

September 13, 2021

Mr. Jason Dismukes, LLC
Consulting Engineers
241 Torrington Road
P.O. Box 194
Goshen, CT 06756

**RE: Proposed Convenience Store/Filling Station
861 Harwinton Road
Torrington, CT
Our File # 21120**

Dear Mr. Dismukes:

Pursuant to your request our office has prepared this report to document our findings related to the potential traffic impact of an addition of gasoline service to the existing Sam's Convenience market located at 861 Harwinton Road, Route 4, in the Town of Torrington, Connecticut. The site location is presented in Figure 1 with respect to the surrounding roadway network. This report presents our findings.

Site Plan

The property is located on the northeast corner of the intersection of New Harwinton Road and Circle Drive in Torrington. The existing site consists of an existing 2,612 s.f. convenience market with a total of 18 parking spaces. Access to the site is provided from Route 4 by a 30 foot wide full service driveway. Almost the entire site frontage along Circle Drive, approximately 116 feet, is paved. Four of the parking spaces, located west of the convenience store building, are perpendicular to Circle Drive requiring customers to back out into Circle Drive, when exiting the site. A portion of the each of the four spaces extends into the City right of way. A service driveway to Circle Drive is provided in the rear of the building for deliveries and access to the dumpster

The current site plan, prepared by your office, depicts the addition of a canopy with two pump islands with 4 vehicle fueling positions, located between the existing building and Route 4. A total of 8 parking spaces, plus the four fueling positions are provided. There are 5 spaces provided along the easterly property line, one accessible space in front of the building, and two employee spaces provided on the west side of the building. The employee spaces are back to back and accessible from either the front parking lot or the rear service/delivery access. The Route 4 driveway will be relocated to the east closer to the property line and will be reduced in width to provide 18 feet of pavement. The driveway will be restricted to entering traffic only. The Circle Drive frontage will be reconfigured to narrow the curb cut to a single 18 foot wide driveway for exiting traffic only. To allow for access for the fuel truck, raised mountable islands are provided at each driveway. The rear service driveway to Circle Drive will remain.

Description of Area

The site proposed for re-development is located on the north side of New Harwinton Road, Route 4, and east of Circle Drive. Route 4 traverses the City of Torrington from east to west, entering the town from Harwinton approximately .4 miles east of the site. The roadway extends in a westerly direction, through a signalized intersection with Route 183, past the subject site and the unsignalized intersection with Circle Drive. The roadway continues westerly through a signalized intersection with Tarringford West Street and then continuing west to a junction with Route 202. Route 4 continues in a westerly direction, providing access to Route 8, then Main Street before continuing into the Town of Goshen. Across the site frontage the roadway provides 40 feet of pavement with a single 12 foot lane and painted shoulder in each direction of travel, separated by a painted double yellow centerline. Land use along the roadway is a mix of commercial and residential uses. There are multiple driveways intersecting the roadway. New Harwinton Road is posted at 40 miles per hour.

Circle Drive is a city maintained roadway that originates at an un-signalized intersection with New Harwinton Road, and extends north past the subject site. Circle Drive provides access to a residential subdivision of approximately 104 single family houses. The roadway provides approximately 24 feet of pavement with a single travel lane in each direction. The roadway widens to approximately 28 feet on the approach to New Harwinton Road. The Circle Drive approach operates under stop sign control with a flashing beacon with a flashing yellow light facing Route 4 traffic and a flashing red beacon facing the Circle Drive approach. The roadway is not marked and is posted at 25 miles per hour. Land use is single family residential, with the exception of the subject site.

Current Traffic Volumes

The Connecticut DOT maintains a traffic volume count program on all state highways and some local roadways. Included within the DOT database is a count on Route 4, west of Route 183. The latest count at that location was conducted during May 2012. The count indicates an Average Daily Traffic volume (ADT) of 9,400 vehicles with peak hour volumes of 716 vehicles during the a.m. peak hour (7:00 a.m.) and 1,006 vehicles during the p.m. peak hour (5:00 p.m.). The ConnDOT count is presented in Table 1.

In addition to the automated count outlined above, our office has conducted manual turning movement counts at the intersection of Route 4 and Circle Drive for the morning, afternoon and Saturday peak hours. The observed traffic volumes, together with the automated count data, are shown in Figure 2.

