



FUSS & O'NEILL

April 2, 2019

Amy McNamee, CEO
Union Twist, Inc.
c/o Prince Lobel Tye, LLP
One International Place
Boston, MA 02110

Re: Traffic Review Letter
Cannabis Dispensary
1158 Beacon Street, Newton, MA
Fuss & O'Neill Reference No. 20190241.A30

Dear Ms. McNamee:

Union Twist, Inc. proposes to remodel a portion of the existing building at 1158 Beacon Street Newton, Massachusetts and convert its use to a cannabis dispensary. The proposed project building will have approximately 2,300 square feet of gross floor area to be used for retail. The development is expected to open in 2020.

The existing property is situated on 20,000 square feet of land, approximately 800 feet west of the intersection of Beacon Street and Walnut Street at the City of Newton. Two existing driveways provide access to the parcel from Beacon Street. The proposed development will continue using the two existing driveways for access and egress. On-street parking is not permitted in the vicinity of the site.

The site is accessible via the Massachusetts Bay Transportation Authority (MBTA) bus line number 59 which runs north and south on Walnut Street, approximately 800 feet away, as noted above. The 59 bus connects directly to the T system at the Newton Highlands station on the Green Line. The site is also located approximately one mile west of the Waban Green Line station, with a walking time of approximately 20 minutes. Sidewalks are provided on Beacon Street throughout the area, and have recently been reconstructed by the City of Newton.

The parcel is bounded by Beacon Street to the north, commercial properties to the east, the Caliper Corporation Mapping Software to the west and residential property to the south. This area is located in the Business 2 District (BU2).

Fuss & O'Neill has been retained to study the impact of the proposed development on traffic conditions throughout the adjacent roadway network. This letter has been prepared to document

108 Myrtle Street
Suite 502
Quincy, MA
02171
t 617.282.4675
800.286.2469
f 617.481.5885

www.fando.com

Connecticut
Massachusetts
Rhode Island
New Hampshire

Ms. McNamee

April 2, 2019

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the findings of the study and is being submitted to the City of Newton in support of the project's land use applications.

Traffic Volumes and Speeds

The greatest potential for traffic impact on the roadway network by the proposed development will occur during the morning and afternoon peak hours, the periods when commuter related trips are at their highest levels. In order to determine the traffic impact of the proposed development on adjacent street traffic, representatives of Fuss & O'Neill, Inc. conducted 24-hour traffic volume and speed counts with automatic traffic recorder (ATR) road tubes. The count was located on Beacon Street east of Beaconwood Road. Copies of the ATR data is included as an attachment to this letter.

The 85th percentile speed on Beacon Street was recorded at 33 miles per hour westbound and 29 miles per hour. The 24-hour traffic volume on this roadway (total for both directions) was recorded to be 11,539 vehicles.

Trip Generation

The expected site generated traffic for the morning and afternoon peak hours was calculated using existing empirical data from the Institute of Transportation Engineers (ITE) publication Trip Generation, 10th edition, 2017. This publication is an industry-accepted resource for determining trip generation.

Land Use Code (LUC) 882, "Marijuana Dispensary" was used for the analysis. This LUC is expected to provide a conservative estimate of the number of trips generated by this facility.

Based on approximately 2,300 square feet of retail space, ITE Trip Generation indicates that the facility is expected to generate a total of 24 vehicle trips (13 entering, 11 exiting) in the morning peak hour, and 50 vehicle trips (25 entering, 25 exiting) in the afternoon peak hour.

Trip Distribution

The distribution of traffic entering and exiting the proposed site was applied to the road network based on the existing regional traffic distributions and the layout of the adjacent roadway network. During the peak hours, the following arrival distributions of traffic are anticipated:

- 55 percent from Beacon Street east of the site
- 45 percent from Beacon Street west of the site

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A regional arrival/departure distribution for the new site generated traffic traveling to and from the project site is depicted in Figure No. 1 of the attached traffic volume figures.

