be considered along SMR, including additional traffic congestion along SMR, safety issues at the driveway intersection, southbound left turn into the site causing additional queuing and congestion along SMR, and the potential compounding traffic congestion with other proposed projects along SMR (including the Sai Datta project) and the cumulative traffic conflicts and congestion.

The Board should require input from the County before any approval to better understand if the County will require widening of SMR to provide for an exclusive southbound left turn into the site, if SMR would be widened from this project to the proposed Sai Data project, or if the County WILL NOT permit any widening --- in which case the proposed site driveway could be a traffic and safety issue.

Parking Requirements - for the project should consider a calculation based on the square footage of the worship area which would require 457 parking spaces and only 157 are provided. Based on the *ITE Parking Generation Manual (5th Edition)*, the site would require from 363 to 420 parking spaces for a typical Mosque (Land Use Code 562) based on square footage (**ATTACHMENT D** contains detailed calculations). This is more in line with the 457 spaces required by code, and certainly much more than the 157 spaces proposed. This would be a 206 to 300 parking space variance request.

Regards,



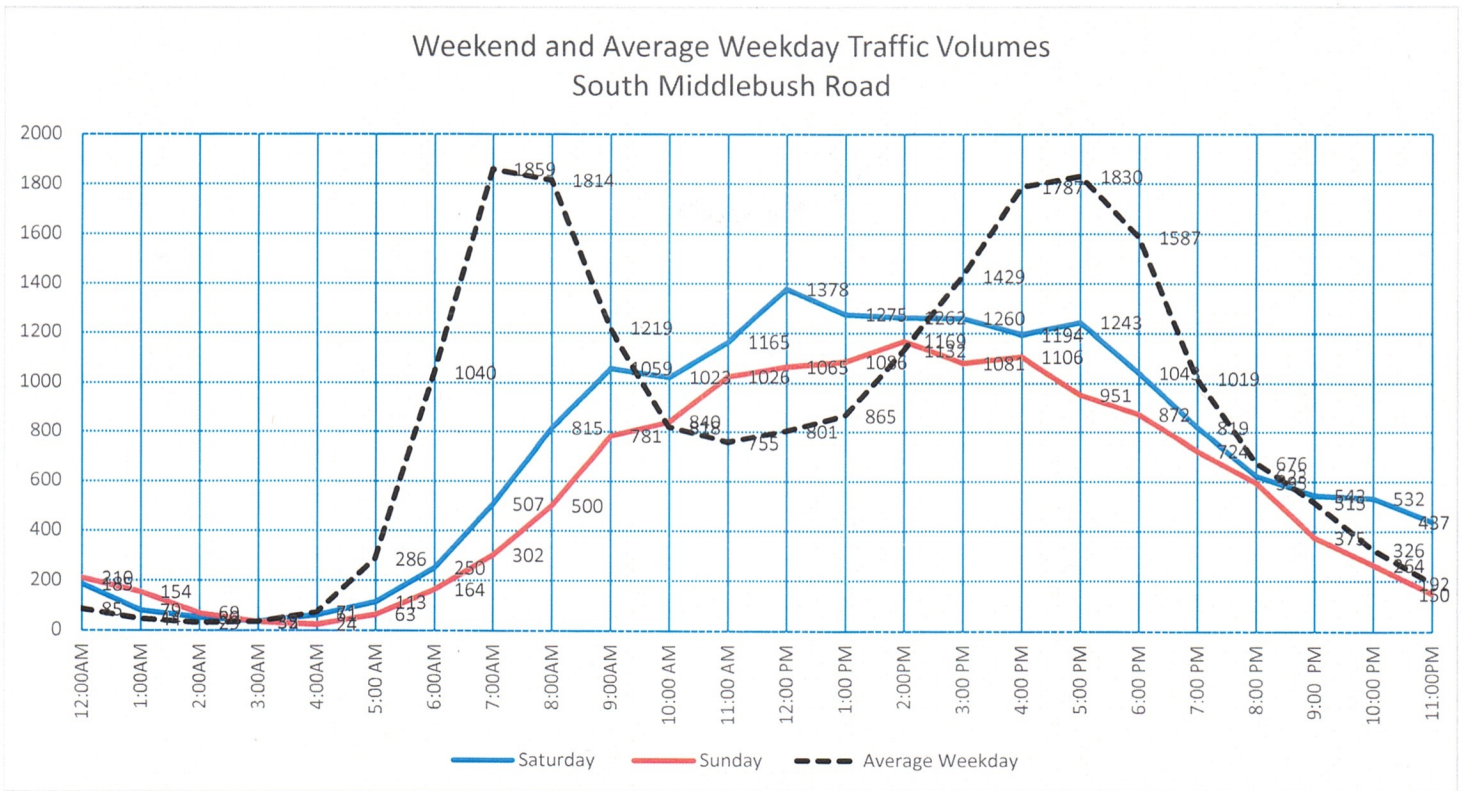
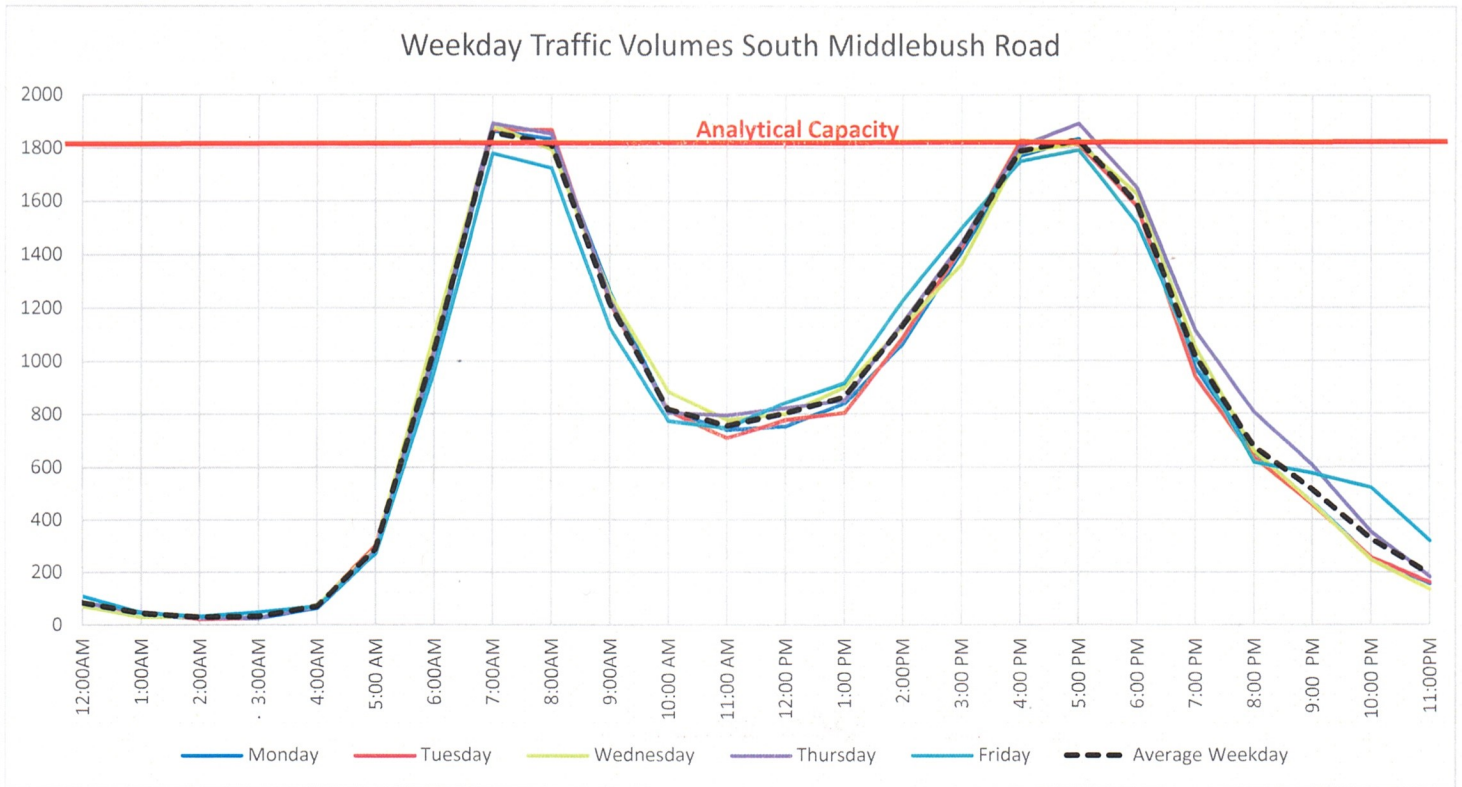
Lou Luglio, PE
Vice President

