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August 7, 2020

Islamic Circle of Mercer County (ICMC)  
330 Lawrence Station Rd  
Lawrenceville, NJ 08648

RE: **Parking and Trip Generation Evaluation**

Islamic Circle of Mercer County (ICMC)  
330 and 336 Lawrence Station Road  
Block 42.01, Lots 13.01 and 15  
Lawrence Township, Mercer County, NJ  
McMahon Project No. F20235.11

McMahon Associates, Inc. has completed a parking assessment and trip generation evaluation for the existing Islamic Circle of Mercer County (ICMC) for its existing and proposed operations as a house of worship (mosque) located at 330 and 336 Lawrence Station Road in Lawrence Township, Mercer County, New Jersey (**Figure 1**).

ICMC proposes the expansion of their existing, auxiliary parking area in Lot 15, adjacent to the existing mosque and separate parking area in Lot 13.01. A summary of the existing parking supply and the change in the parking supply associated with the development of the adjacent lot has been provided. An overview and comparison to the Township's requirements for off-street parking and the parking demand estimate based on Institute of Transportation Engineers (ITE) guidelines is also provided.

The existing mosque, located on Lot 13.01, provides two driveways along Lawrence Station Road; one full-movement driveway and one ingress only driveway. Lot 15 is also serviced by a full-movement driveway to the west along Lawrence Station Road. The eastern, ingress only driveway is proposed to be closed with the parking lot expansion and a new right-out only driveway is proposed near Lot 15. The parking lots will also be connected internally. With the modifications to the parking lot, access to the property will ultimately continue to be provided via three driveways along Lawrence Station Road; two full-movement driveways and one right-out only driveway. A schematic of the latest site plan is provided in **Figure 2**.

The purpose of this report is to provide a summary of the existing and proposed parking supply, expected peak parking demand, and trip generation for the site on a typical Friday during the time period when the mosque regularly conducts their main religious services.

Our analysis is based on information contained in the following industry accepted resources:

- **Parking requirements** for the site based on the Lawrence Township Land Use Ordinance.
- **Parking demand** for the site is based on information contained in the Institute of Transportation Engineers' publication, *Parking Generation Manual, Fifth Edition*.
- Anticipated **trip generation** characteristics for the existing mosque are presented based information contained in the ITE publication, *Trip Generation Manual, Tenth Edition*.

### Assumptions

It is understood that the mosque's intention is to continue to use the property for a house of worship with modifications only to the current parking supply and access driveways. We are advised that the mosque contains three (3) floors; which include a prayer hall, multi-purpose room, library, offices and classrooms. The first floor is approximately 4,300 square feet, the second floor 4,800 square feet, and 4,400 square feet on the third level, for a total of approximately 13,000 square feet.

According to the original Resolution in 2010, the mosque had a membership of approximately 75-85 members. Since then, the ICMC indicates its congregation has almost doubled and now consists of more than 150 members who regularly attend religious services. ICMC believes that its needs for servicing its congregation now and into the foreseeable future will require an increase in parking at the property.

The mosque conducts prayer services five times a day:

1. The first prayer is before sunrise,
2. the second service is at 1:15 PM,
3. the third service at is 5:30 PM,
4. the fourth service is just after sunset, and
5. the night prayer is at approximately 9:00 PM.

Generally, no more than 50-75 members attend these services, with the exception of the main weekly congregation which occurs every Friday at 1:00 PM and normally lasts until 1:30 PM.

There are close to 350 adult men and women who attend the Friday prayer, including both members and non-members of the ICMC. Arrivals of congregants are anticipated to occur 30 minutes prior to the start time (~12:30 PM) while members start leaving the facility right after the prayer and the property becomes empty within 30 minutes by 2:00 PM. The mosque uses all floors during this prayer

service. There are no seating arrangements during prayer time. Congregants enter the prayer hall and kneel on a small prayer rug measuring approximately 27" by 45" (or 2.25' by 3.75').

### **Existing Parking Conditions**

Per Resolution No. 15-10z, Section 9, Sub-Section (a), Part (vi), the proposed development would provide 56 parking spaces at the mosque; however, under current conditions, the ICMC provides 57 parking spaces on Lot 13.01. We are advised the adjacent Lot 15 is currently being utilized for overflow parking during the Friday prayer services. As determined from the existing conditions noted on the site plan and verified with Google Earth, Lot 15 provides over 100 marked spaces, for a total of approximately 157 parking spaces available for the mosque during peak times. This is just an estimation, as we are advised the grassed areas on Lot 15 are also being used for parking needs during the Friday prayer service and therefore the parking demand far exceeds 157 spaces. It is our understanding that the total available parking spaces can no longer accommodate the parking demand during the main Friday prayer.

### **Actual Parking Demand**

With the expansion of the parking lot area on Lot 15, the existing on-site parking for the property will provide a total of 240 parking spaces, which is an increase of 183 spaces compared to existing conditions.

The Lawrence Township Land Use Ordinance, *Article V: Performance and Design Standards Part II – Lawrence Township Standards, Section 530 Parking, Loading Areas and Driveways*, indicate the minimum number of parking spaces required for a House of Worship is 1 space per 3 seats (each 21" of bench = 1 seat). However, unlike some houses of worship, there are no fixed seats in the mosque. An Islamic prayer requires people to line up next to each other in rows and kneel on a small prayer rug measuring approximately 27" by 45" (or 2.25' by 3.75'). These individual rugs are joined together and made to allow for multiple people to pray on a single, long rug, with little to no space between people. Therefore, it is not feasible to calculate the required number of parking spaces based on the number of seats. Our office evaluated the parking requirements based on maximum occupancy load.