Intersection Sight Distance Analysis

Intersection sight distances were calculated at the proposed site driveway in accordance with criteria set forth in the 2006 Massachusetts Highway Department Project Development & Design Guide (PDDG). This sight distance is measured from a point 15 feet back from the edge of travel-way at a height of 3.5 feet, the standard height of a driver's eye.

The 85th percentile speed on Beacon Street was recorded at 33 miles per hour westbound and 29 miles per hour eastbound. In accordance with criteria set forth in the 2006 PDDG, 325 feet of intersection sight distance is required for a passenger car looking to the right and 370 is required for a passenger car looking to the left from the site driveway when approaching a two-lane roadway.

At the site driveway, sight distance extends approximately 650 feet looking left (west) and 800 feet looking right (East).

For drivers looking left or right out of the site driveway, the sight distance triangle is not obstructed and does not encroach upon abutting landowner property. The sight distances exceed MassDOT criteria for safe egress from the site.

Crash Analysis

Crash data was gathered from the MassDOT Crash Portal along Beacon Street in vicinity of the site driveway. The records were gathered for the most recent three years of available data, 2014 through 2016. A total of 12 crashes were reported over this time period, four in 2016, three in 2015 and five in 2014, for an average of four crashes per year. Of these 12 crashes, only four were associated with personal injury, and the majority occurred in the area east of the site between Beaconwood Road and Walnut Street.

A summary of the crash data per segment is attached as Table A-1.

Conclusions

The purpose of preparing a traffic impact study is to identify the impact of the proposed development's site generated traffic. The study efforts have indicated that the proposed facility will generate a total of 24 vehicle trips (13 entering, 11 exiting) in the morning peak hour, and 50 vehicle trips (25 entering, 25 exiting) in the afternoon peak hour.



Ms. McNamee

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The 85th percentile speed on Beacon Street was recorded at 33 miles per hour westbound and 29 miles per hour eastbound. The 24-hour traffic volume on this roadway (total for both directions) was recorded to be 11,539 vehicles.

A review of crash data provided by the MassDOT Crash Portal indicated that there were no abnormal crash patterns or frequencies in the study area.

For drivers looking left or right out of the site driveway, the sight distance triangle is not obstructed and does not encroach upon abutting landowner property. The sight distances exceed CTDOT criteria for safe egress from the site.

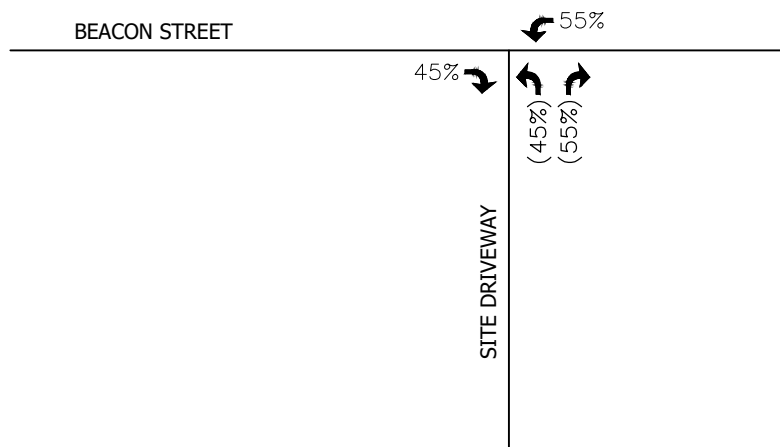
Based on the results of the foregoing analysis, it is the professional opinion of Fuss & O'Neill, Inc. that the proposed development will not have a significant impact to traffic operations within the study area.

We trust that this information will be sufficient for your review; however, if you should require additional information or have any questions, please contact me.

Sincerely,

A handwritten signature in blue ink that reads 'Matt Skelly'.