Copy:

Attached: **ATTACHMENT A** – Graphic Representation of Traffic Data(1 page)
ATTACHMENT B – ITE Trip Generation Calculation Sheets (4 pages)
ATTACHMENT C – HCS Unsignalized Proposed Driveway Analyses (2 pages)
ATTACHMENT D – ITE Parking Generation Calculation Sheets (1 page)

ATTACHMENT A

GRAPHIC REPRESENTATION OF TRAFFIC VOLUME DATA



Source: Dolan & Dean Traffic Impact Study Technical Appendix (April 2019 Traffic Counts 4/4/19 to 4/10/19)

ATTACHMENT B

Mosque (562)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Friday,
AM Peak Hour of Generator

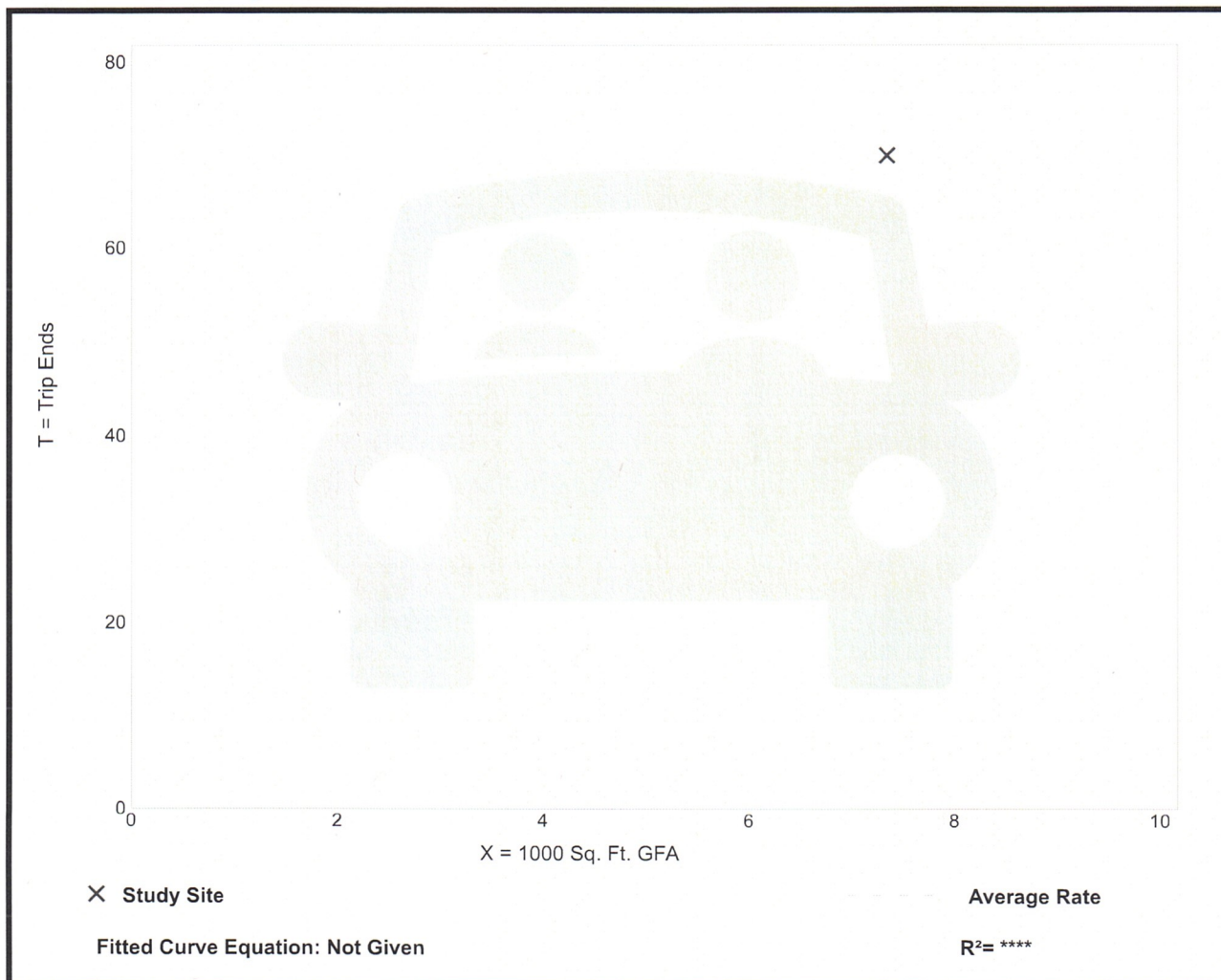
Setting/Location: General Urban/Suburban
 Number of Studies: 1
 Avg. 1000 Sq. Ft. GFA: 7
 Directional Distribution: 67% entering, 33% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
9.54	9.54 - 9.54	*