The maximum occupancy assigned to the building per the fire official is as follows:

First floor: 118 occupants  
Second Floor: 118 occupants  
Third Floor: 250 occupants  
Total Maximum Occupancy: 486 occupants

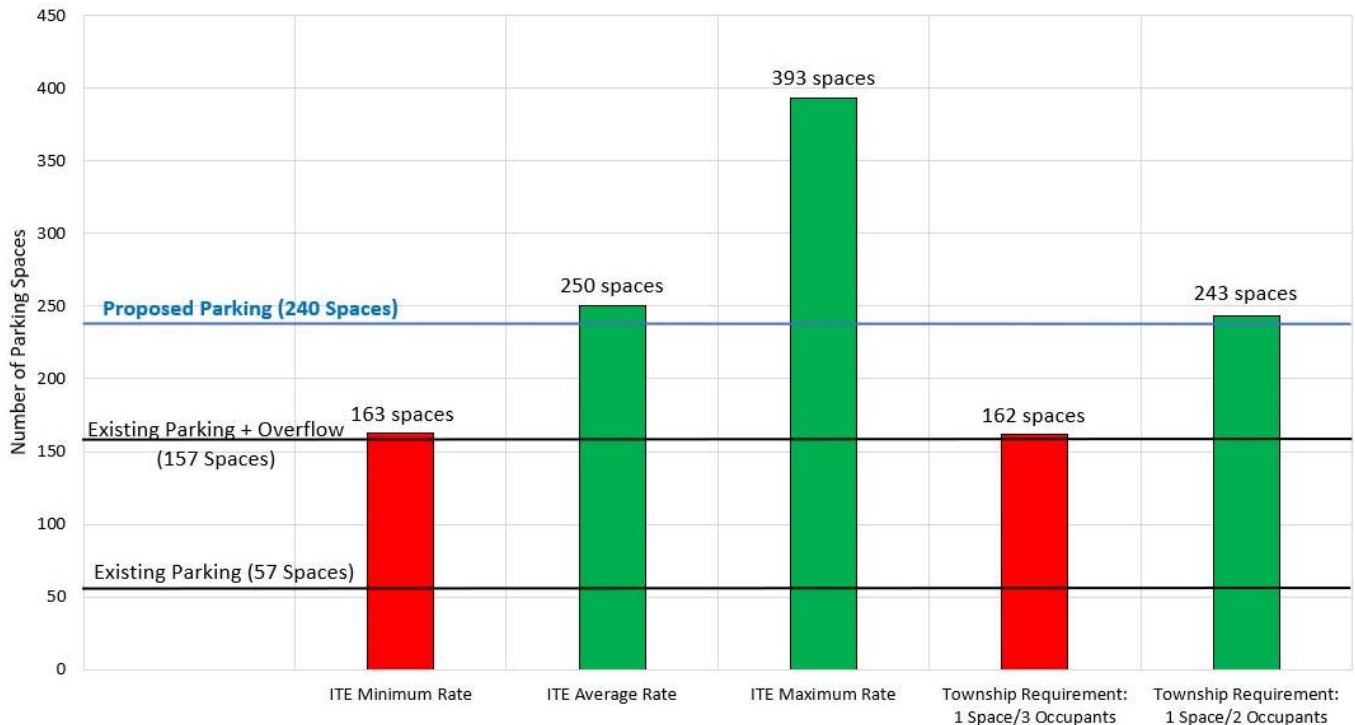
Utilizing the Township requirement of 1 space per 3 occupants would require 162 parking spaces. However, we are advised by the ICMC that the Friday prayer service is attended by adults only, as the prayer takes place during the early afternoon during school hours. Accordingly, the parking

requirements were recalculated utilizing 1 space per 2 occupants, yielding 243 required parking spaces.

To account for the parking demand associated with the existing ICMC, a review of available data was conducted using the ITE publication entitled *Parking Generation, Fifth Edition*, for Land Use Code 562: mosque. A copy of this data is provided in **Attachment B**. There is a wide range of parking ratios applied to mosques for a typical Friday afternoon peak period. ITE specifies a peak parking demand range of 12.50-30.20 spaces per 1,000 square feet of gross floor area (GFA) which equates to 163-393 occupied parking spaces. The average parking demand rate is 19.22 spaces per 1,000 square feet of GFA which equates to 250 spaces anticipated to be occupied during the Friday main prayer service or approximately 4 times the existing on-site parking capacity of 57 spaces.

Whether the number is 162 or 250 there are only 57 spaces currently provided; 193 below the ITE-estimated average demand and 105 short an interpretation of Township code. Therefore, it is our professional assessment that the existing on-site parking capacity is not adequate and cannot accommodate the reasonably expected peak parking demand of the existing mosque during the main, weekly prayer service on Friday at 1:00 PM. **Graph 1** depicts the number of existing and proposed parking spaces along with the projected demand for parking at the existing ICMC during the Friday midday peak period, using the various methods previously described.

**Graph 1 - Vehicular Trip Generation**



**Trip Generation**

Traffic volumes generated by the existing mosque were prepared based on trip generation data compiled from numerous studies contained in the ITE publication, *Trip Generation Manual, Tenth Edition*. A copy of this data is provided in **Attachment C**. **Table 1** provides the anticipated vehicular trip generation for multiple times on a typical Friday.

**Table 1 - Vehicular Trip Generation <sup>(1)</sup>**

Land Use	Size	Friday Morning (6:00 – 7:00 AM)			Friday Midday (12:00 – 2:00 PM)			Friday Afternoon (4:00 – 6:00 PM)		
		In	Out	In	In	Out	Total	In	Out	Total
Mosque <sup>(2)</sup>	13,000 SF	83	41	124	160	79	239	37	18	55

(1) Based on ITE's *Trip Generation Manual, Tenth Edition*.

(2) Based on rates for ITE Land Use Code 562 – mosque.

As mentioned earlier in this report, the main weekly congregation occurs every Friday at 1:00 PM and normally lasts until 1:30 PM. Therefore, the existing mosque generates an approximate total of 239 trips during the Friday midday peak prayer hour, the maximum hourly volume anticipated for the site.

**Driveway Operations**

The existing mosque provides two driveways along Lawrence Station Road; one full-movement driveway and one ingress only driveway. Lot 15 is also serviced by a full-movement driveway to the west along Lawrence Station Road. With the modifications to the parking lot, access to the property will ultimately continue to be provided via three driveways along Lawrence Station Road; two full-movement driveways and one right-out only driveway.

Automatic traffic recorder (ATR) counts were obtained by the Delaware Valley Regional Planning Commission (DVRPC) along Lawrence Station Road on a typical Friday in September 2019, which document the existing traffic conditions during the 1.5-hour timeframe during the largest mosque services. The results of these traffic counts are tabulated by 1-hour intervals in **Attachment A**. Based on these ATR counts, the midday peak hour along Lawrence Station Road occurs from 12:00 to 1:00 PM. Since the main prayer service has a start time of 1:00 PM the arrivals and departures would fall outside of the commuter peak. As review of the ATR data shows the midday traffic volumes are 50% lower than the weekday morning and afternoon commuter peak hours.