Matthew Skelly, PTOE
Senior Transportation Engineer



xxx(xxx) = ENTERING TRAFFIC (EXITING TRAFFIC)



FUSS & O'NEILL

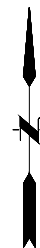
108 MYRTLE STREET, SUITE 502
QUINCY, MA 02171
617.282.4675
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FIGURE 1: TRIP DISTRIBUTION

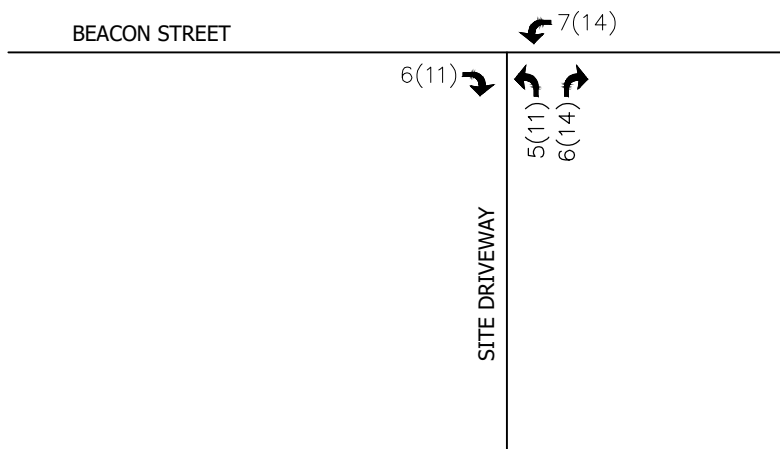
PROJ. NO: 20190241.A30

1158 BEACON STREET
NEWTON, MA

APRIL 2, 2019



SITE GENERATED TRAFFIC VOLUMES			
	ENTER	EXIT	TOTAL
MORNING	13	11	24
AFTERNOON	25	25	50



xxx(xxx) = WEEKDAY MORNING PEAK HOUR (WEEKDAY PM PEAK HOUR)



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FIGURE 2: TRIP GENERATION

PROJ. NO: 20190241.A30

1158 BEACON STREET
NEWTON, MA

APRIL 2, 2019

Accurate Counts
978-664-2565

Location : Beacon Street
Location : East of Beaconwood Road
City/State: Newton, MA

1158VOL1

Start Time	3/28/2019 Thu	WB		Hour Totals		EB		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		1	81			2	97				
12:15		0	86			0	86				
12:30		1	86			2	98				
12:45		2	106	4	359	0	96	4	377	8	736
01:00		4	89			2	78				
01:15		0	71			3	78				
01:30		0	86			0	97				
01:45		1	105	5	351	1	100	6	353	11	704
02:00		2	91			2	77				
02:15		2	91			0	91				
02:30		0	110			0	109				
02:45		0	127	4	419	1	80	3	357	7	776
03:00		3	117			1	103				
03:15		1	156			5	120				
03:30		0	115			2	107				
03:45		1	118	5	506	2	130	10	460	15	966
04:00		1	132			3	116				
04:15		2	126			1	93				
04:30		1	128			6	122				
04:45		1	121	5	507	2	111	12	442	17	949
05:00		5	124			10	114				
05:15		6	120			14	85				
05:30		6	134			17	124				
05:45		7	113	24	491	25	138	66	461	90	952
06:00		10	118			22	118				
06:15		15	110			34	127				
06:30		22	112			56	111				
06:45		44	88	91	428	78	98	190	454	281	882
07:00		37	72			110	72				
07:15		63	69			138	42				
07:30		84	52			133	61				
07:45		88	73	272	266	125	66	506	241	778	507
08:00		96	47			146	57				
08:15		107	38			143	43				
08:30		95	35			165	49				
08:45		89	35	387	155	155	30	609	179	996	334
09:00		77	36			139	38				
09:15		76	34			152	27				
09:30		80	29			114	33				
09:45		59	34	292	133	117	17	522	115	814	248
10:00		65	20			119	17				
10:15		69	20			84	9				
10:30		71	20			68	12				
10:45		61	7	266	67	103	12	374	50	640	117
11:00		67	4			79	7				
11:15		67	12			80	3				
11:30		97	4			107	6				
11:45		78	4	309	24	93	3	359	19	668	43
Total		1664	3706			2661	3508			4325	7214
Percent		31.0%	69.0%			43.1%	56.9%			37.5%	62.5%
Grand Total		1664	3706			2661	3508			4325	7214
Percent		31.0%	69.0%			43.1%	56.9%			37.5%	62.5%