Data Plot and Equation

Caution – Small Sample Size



Mosque (562)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Friday,
PM Peak Hour of Generator

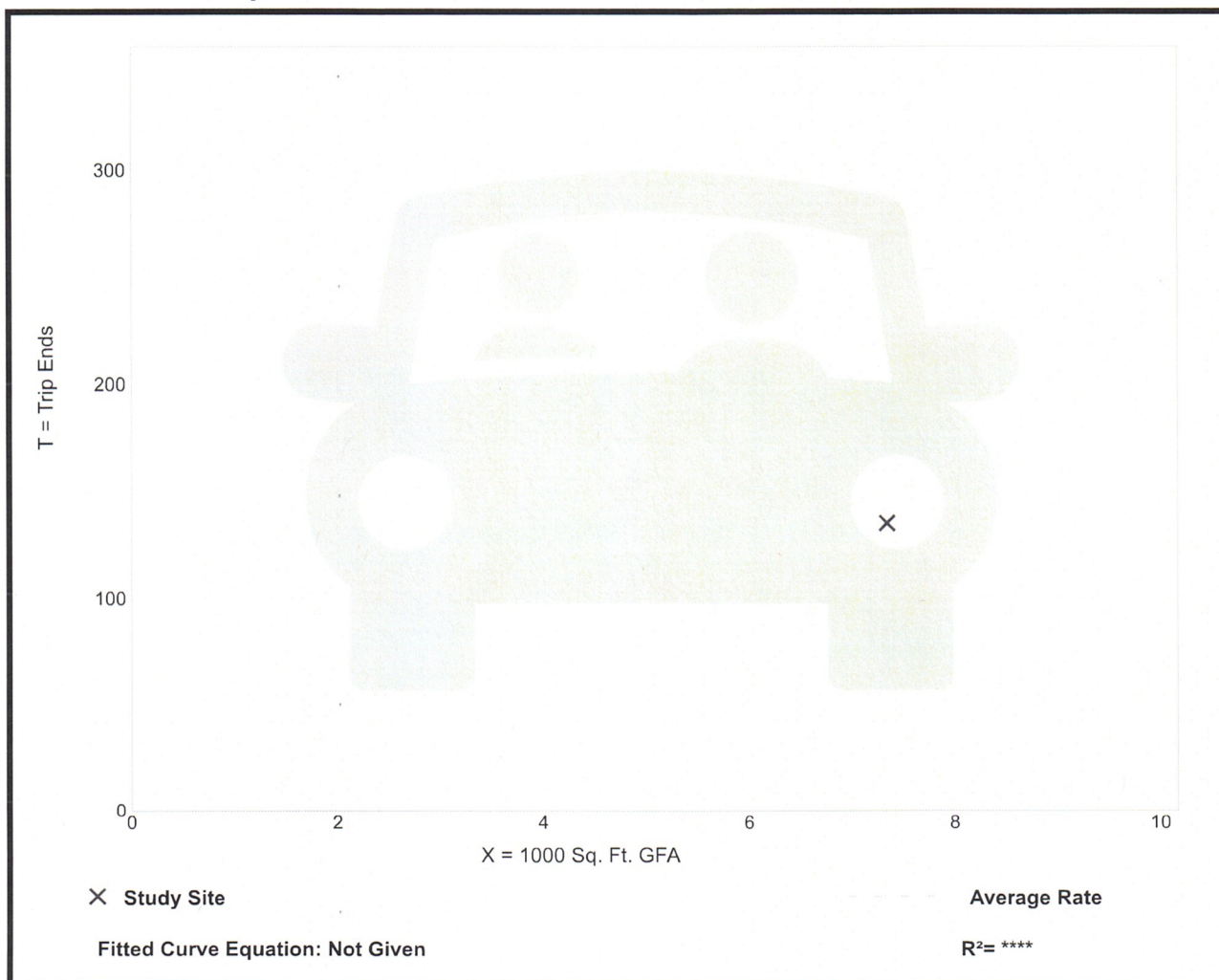
Setting/Location: General Urban/Suburban
 Number of Studies: 1
 Avg. 1000 Sq. Ft. GFA: 7
 Directional Distribution: Not Available

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
18.39	18.39 - 18.39	*

Data Plot and Equation

Caution – Small Sample Size



Church (560)