The 2019 traffic volumes were increased to account for regional traffic growth and for the site traffic shown in Table 1. The 2021 future peak hour traffic volumes, illustrated in **Figure 3**, were analyzed to determine the operating conditions of the site access in accordance with the standard techniques

contained in the current *Highway Capacity Manual (6<sup>th</sup> Edition)*. It should be noted, the peak hour factor (PHF) was adjusted at the site driveways to account for the variation in hourly traffic volumes due to the influx of vehicles during arrival and departures.

Typically, LOS A through D are considered acceptable operating conditions, while LOS E represents conditions approaching capacity, and LOS F indicates that traffic volumes have exceeded available capacity. Copies of the 2021 future capacity/level-of-service analysis worksheets for the Friday peak hour are provided in **Attachment D**. The corresponding levels-of-service are then illustrated on **Figure 3**.

As depicted on **Figure 3**, it is our professional assessment that all site access intersections will operate at highly acceptable LOS B both overall and for each movement during the Friday midday peak hour.

The Township ordinances restricts the number of access points for any one lot to two (2) driveways along the site frontage. However, given the level of vehicular activity that occurs on a weekly basis at the ICMC, it is our opinion that three driveways along Lawrence Station Road are necessary to accommodate and minimize conflicts between the influx of vehicles arriving and departing during a short period of time. Additionally, the western driveway is limited to right-out only egress movements to reduce conflicts with the other driveways.

### **Summary and Conclusions**

Based upon the evaluation provided herein, we reasonably conclude within industry standards that:

- The parking needs of the site based on ITE data require 250 parking spaces for the 13,000 square foot mosque's intended purposes. This number of on-site parking spaces is less than adequate to accommodate the expected peak parking demands of the mosque. However, with the proposed project improvements to expand the parking area to 240 total parking spaces, there will be adequate space to accommodate the parking demand for the ICMC during the weekly Friday prayer service.
- Based upon trip generation characteristics assumed for the existing mosque it is concluded that during the Friday peak hour, the site will generate approximately 239 total trips (entering and exiting). The analysis indicates all proposed site access intersections will operate at a highly acceptable LOS B both overall and for each movement during the Friday midday peak hour, given the low traffic volumes along Lawrence Station Road between 1:00 PM and 2:00 PM.
- Three driveways along Lawrence Station Road are necessary to accommodate and minimize conflicts between the influx of vehicles arriving and departing the ICMC during

the Friday prayer service.

- Based on all the factors addressed above, it can be concluded that the proposed modifications to the parking area and access driveways at the existing mosque will not have an adverse consequential impact on the traffic operations along Lawrence Station Road.

We trust that this report pertaining to the required parking and trip generation characteristics for the mosque's usage along Lawrence Station Road provides conclusions which effectively address the scope of the analysis for which we were retained. If you have any questions, or require further clarification, please feel free to contact me.