ADT ADT 11,539 AADT 11,539

Location : Beacon Street
Location : East of Beaconwood Road
City/State: Newton, MA

1158VOL1

Start Time	3/28/2019		Total						
	Thu	WB		EB					
12:00 AM		4	4	8					
01:00		5	6	11					
02:00		4	3	7					
03:00		5	10	15					
04:00		5	12	17					
05:00		24	66	90					
06:00		91	190	281					
07:00		272	506	778					
08:00		387	609	996					
09:00		292	522	814					
10:00		266	374	640					
11:00		309	359	668					
12:00 PM		359	377	736					
01:00		351	353	704					
02:00		419	357	776					
03:00		506	460	966					
04:00		507	442	949					
05:00		491	461	952					
06:00		428	454	882					
07:00		266	241	507					
08:00		155	179	334					
09:00		133	115	248					
10:00		67	50	117					
11:00		24	19	43					
Total		5370	6169	11539					
Percent		46.5%	53.5%						
AM Peak	-	08:00	08:00	-	-	-	-	-	08:00
Vol.	-	387	609	-	-	-	-	-	996
PM Peak	-	16:00	17:00	-	-	-	-	-	15:00
Vol.	-	507	461	-	-	-	-	-	966
Grand Total		5370	6169						11539
Percent		46.5%	53.5%						
ADT		ADT 11,539	AADT 11,539						

Accurate Counts
978-664-2565

Location : Beacon Street
Location : East of Beaconwood Road
City/State: Newton, MA

1158SPD1

WB

Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total
03/28/19	0	0	0	1	3	0	0	0	0	0	0	0	0	0	4
01:00	0	0	0	2	2	1	0	0	0	0	0	0	0	0	5
02:00	0	0	2	1	1	0	0	0	0	0	0	0	0	0	4
03:00	0	1	0	2	0	2	0	0	0	0	0	0	0	0	5
04:00	0	0	1	1	2	0	1	0	0	0	0	0	0	0	5
05:00	1	1	1	9	9	3	0	0	0	0	0	0	0	0	24
06:00	0	1	10	26	32	21	1	0	0	0	0	0	0	0	91
07:00	6	10	29	99	94	26	8	0	0	0	0	0	0	0	272
08:00	3	11	61	161	118	32	1	0	0	0	0	0	0	0	387
09:00	11	16	55	108	80	20	2	0	0	0	0	0	0	0	292
10:00	10	16	41	90	84	24	1	0	0	0	0	0	0	0	266
11:00	4	17	51	127	84	16	10	0	0	0	0	0	0	0	309
12 PM	0	12	65	163	100	18	1	0	0	0	0	0	0	0	359
13:00	9	16	45	137	113	26	5	0	0	0	0	0	0	0	351
14:00	4	12	83	171	113	30	6	0	0	0	0	0	0	0	419
15:00	10	22	124	185	152	13	0	0	0	0	0	0	0	0	506
16:00	11	26	101	230	110	26	3	0	0	0	0	0	0	0	507
17:00	17	76	155	157	76	9	1	0	0	0	0	0	0	0	491
18:00	23	40	98	160	94	12	1	0	0	0	0	0	0	0	428
19:00	4	13	48	111	79	11	0	0	0	0	0	0	0	0	266
20:00	0	11	12	80	43	7	2	0	0	0	0	0	0	0	155
21:00	0	7	16	47	56	6	1	0	0	0	0	0	0	0	133
22:00	0	3	8	20	24	12	0	0	0	0	0	0	0	0	67
23:00	0	0	4	7	7	6	0	0	0	0	0	0	0	0	24
Total	113	311	1010	2095	1476	321	44	0	0	0	0	0	0	0	5370

Daily
 15th Percentile : 21 MPH
 50th Percentile : 27 MPH
 85th Percentile : 33 MPH
 95th Percentile : 36 MPH