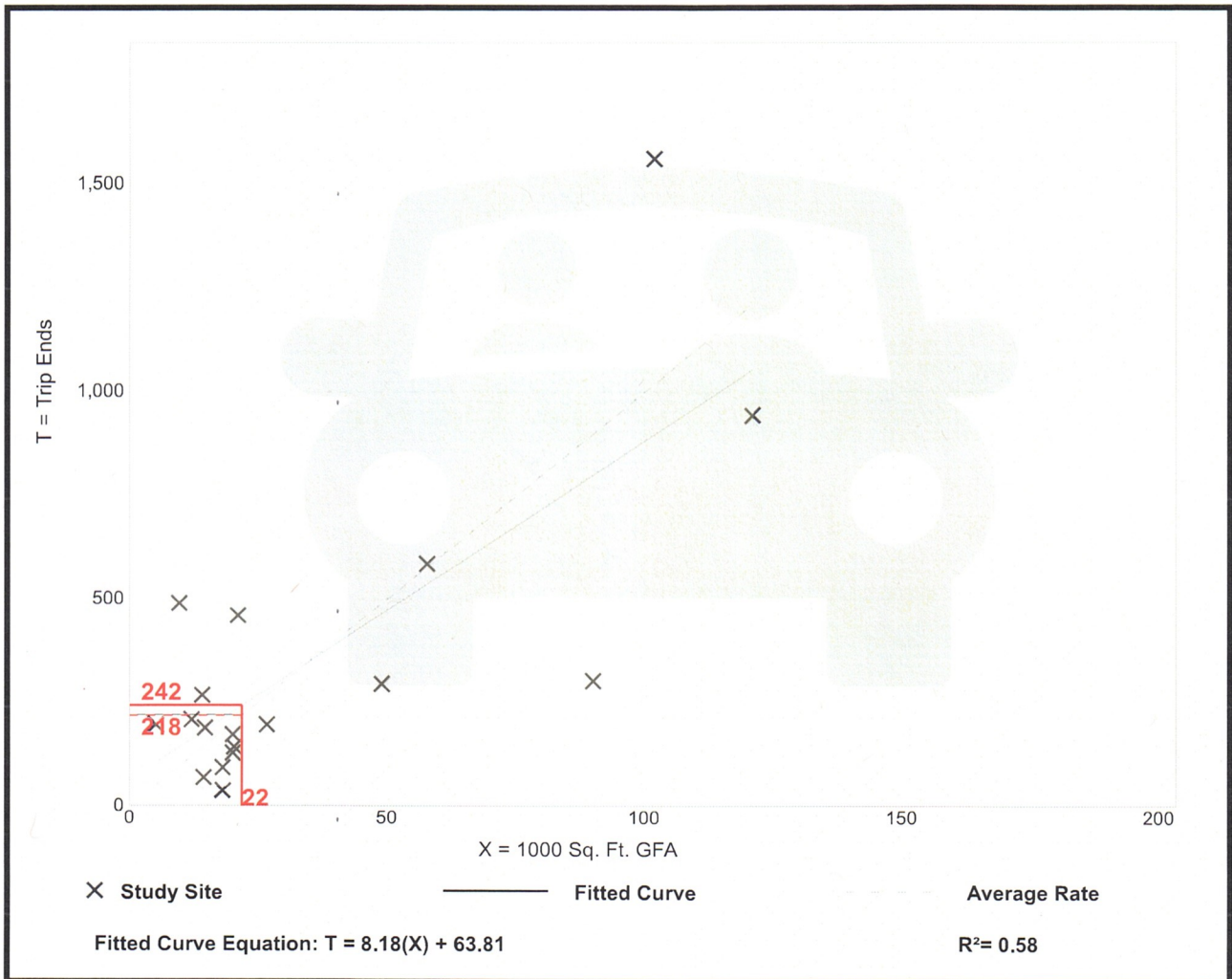
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Sunday, Peak Hour of Generator

Setting/Location: General Urban/Suburban
 Number of Studies: 18
 Avg. 1000 Sq. Ft. GFA: 35
 Directional Distribution: 48% entering, 52% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
9.99	2.05 - 51.31	7.77

Data Plot and Equation



Synagogue (561)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Sunday, Peak Hour of Generator