A review of recent ConnDOT counts on local roadways reveals that traffic has remained steady from 2011 to 2020. To be conservative we have used a 1% per year growth rate from 2012 to a design year of 2022. The higher Route 4 volumes observed in the DOT counts were held. The turning volumes into and out of Circle Drive and the convenience store site were held as well. Since Saturday volumes were not available from ConnDOT,

we have increased the observed Saturday volumes by 20% to account for percentage difference (11% and 17% for the morning and afternoon peak hours, respectively) in traffic between the observed volumes and the increased ConnDOT volumes. The 20% growth rate is higher than 17% and therefore conservative. The resultant volumes represent the 2022 background traffic volumes for the study area and are presented in Figure 3. Figure 4 represents the adjusted background traffic volumes for the site to reflect the revised driveway layout and proposed turn restrictions.

Site Generated Traffic

The proposal is to retain and remodel the existing 2,612 s.f. convenience market and to add two pumps with a total of 4 vehicle fueling positions. In order to determine the trip generation for the proposed site, the Institute of Transportation Engineers (ITE) *Trip Generation Report* was consulted. Trip Generation presents estimates for driveway volumes for many land uses based on counts conducted at existing facilities throughout the country. Included within the ITE database are land uses that are applicable to the proposed development. They include Land Use Code (LUC) 851 – Convenience Market and LUC 853 - Convenience Market with Gas Pumps. The ITE report presents data based on the vfp's (vehicle fueling positions), square footage and adjacent street traffic. We have calculated the trip generation potential for both the existing and proposed uses. Our office has also conducted counts at the site for the morning and afternoon peak commuter hours as well as the Saturday midday peak hours. The trip generation results are presented in Table 2. The existing site was observed to have a total trip generation of 36 trips during the morning peak hour, 57 trips during the afternoon peak hour, and 75 trips during the Saturday peak hour.

The proposed development, based on the building square footage, has a trip generation potential of 106 trips during the morning peak hour, 129 trips during the afternoon and Saturday peak hours. These volumes represent an increase of 70, 72 and 54 trips during the morning, afternoon and Saturday peak hours, respectively. According to the ITE *Trip*

Generation Report, a convenience store use has a “pass by” rate of as much as 87% with an average of 61-63%. Pass by traffic is traffic that is already on the local roadway network and utilizes the subject site on its way between its point of origin and its primary destination. Pass by traffic does not reduce the driveway volumes experienced by the site, but this traffic is not new to the roadway network, as it was already passing by the site. No credit for pass by traffic was taken in this analysis.

The site generated traffic was distributed to the local roadway network with a directional distribution equal to that observed during the site counts. The directional distribution used is presented in Figure 5. The site generated traffic volumes, based on these distributions are shown in Figure 6. By adding the site generated traffic in Figure 6 to the background traffic volumes from Figure 3, the combined traffic volumes for the site can be determined. These volumes are presented in Figure 7.

Intersection Capacity

In order to determine the impact of the site generated traffic on the existing roadway network, capacity analyses were conducted for the background and combined traffic volume conditions for the morning, afternoon and Saturday peak hours. The computer program *SYNCHRO*, which is based on the methodology in the Highway Capacity Manual, was utilized for this purpose. The general method determines how much of the capacity available for each movement is being utilized. This is converted into a delay for each movement, and the delay is rated on a level of service (LOS) scale from A to F, with A being the best level of service with low delays and F being the poorest level of service with high delays. An analysis was completed for the un-signalized intersection of Route 4 with Circle Drive and for the two site driveways. The capacity analysis worksheets are included in the appendix. The level of service results are summarized in Table 3.

Route 4 (New Harwinton Road) and Circle Drive - This is an existing un-signalized intersection, with Route 4 oriented in an east/west orientation with Circle Drive

approaching from the north. A driveway to a small commercial plaza approaches from the south. Volumes on the commercial drive were minimal, therefore the driveway is not included in the analysis. The Route 4 approaches each provide a single lane approach with a wide shoulder to allow for through vehicles to bypass slowing or stopped vehicles waiting to execute a turn. The Circle Drive approach provides a single lane approach and operates under stop sign control. An analysis indicates that under the background traffic volumes the Route 4 approaches operate at a LOS A during peak hours. The Circle Drive approach operates at a LOS B during the morning peak hour and at a LOS C during the afternoon and Saturday peak hours. With the introduction of the site generated traffic, the Route 4 approaches will continue to operate at a LOS A. The Circle Drive approach will operate at a LOS C during the morning and Saturday peak hours and at a LOS D during the afternoon peak hour, with an increase in delay of approximately 10 seconds per vehicle.