 Mean Speed(Average) : 28 MPH
 10 MPH Pace Speed : 26-35 MPH
 Number in Pace : 3571
 Percent in Pace : 66.5%
 Number of Vehicles > 30 MPH : 1841
 Percent of Vehicles > 30 MPH : 34.3%

Grand Total	113	311	1010	2095	1476	321	44	0	0	0	0	0	0	0	5370
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Overall
 15th Percentile : 21 MPH
 50th Percentile : 27 MPH
 85th Percentile : 33 MPH
 95th Percentile : 36 MPH

 Mean Speed(Average) : 28 MPH
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Accurate Counts
978-664-2565

Location : Beacon Street
Location : East of Beaconwood Road
City/State: Newton, MA

1158SPD1

EB

Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total
03/28/19	0	0	0	0	2	2	0	0	0	0	0	0	0	0	4
01:00	0	0	0	4	2	0	0	0	0	0	0	0	0	0	6
02:00	0	0	0	1	2	0	0	0	0	0	0	0	0	0	3
03:00	0	1	3	1	3	2	0	0	0	0	0	0	0	0	10
04:00	0	1	3	1	6	1	0	0	0	0	0	0	0	0	12
05:00	1	1	11	23	21	7	1	1	0	0	0	0	0	0	66
06:00	4	11	28	63	51	29	3	1	0	0	0	0	0	0	190
07:00	106	131	144	76	42	6	1	0	0	0	0	0	0	0	506
08:00	120	168	183	89	42	5	2	0	0	0	0	0	0	0	609
09:00	107	138	171	66	27	12	1	0	0	0	0	0	0	0	522
10:00	26	52	95	125	60	15	1	0	0	0	0	0	0	0	374
11:00	18	44	103	135	51	6	2	0	0	0	0	0	0	0	359
12 PM	7	51	106	146	58	8	1	0	0	0	0	0	0	0	377
13:00	23	33	103	127	57	8	2	0	0	0	0	0	0	0	353
14:00	31	51	88	119	57	11	0	0	0	0	0	0	0	0	357
15:00	42	64	166	147	36	4	1	0	0	0	0	0	0	0	460
16:00	53	87	131	121	46	3	1	0	0	0	0	0	0	0	442
17:00	187	140	94	31	9	0	0	0	0	0	0	0	0	0	461
18:00	118	122	107	71	30	6	0	0	0	0	0	0	0	0	454
19:00	3	20	71	92	48	7	0	0	0	0	0	0	0	0	241
20:00	0	7	43	80	41	8	0	0	0	0	0	0	0	0	179
21:00	4	1	19	51	36	3	1	0	0	0	0	0	0	0	115
22:00	0	1	6	21	17	4	1	0	0	0	0	0	0	0	50
23:00	0	1	0	9	7	2	0	0	0	0	0	0	0	0	19
Total	850	1125	1675	1599	751	149	18	2	0	0	0	0	0	0	6169

Daily
 15th Percentile : 15 MPH
 50th Percentile : 23 MPH
 85th Percentile : 29 MPH
 95th Percentile : 34 MPH

 Mean Speed(Average) : 23 MPH
 10 MPH Pace Speed : 21-30 MPH
 Number in Pace : 3274
 Percent in Pace : 53.1%
 Number of Vehicles > 30 MPH : 920
 Percent of Vehicles > 30 MPH : 14.9%

Grand Total	850	1125	1675	1599	751	149	18	2	0	0	0	0	0	0	6169
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Overall
 15th Percentile : 15 MPH
 50th Percentile : 23 MPH
 85th Percentile : 29 MPH
 95th Percentile : 34 MPH

 Mean Speed(Average) : 23 MPH
 10 MPH Pace Speed : 21-30 MPH
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Accurate Counts
978-664-2565

Location : Beacon Street
Location : East of Beaconwood Road
City/State: Newton, MA