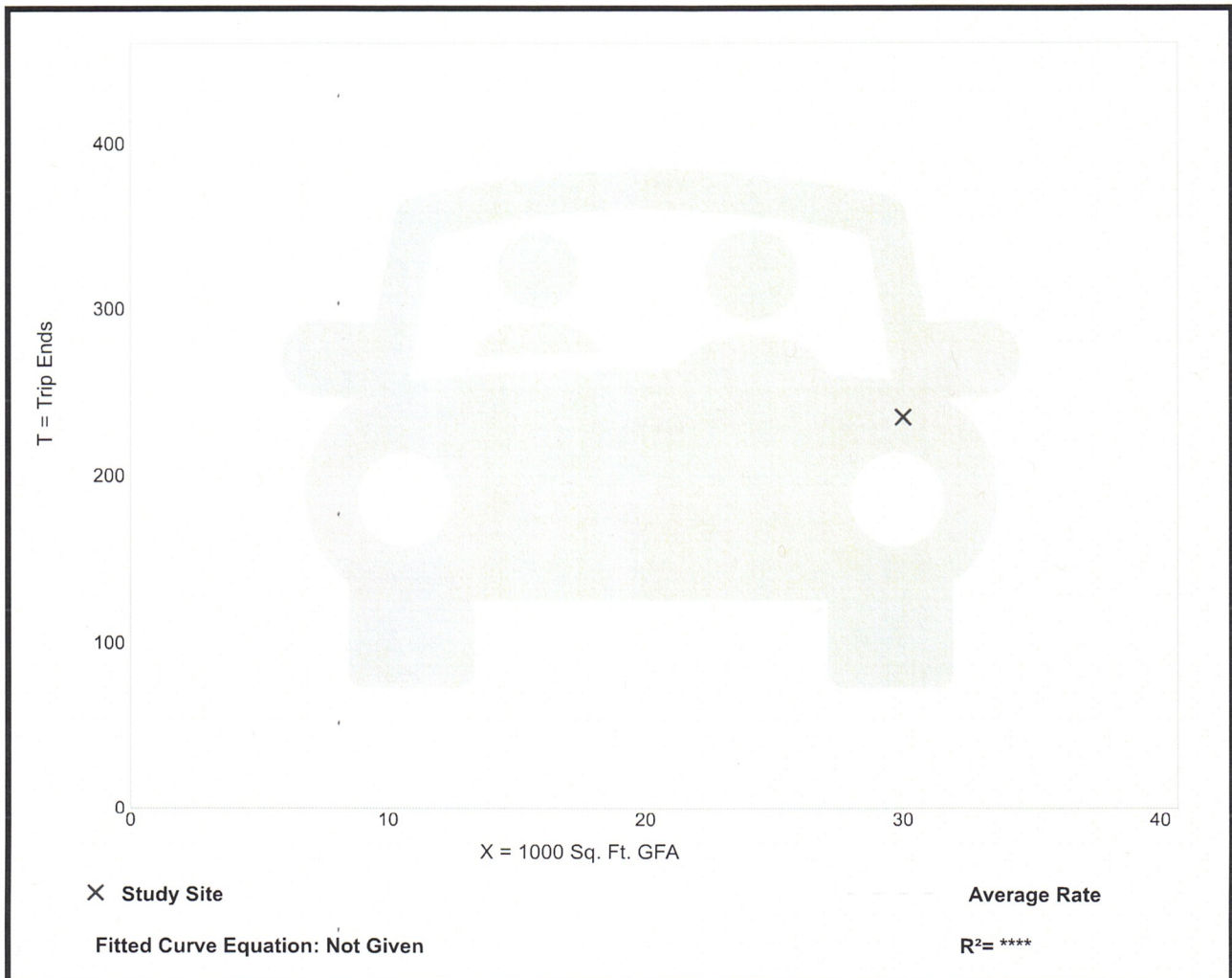
Setting/Location: General Urban/Suburban
 Number of Studies: 1
 Avg. 1000 Sq. Ft. GFA: 30
 Directional Distribution: 49% entering, 51% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
7.83	7.83 - 7.83	*