Sincerely,



Heather M. Balgowan, P.E., PTOE  
Project Manager

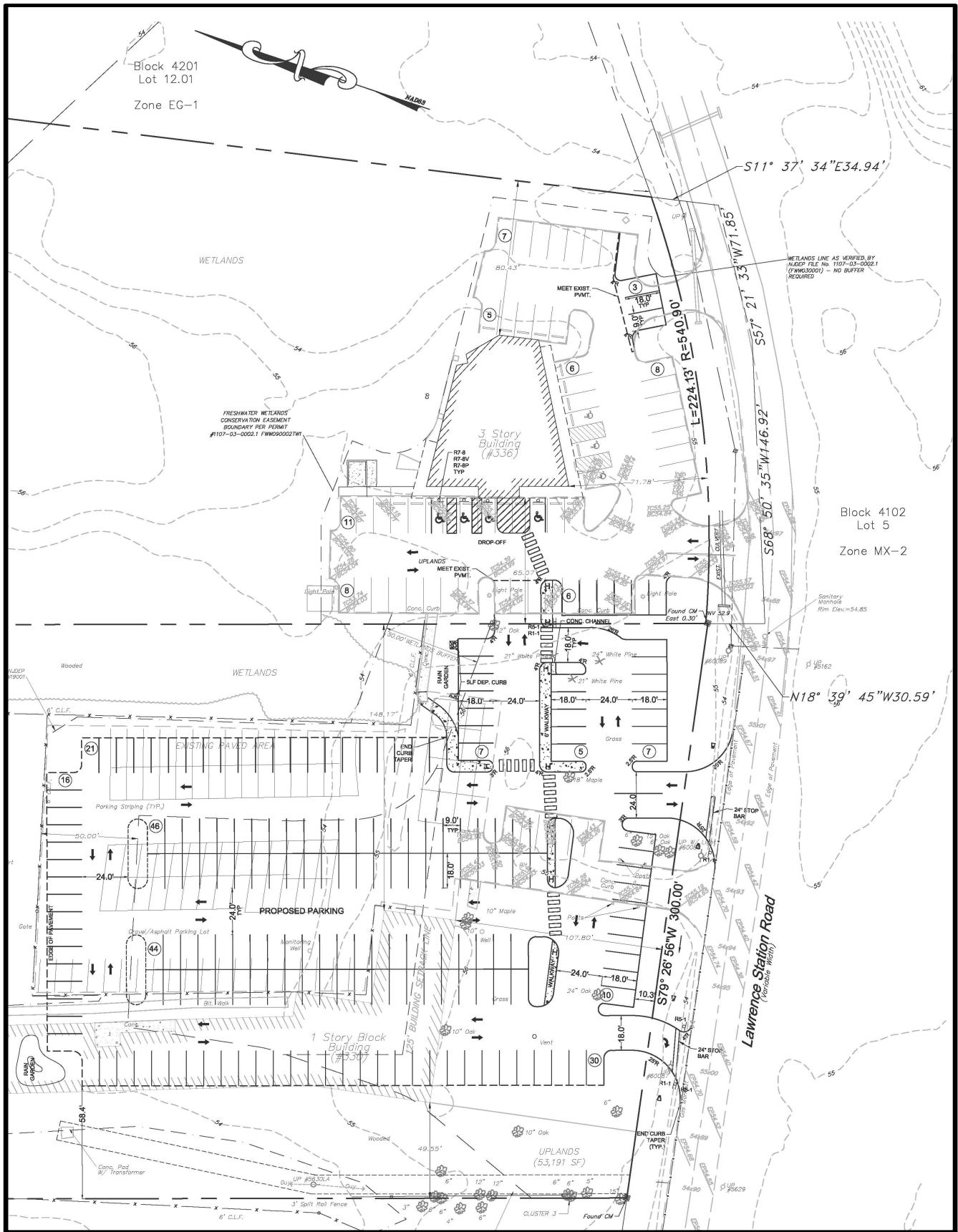
#### Attachments

I:\eng\TRISTSU\F20235 ICMC\Traffic\Report\ICMC Preliminary Parking Report

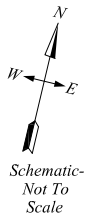


**FIGURE 1**  
Site Location Map  
**PROPOSED PARKING LOT EXPANSION**  
**ISLAMIC CIRCLE OF MERCER COUNTY (ICMC)**  
**LAWRENCE TOWNSHIP, MERCER COUNTY, NJ**



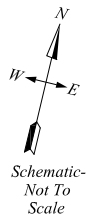
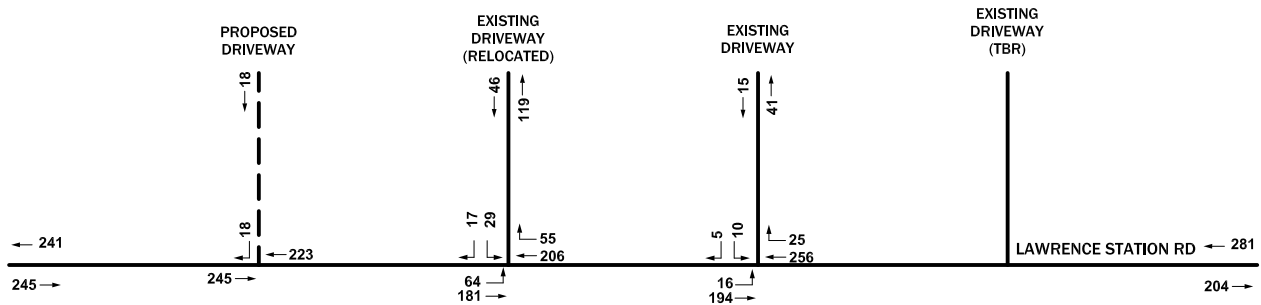


**FIGURE 2**  
 Site Plan (prepared by Invision Engineers, P.C.)  
**PROPOSED PARKING LOT EXPANSION**  
**ISLAMIC CIRCLE OF MERCER COUNTY (ICMC)**  
**LAWRENCE TOWNSHIP, MERCER COUNTY, NJ**



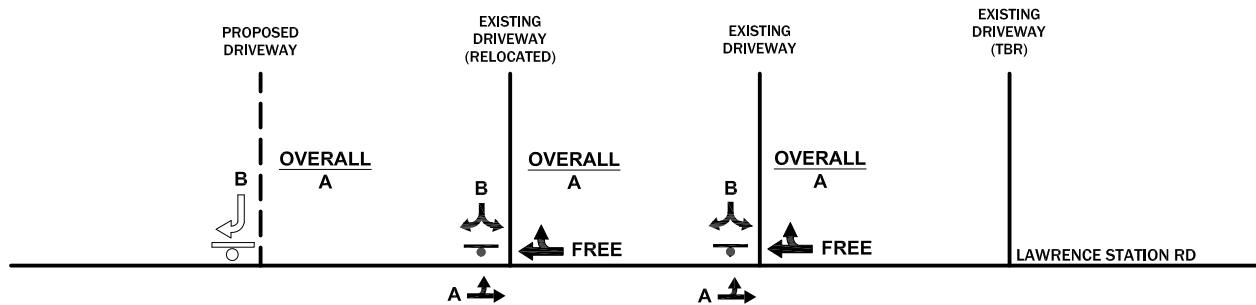
**VOLUMES**

**SITE**



**LEVELS OF SERVICE**

**SITE**



**LEGEND:**

- EXISTING LANE/MOVEMENT
- EXISTING STOP CONTROL
- PROPOSED LANE/MOVEMENT
- PROPOSED STOP CONTROL
- FREE FREE-FLOW MOVEMENT

**FIGURE 3**  
 2021 Future Friday Peak Hour Conditions  
 PROPOSED PARKING LOT EXPANSION  
 ISLAMIC CIRCLE OF MERCER COUNTY (ICMC)  
 LAWRENCE TOWNSHIP, MERCER COUNTY, NJ

## Attachment A

# Automatic Traffic Recorder (ATR) Counts

# DVRPC - Travel Monitoring

**TAKEN BY:** KH                      **DATE:** 9/19/2019                      **PROJECT:** 20-IC-413                      **STATION ID:**  
**ROAD:** CR 608 LAWRENCE STATION RD                      **SRI/MP:** 11000608\_\_/0.38  
**FROM:** CR 533 QUAKER BRIDGE RD                      **TO:** YOUNGS RD  
**STATE:** NJ                      **COUNTY:** MERCER                      **MCD:** 3402139510 - LAWRENCE TWP  
**COUNT DIR:** NORTH                      **TRAFFIC DIR:** BOTH                      **SPEED LIMIT:** 40                      **FC:** 16  
**DVRPC FILE #:** 149739                      **COUNTER #:** 1198                      **WEATHER:** F                      **DATA SOURCE:** EXTERNAL  
**COMMENTS:**

Hour Beginning	Wednesday 9/18/2019	Thursday 9/19/2019	Friday 9/20/2019
12 AM		4	8
1 AM		7	8
2 AM		4	3
3 AM		1	1
4 AM		13	10
5 AM		27	23
6 AM		99	100
7 AM		249	244
8 AM		310	275
9 AM		242	169
10 AM		173	157
11 AM	107	147	160
12 PM	161	190	200
1 PM	172	180	109
2 PM	154	176	
3 PM	200	207	
4 PM	278	313	
5 PM	361	408	
6 PM	266	286	
7 PM	189	268	
8 PM	146	168	
9 PM	72	58	
10 PM	35	42	
11PM	27	18	
<b>Total</b>	<b>2,168</b>	<b>3,590</b>	<b>1,467</b>