1158SPD1

WB, EB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total
03/28/19	0	0	0	1	5	2	0	0	0	0	0	0	0	0	8
01:00	0	0	0	6	4	1	0	0	0	0	0	0	0	0	11
02:00	0	0	2	2	3	0	0	0	0	0	0	0	0	0	7
03:00	0	2	3	3	3	4	0	0	0	0	0	0	0	0	15
04:00	0	1	4	2	8	1	1	0	0	0	0	0	0	0	17
05:00	2	2	12	32	30	10	1	1	0	0	0	0	0	0	90
06:00	4	12	38	89	83	50	4	1	0	0	0	0	0	0	281
07:00	112	141	173	175	136	32	9	0	0	0	0	0	0	0	778
08:00	123	179	244	250	160	37	3	0	0	0	0	0	0	0	996
09:00	118	154	226	174	107	32	3	0	0	0	0	0	0	0	814
10:00	36	68	136	215	144	39	2	0	0	0	0	0	0	0	640
11:00	22	61	154	262	135	22	12	0	0	0	0	0	0	0	668
12 PM	7	63	171	309	158	26	2	0	0	0	0	0	0	0	736
13:00	32	49	148	264	170	34	7	0	0	0	0	0	0	0	704
14:00	35	63	171	290	170	41	6	0	0	0	0	0	0	0	776
15:00	52	86	290	332	188	17	1	0	0	0	0	0	0	0	966
16:00	64	113	232	351	156	29	4	0	0	0	0	0	0	0	949
17:00	204	216	249	188	85	9	1	0	0	0	0	0	0	0	952
18:00	141	162	205	231	124	18	1	0	0	0	0	0	0	0	882
19:00	7	33	119	203	127	18	0	0	0	0	0	0	0	0	507
20:00	0	18	55	160	84	15	2	0	0	0	0	0	0	0	334
21:00	4	8	35	98	92	9	2	0	0	0	0	0	0	0	248
22:00	0	4	14	41	41	16	1	0	0	0	0	0	0	0	117
23:00	0	1	4	16	14	8	0	0	0	0	0	0	0	0	43
Total	963	1436	2685	3694	2227	470	62	2	0	0	0	0	0	0	11539

Daily
 15th Percentile : 17 MPH
 50th Percentile : 25 MPH
 85th Percentile : 32 MPH
 95th Percentile : 34 MPH

 Mean Speed(Average) : 25 MPH
 10 MPH Pace Speed : 21-30 MPH
 Number in Pace : 6379
 Percent in Pace : 55.3%
 Number of Vehicles > 30 MPH : 2761
 Percent of Vehicles > 30 MPH : 23.9%

Grand Total	963	1436	2685	3694	2227	470	62	2	0	0	0	0	0	0	11539
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Overall
 15th Percentile : 17 MPH
 50th Percentile : 25 MPH
 85th Percentile : 32 MPH
 95th Percentile : 34 MPH

 Mean Speed(Average) : 25 MPH
 10 MPH Pace Speed : 21-30 MPH
 Number in Pace : 6379
 Percent in Pace : 55.3%
 Number of Vehicles > 30 MPH : 2761
 Percent of Vehicles > 30 MPH : 23.9%

Marijuana Dispensary (882)