Data Plot and Equation

Caution – Small Sample Size



ATTACHMENT C

TWO-WAY STOP CONTROL SUMMARY							ARRIVAL		
General Information				Site Information					
Analyst	LL			Intersection	S. Middlebush & Driveway				
Agency/Co.	SSC			Jurisdiction					
Date Performed	5/20/2021			Analysis Year					
Analysis Time Period	Sat 12pm - 1pm pre event REV								
Project Description									
East/West Street: Site Driveway				North/South Street: South Middlebush Road					
Intersection Orientation: North-South				Study Period (hrs): 0.25					
Vehicle Volumes and Adjustments									
Major Street		Northbound				Southbound			
Movement	1	2	3	4	5	6			
	L	T	R	L	T	R			
Volume (veh/h)		686	50	50	719				
Peak-Hour Factor, PHF	1.00	0.80	0.80	0.80	0.80	1.00			
Hourly Flow Rate, HFR (veh/h)	0	857	62	62	898	0			
Percent Heavy Vehicles	0	--	--	0	--	--			
Median Type	Undivided								
RT Channelized			0			0			
Lanes	0	1	0	0	1	0			
Configuration			TR	LT					
Upstream Signal		0			0				
Minor Street		Eastbound				Westbound			
Movement	7	8	9	10	11	12			
	L	T	R	L	T	R			
Volume (veh/h)				25	0	25			
Peak-Hour Factor, PHF	1.00	1.00	1.00	0.80	0.80	0.80			
Hourly Flow Rate, HFR (veh/h)	0	0	0	31	0	31			
Percent Heavy Vehicles	0	0	0	0	0	0			
Percent Grade (%)		0			0				
Flared Approach		N			N				
Storage		0			0				
RT Channelized			0			0			
Lanes	0	0	0	0	1	0			
Configuration					LTR				
Delay, Queue Length, and Level of Service									
Approach	Northbound	Southbound	Westbound			Eastbound			
Movement	1	4	7	8	9	10	11	12	
Lane Configuration		LT		LTR					
v (veh/h)		62		62					
C (m) (veh/h)		462		111					
v/c		0.13		0.56					
95% queue length		0.46		2.65					
Control Delay (s/veh)		14.0		72.3					
LOS		B		F					
Approach Delay (s/veh)	--	--		72.3					
Approach LOS	--	--		F					

TWO-WAY STOP CONTROL SUMMARY							DEPARTING		
General Information				Site Information					
Analyst	LL			Intersection	S. Middlebush & Driveway				
Agency/Co.	SSC			Jurisdiction					