**AXLE CORR. FACTOR:** 0.984                      **AADT:** 3,677                      **AM Peak %:** 8.6                      **Hour Beginning:** 8:00 AM  
**SEASONAL FACTOR:** 1.041                      **PM Peak %:** 11.4                      **Hour Beginning:** 5:00 PM

# DVRPC - Travel Monitoring

**TAKEN BY:** KH                      **DATE:** 9/19/2019                      **PROJECT:** 20-IC-413                      **STATION ID:**  
**ROAD:** CR 608 LAWRENCE STATION RD                      **SRI/MP:** 11000608\_\_/0.38  
**FROM:** CR 533 QUAKER BRIDGE RD                      **TO:** YOUNGS RD  
**STATE:** NJ                      **COUNTY:** MERCER                      **MCD:** 3402139510 - LAWRENCE TWP  
**COUNT DIR:** SOUTH                      **TRAFFIC DIR:** BOTH                      **SPEED LIMIT:** 40                      **FC:** 16  
**DVRPC FILE #:** 149740                      **COUNTER #:** 1254                      **WEATHER:** F                      **DATA SOURCE:** EXTERNAL  
**COMMENTS:**

Hour Beginning	Wednesday 9/18/2019	Thursday 9/19/2019	Friday 9/20/2019
12 AM		11	13
1 AM		2	8
2 AM		6	3
3 AM		2	1
4 AM		7	11
5 AM		36	32
6 AM		98	96
7 AM		278	268
8 AM		382	340
9 AM		324	176
10 AM		164	163
11 AM	111	177	180
12 PM	204	224	275
1 PM	231	215	173
2 PM	221	227	
3 PM	257	300	
4 PM	364	362	
5 PM	388	412	
6 PM	333	410	
7 PM	275	287	
8 PM	178	186	
9 PM	86	103	
10 PM	30	48	
11PM	25	24	
<b>Total</b>	<b>2,703</b>	<b>4,285</b>	<b>1,739</b>

**AXLE CORR. FACTOR:** 0.984                      **AADT:** 4,389                      **AM Peak %:** 8.9                      **Hour Beginning:** 8:00 AM  
**SEASONAL FACTOR:** 1.041                      **PM Peak %:** 9.6                      **Hour Beginning:** 5:00 PM

## Appendix B

# Parking Generation Manual



# Parking Generation Manual

5<sup>th</sup> Edition

JANUARY 2019

# Land Use: 562 Mosque

## Description

A mosque is a building in which public worship services are held. A mosque houses an assembly hall and sanctuary. It may also house meeting rooms, classrooms, and dining facilities. Church (Land Use 560) and synagogue (Land Use 561) are related uses.

## Additional Data

The average parking supply ratio for the one study site with parking supply information is 12 spaces per 1,000 square feet GFA.

The sites were surveyed in the 1980s, the 2000s, and the 2010s in Arizona, California, New York, and Ontario (CAN).

Worship services are typically held on Fridays.

*Future studies should include weekday data that encompass group activities (such as, youth groups, study groups, retreats) as well as base employee data. It is also important to collect attendance data for the days of the surveys.*

## Source Numbers

21, 435, 446, 510



# Mosque (562)

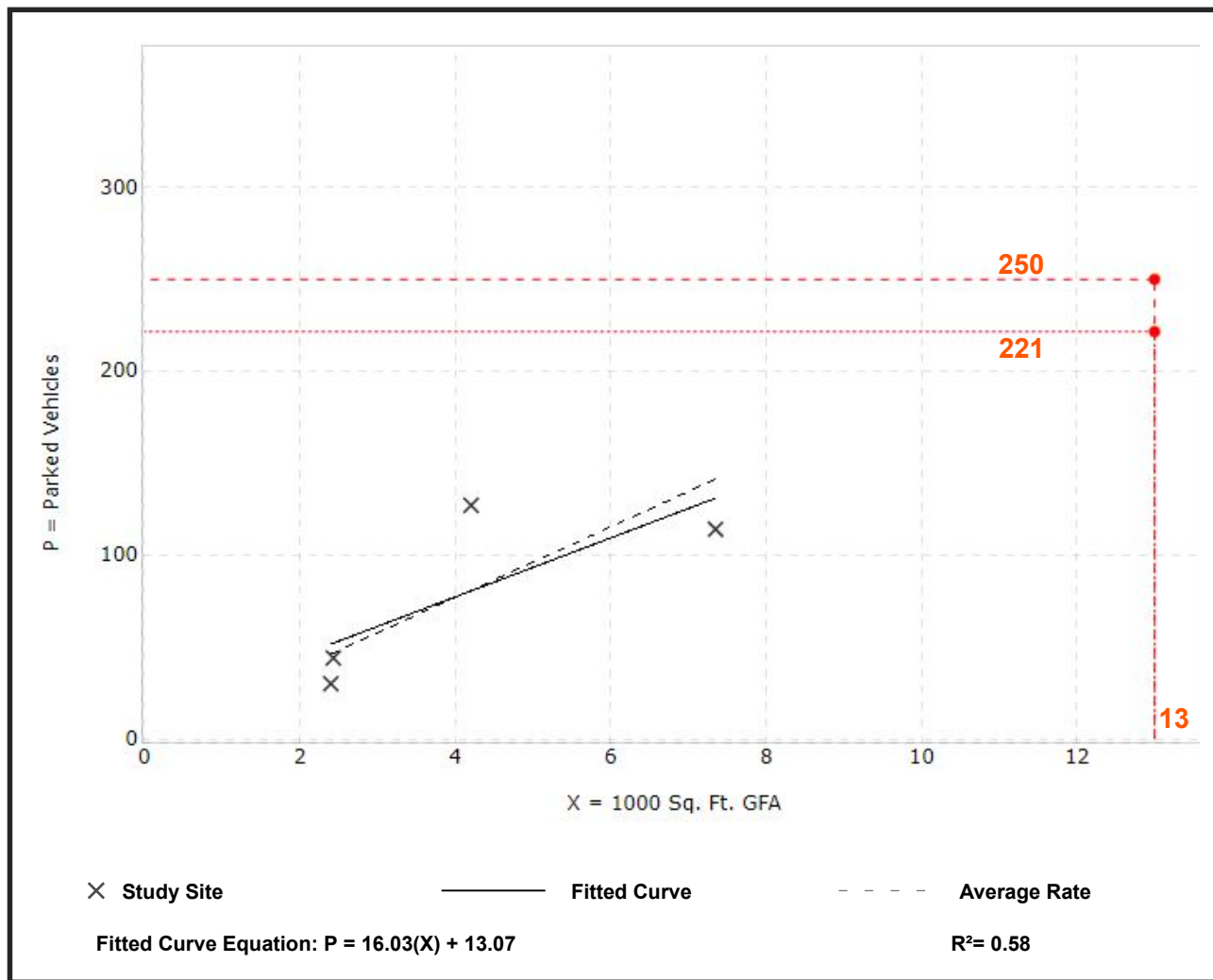
**Peak Period Parking Demand vs: 1000 Sq. Ft. GFA**  
**On a: Friday**  
**Setting/Location: General Urban/Suburban**  
**Peak Period of Parking Demand: 1:00 - 2:00 p.m.**  
 Number of Studies: 4  
 Avg. 1000 Sq. Ft. GFA: 4.1