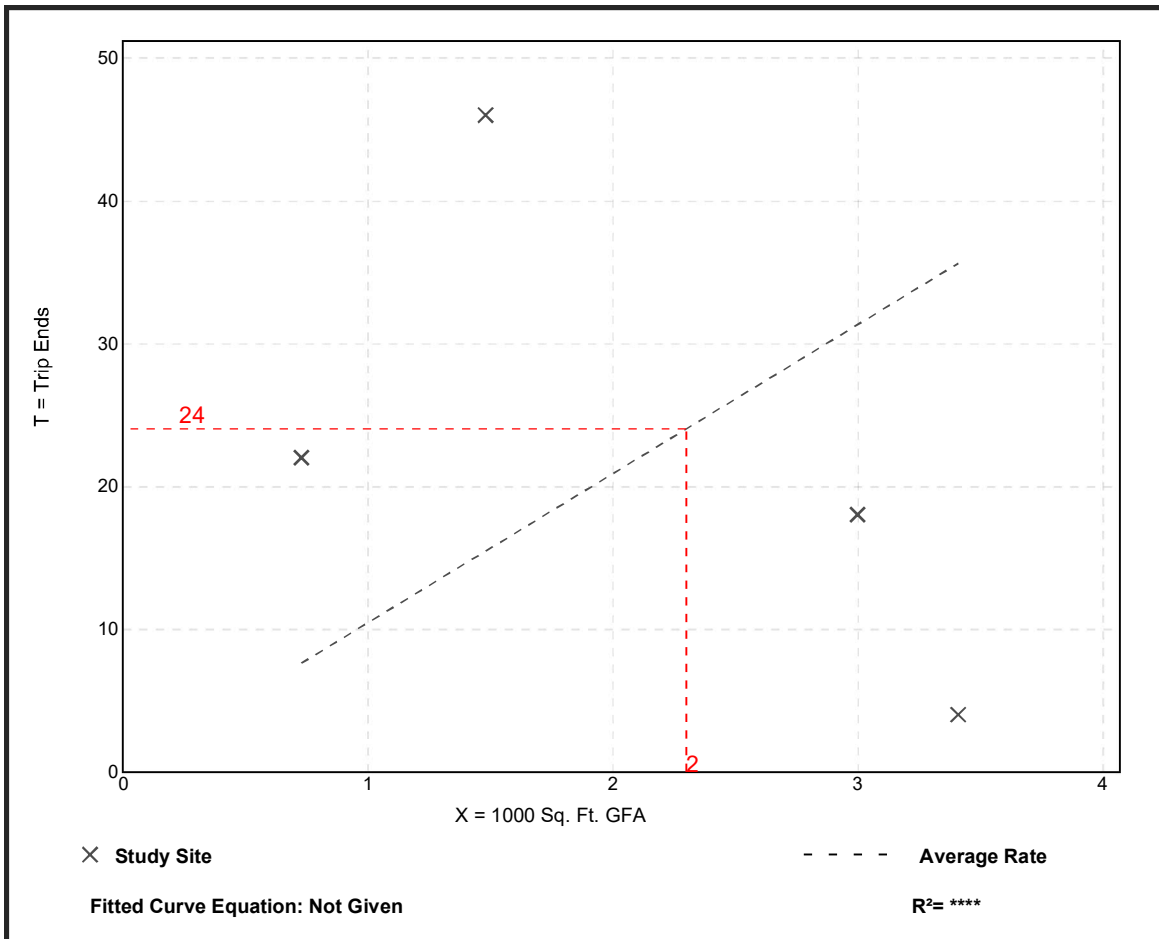
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
 Number of Studies: 4
 Avg. 1000 Sq. Ft. GFA: 2
 Directional Distribution: 56% entering, 44% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
10.44	1.17 - 31.08	14.00