Date Performed	5/20/2021			Analysis Year					
Analysis Time Period	Sat 12pm - 1pm post event								
Project Description									
East/West Street: Site Driveway				North/South Street: South Middlebush Road					
Intersection Orientation: North-South				Study Period (hrs): 0.25					
Vehicle Volumes and Adjustments									
Major Street		Northbound			Southbound				
Movement	1	2	3	4	5	6			
	L	T	R	L	T	R			
Volume (veh/h)		686	25	25	719				
Peak-Hour Factor, PHF	1.00	0.80	0.80	0.80	0.80	1.00			
Hourly Flow Rate, HFR (veh/h)	0	857	31	31	898	0			
Percent Heavy Vehicles	0	--	--	0	--	--			
Median Type	Undivided								
RT Channelized			0			0			
Lanes	0	1	0	0	1	0			
Configuration			TR	LT					
Upstream Signal		0			0				
Minor Street		Eastbound			Westbound				
Movement	7	8	9	10	11	12			
	L	T	R	L	T	R			
Volume (veh/h)				50	0	50			
Peak-Hour Factor, PHF	1.00	1.00	1.00	0.80	0.80	0.80			
Hourly Flow Rate, HFR (veh/h)	0	0	0	62	0	62			
Percent Heavy Vehicles	0	0	0	0	0	0			
Percent Grade (%)	0			0					
Flared Approach		N			N				
Storage		0			0				
RT Channelized			0			0			
Lanes	0	0	0	0	1	0			
Configuration					LTR				
Delay, Queue Length, and Level of Service									
Approach	Northbound	Southbound	Westbound			Eastbound			
Movement	1	4	7	8	9	10	11	12	
Lane Configuration		LT		LTR					
v (veh/h)		31		124					
C (m) (veh/h)		483		130					
v/c		0.06		0.95					
95% queue length		0.21		6.45					
Control Delay (s/veh)		13.0		131.8					
LOS		B		F					
Approach Delay (s/veh)	--	--		131.8					
Approach LOS	--	--		F					

ATTACHMENT D

Mosque (562)

Peak Period Parking Demand vs: 1000 Sq. Ft. GFA
On a: Friday
Setting/Location: General Urban/Suburban
Peak Period of Parking Demand: 1:00 - 2:00 p.m.
 Number of Studies: 4
 Avg. 1000 Sq. Ft. GFA: 4.1

Peak Period Parking Demand per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
19.22	12.50 - 30.20	14.46 / 30.20	***	7.65 (40%)

Data Plot and Equation

Caution – Small Sample Size