## 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*



*Parking Generation Manual, 5th Edition* • Institute of Transportation Engineers

# Appendix C

## Trip Generation

# Land Use: 562

## Mosque

### Description

A mosque is a building in which public worship services are held. A mosque houses an assembly hall and sanctuary; it may also house meeting rooms, classrooms, and dining facilities. Church (Land Use 560) and synagogue (Land Use 561) are related uses.

### Additional Data

Worship services are typically held on Fridays.

The Friday AM peak hour for the site was between 6:00 and 7:00 a.m. The Friday PM peak hour for the site was between 12:15 and 1:15 p.m.

The site was surveyed in the 2000s in Ontario (CAN).

### Source Number

730

# Mosque (562)

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

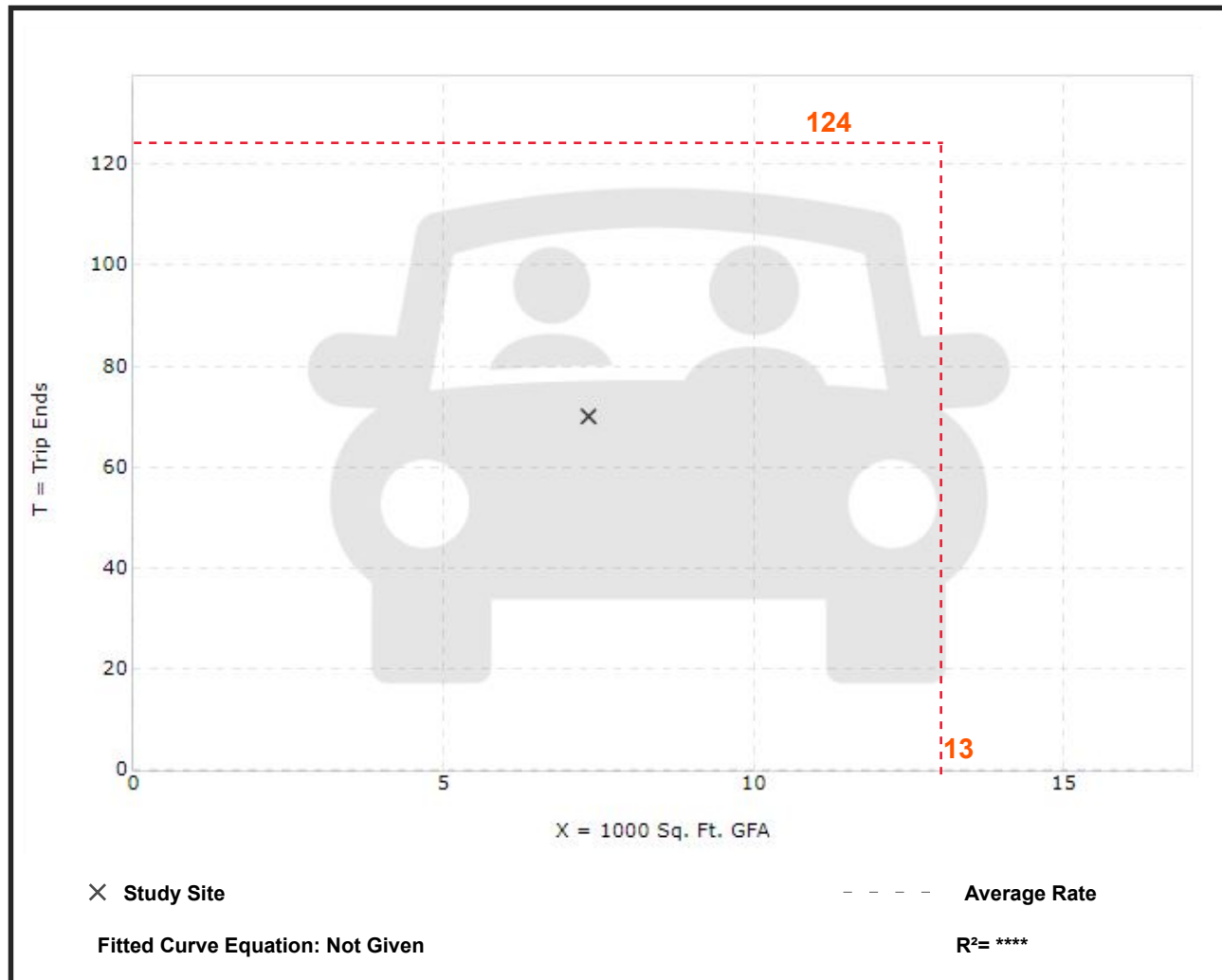
**Setting/Location: General Urban/Suburban**  
 Number of Studies: 1  
 Avg. 1000 Sq. Ft. GFA: 7  
 Directional Distribution: 67% entering, 33% exiting