Data Plot and Equation

Caution – Small Sample Size



Trip Generation Manual, 10th Edition • Institute of Transportation Engineers

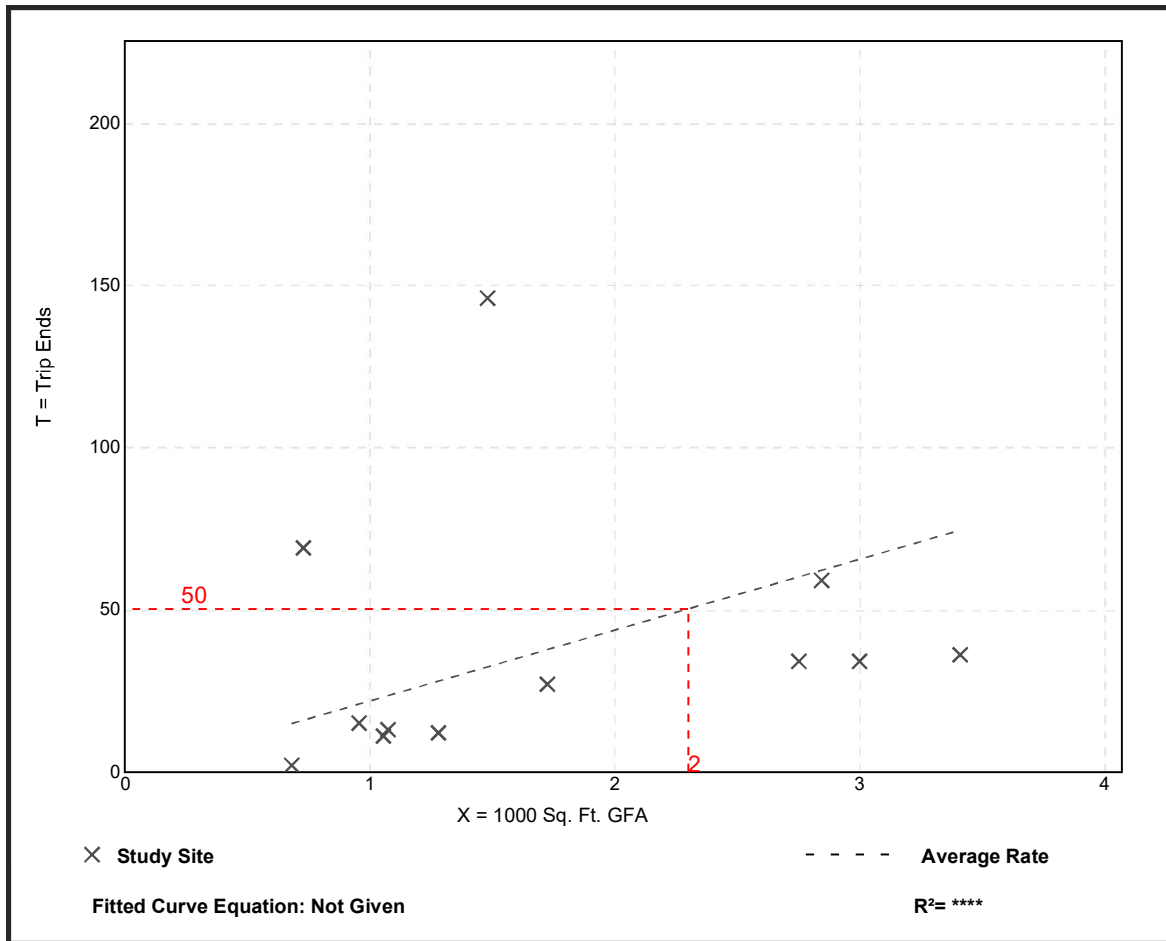
Marijuana Dispensary (882)

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: 12
 Avg. 1000 Sq. Ft. GFA: 2
 Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
21.83	2.94 - 98.65	27.36

Data Plot and Equation



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TABLE A-1
 CRASH DATA SUMMARY - 2014 to 2016
 STUDY AREA SEGMENT

	Beacon Street
<hr/>	
Criteria	
YEAR	
2014	5
2015	3
<u>2016</u>	<u>4</u>
Total	12
Average No. of Crashes	4.00
Crash Rate	1.90
TYPE	
Angle	2
Rear-End	5
Head-On	0
Sideswipe	2
Pedestrian/Bicycle	2
Collision w/ Fixed Object	0
<u>Unknown/Other</u>	<u>1</u>
Total	12
SEVERITY	
Property Damage Only	7
Non-fatal Injury	4
Fatality	0
<u>Unknown/Other</u>	<u>1</u>
Total	12
WEATHER	
Clear	9
Wet	0
Snow/Ice	0
Clouds	2
Fog	0
<u>Unknown/Other</u>	<u>1</u>
Total	12
TIME	
Weekday 7:30 AM - 9:30 AM	1
Weekday 3:30 PM - 5:30 PM	4
<u>Other</u>	<u>0</u>
Total	5
<hr/>	

District #6 Average Crash Rates: 0.71 Signalized Intersections
 0.52 Unsignalized Intersections
 Major Collector: 3.58