## 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

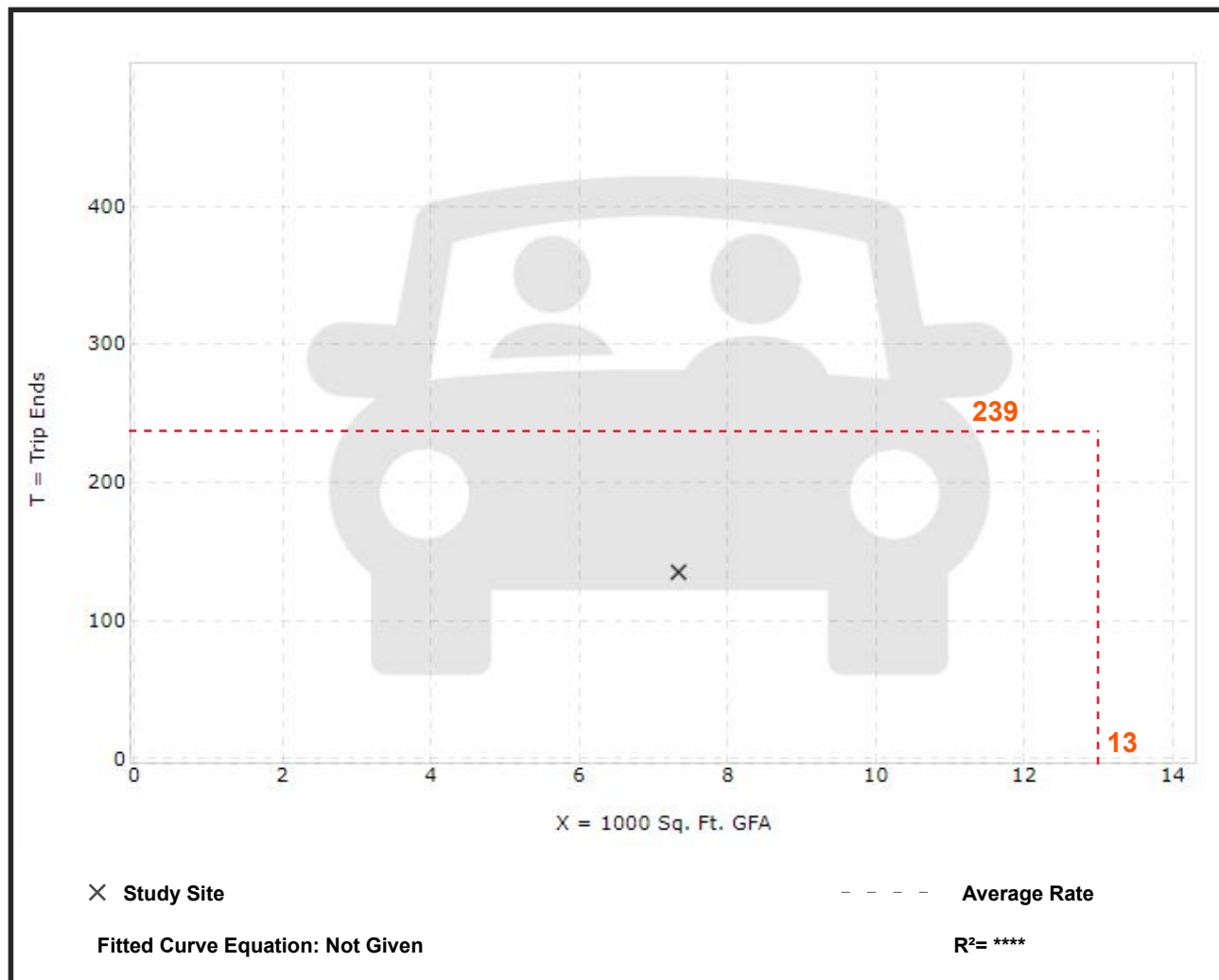
Setting/Location: General Urban/Suburban  
Number of Studies: 1  
Avg. 1000 Sq. Ft. GFA: 7  
Directional Distribution: Not Available

## 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



# Mosque (562)

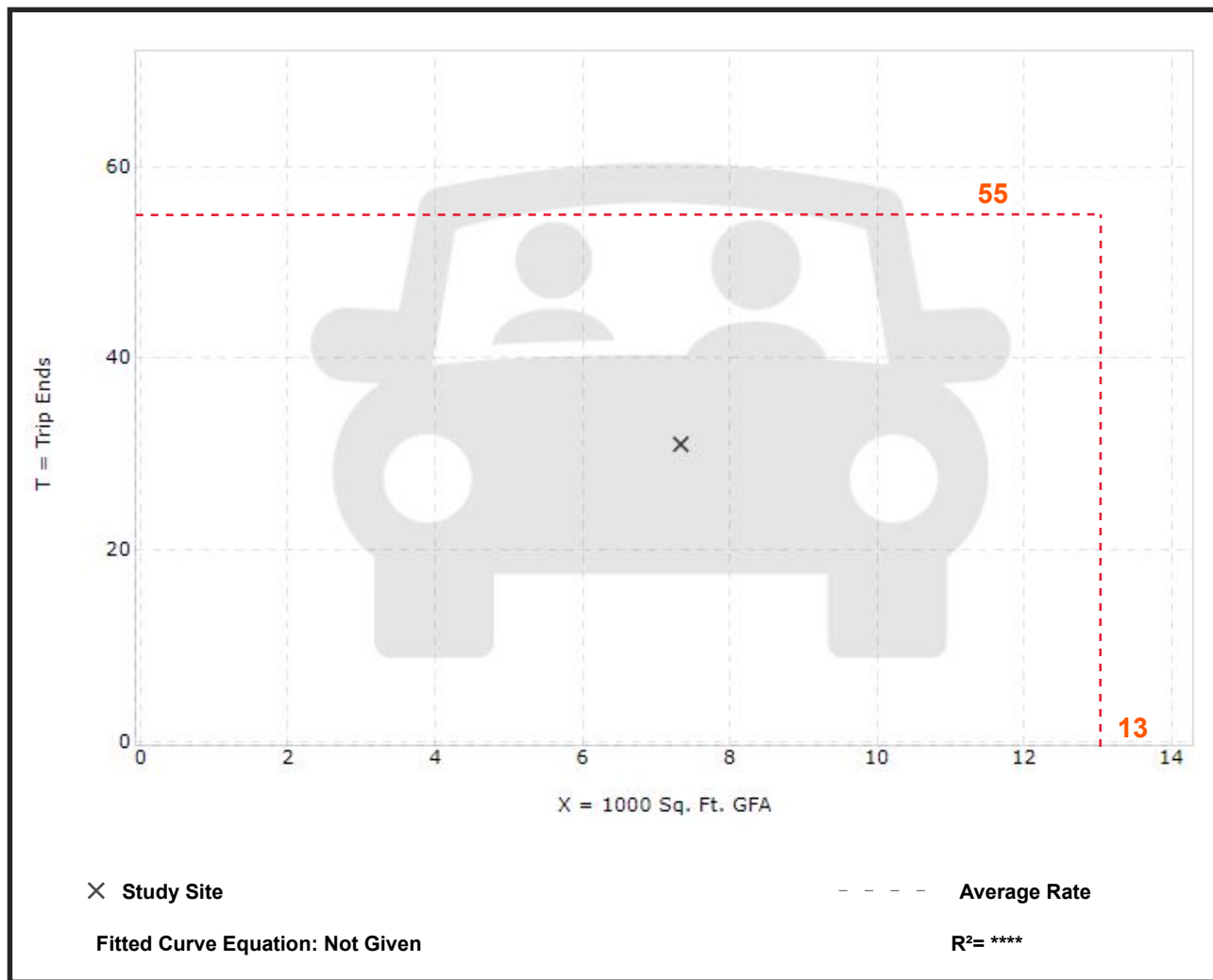
**Vehicle Trip Ends vs: 1000 Sq. Ft. GFA**  
**On a: Friday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 4 and 6 p.m.**  
**Setting/Location: General Urban/Suburban**  
 Number of Studies: 1  
 Avg. 1000 Sq. Ft. GFA: 7  
 Directional Distribution: Not Available

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
4.22	4.22 - 4.22	*

## Data Plot and Equation

Caution – Small Sample Size



## Appendix D

# 2021 Future Capacity/Level-of-Service Analysis Worksheets

Lanes, Volumes, Timings

1: Lawrence Station Rd & Proposed Right-Out only Driveway

08/04/2020



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↗
Traffic Volume (vph)	0	245	223	0	0	18
Future Volume (vph)	0	245	223	0	0	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	16
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	1863	1863	0	0	1826
Flt Permitted						
Satd. Flow (perm)	0	1863	1863	0	0	1826
Link Speed (mph)		30	30		30	
Link Distance (ft)		222	154		80	
Travel Time (s)		5.0	3.5		1.8	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Adj. Flow (vph)	0	327	297	0	0	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	327	297	0	0	24
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		24	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	0.85
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized



Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↑
Traffic Vol, veh/h	0	245	223	0	0	18
Future Vol, veh/h	0	245	223	0	0	18
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
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	327	297	0	0	24

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

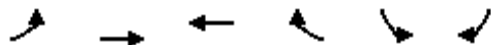
Approach	EB	WB	SB
HCM Control Delay, s	0	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	742
HCM Lane V/C Ratio	-	-	0.032
HCM Control Delay (s)	-	-	10
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.1

# Lanes, Volumes, Timings

## 2: Lawrence Station Rd & Existing Driveway (relocated)

08/04/2020



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↶		↷	
Traffic Volume (vph)	64	181	206	55	29	17
Future Volume (vph)	64	181	206	55	29	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.972		0.950	
Flt Protected		0.987			0.970	
Satd. Flow (prot)	0	1839	1811	0	1717	0
Flt Permitted		0.987			0.970	
Satd. Flow (perm)	0	1839	1811	0	1717	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		154	116		111	
Travel Time (s)		3.5	2.6		2.5	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Adj. Flow (vph)	85	241	275	73	39	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	326	348	0	62	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

### Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection						
Int Delay, s/veh	2.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	↷
Traffic Vol, veh/h	64	181	206	55	29	17
Future Vol, veh/h	64	181	206	55	29	17
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	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	85	241	275	73	39	23

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	348	0	-	0	723
Stage 1	-	-	-	-	312
Stage 2	-	-	-	-	411
Critical Hdwy	4.12	-	-	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	2.218	-	-	-	3.518
Pot Cap-1 Maneuver	1211	-	-	-	393
Stage 1	-	-	-	-	742
Stage 2	-	-	-	-	669
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1211	-	-	-	361
Mov Cap-2 Maneuver	-	-	-	-	361
Stage 1	-	-	-	-	682
Stage 2	-	-	-	-	669

Approach	EB	WB	SB
HCM Control Delay, s	2.1	0	14.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1211	-	-	-	444
HCM Lane V/C Ratio	0.07	-	-	-	0.138
HCM Control Delay (s)	8.2	0	-	-	14.4
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.5

Lanes, Volumes, Timings  
 3: Lawrence Station Rd & Existing Driveway

08/04/2020



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	16	194	256	25	10	5
Future Volume (vph)	16	194	256	25	10	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.988		0.953	
Flt Protected		0.996			0.969	
Satd. Flow (prot)	0	1855	1840	0	1720	0
Flt Permitted		0.996			0.969	
Satd. Flow (perm)	0	1855	1840	0	1720	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		116	817		106	
Travel Time (s)		2.6	18.6		2.4	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Adj. Flow (vph)	21	259	341	33	13	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	280	374	0	20	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Vol, veh/h	16	194	256	25	10	5
Future Vol, veh/h	16	194	256	25	10	5
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	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	21	259	341	33	13	7

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	374	0	-	0	659 358
Stage 1	-	-	-	-	358 -
Stage 2	-	-	-	-	301 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1184	-	-	-	429 686
Stage 1	-	-	-	-	707 -
Stage 2	-	-	-	-	751 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1184	-	-	-	420 686
Mov Cap-2 Maneuver	-	-	-	-	420 -
Stage 1	-	-	-	-	692 -
Stage 2	-	-	-	-	751 -

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	12.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1184	-	-	-	482
HCM Lane V/C Ratio	0.018	-	-	-	0.041
HCM Control Delay (s)	8.1	0	-	-	12.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1