Route 4 (New Harwinton Road) at the Site Driveway - This is an existing un-signalized intersection with Route 4 oriented in the east/west direction and the site drive approaching from the north. The Route 4 approaches each provide a single lane approach with a wide shoulder to allow for through vehicles to bypass slowing or stopped vehicles waiting to execute a turn. The site driveway approach provides a single lane approach and operates under stop sign control. An analysis indicates that under the background traffic volumes the Route 4 approaches operate at a LOS A while the site driveway approach operates at a LOS C during peak hours. With the introduction of the fuel pumps and the site generated traffic the driveway will be an enter only driveway. Under this scenario the Route 4 approaches will continue to operate at a LOS A during peak hours. Since the driveway is an enter only driveway there is no delay on the driveway approach.

Circle Drive at the Site Driveway - This is an existing un-signalized intersection with Circle Drive oriented in the north/south direction and the site drive approaching from the

east. The Circle Drive approaches each provide a single lane approach. The site driveway approach is very wide but in practice operates as a single lane approach under stop sign control. An analysis indicates that under the background traffic volumes all approaches operate at a LOS A during peak hours. With the revised site plan the driveway width will be narrowed to 18 feet and will be restricted to exiting movements only. The driveway will provide a single lane approach and will operate under stop sign control. With these revisions in place all approaches will continue to operate at a LOS A during peak hours.

Site Driveway Location and Design

As indicated above the site access to Route 4 will be relocated to the east and restricted to an enter only driveway. The Circle Drive access will be reduced in width from 116 feet to a width of 18 feet and restricted to exiting movements only. The four parking spaces with direct access to Circle Drive have been eliminated.

A truck template plan has been prepared to demonstrate that a WB-40 delivery vehicle can access the site by entering from Route 4 and exiting via a left turn onto Circle Drive, returning to Route 4. Mountable curbing and scored pavement will be provided on either side of the proposed site driveways to allow for delivery truck access into and out of the site. Deliveries will be made when the convenience store is closed to allow for more room on site for the delivery vehicle. Deliveries are anticipated once or twice a week, but are dependent on the volume of sales, so the number of deliveries could be three or four times a week at most.

Sight Distances

The available ISD's from the Circle Drive entrance were observed to be in excess of 400 feet looking to the right, and a distance of approximately 95, to the centerline of the Route 4 westbound lane, looking to the left. The available sight distance looking right,

meets the current ConnDOT requirements for approach speeds of 35 mph. Circle Drive is posted at 25 mph.

Accident Experience

The University of Connecticut gathers and compiles traffic accident data for all state highways and some major local roadways. A list of accidents occurring in the area from January 1st, 2017 through December 31st, 2019 includes the most recent 3 years of available data, pre Covid. In the appendix are the UConn tables relating the accidents to various conditions including date, time, roadway and weather conditions, collision types, and other variables as well as a short description of each accident.

Accident records were obtained for Route 4 from a point one tenth of a mile east of Circle Drive to a point one tenth of a mile west of Circle Drive, and for Circle Drive. The 3-year accident history indicates a total of 5 accidents involving a total of 11 vehicles and 9 persons, over the three year period. One accident occurred at the intersection of Route 4 with Circle Drive. There were two accidents on Circle Drive, one at the intersection of Route 4 with Morningside Drive, and one accident on Route 4 east of the site driveway. None of the accidents can be directly attributable to the operations of the subject site.

Of the 5 accidents, 3 were sideswipe accidents and two were rear end accidents. Two of the accidents, both on Circle Drive well north of the subject parcel, and involved parked vehicles. All accidents were listed as having occurred on clear and dry days. Three accidents occurred during the morning commuter hours and two occurred after nine pm. All of the accidents were recorded as property damage only and there were no injuries reported.

State Approval

Since the development has frontage to and access from a State Highway, CT Route 4, it will be necessary to obtain an encroachment permit from the ConnDOT District IV

Administration Office prior to the start of any work within the DOT Right of Way. A full set of site plans will need to be submitted to ConnDOT for review. Since the development includes less than 100,000 s.f. of floor area and fewer than 200 parking spaces, a review by OSTA of the project as a major traffic generator will not be required.

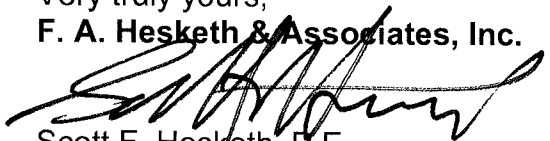
Conclusion

Based on the observed background traffic volumes, the projected site traffic volumes and the analysis as outlined in this report, it is our professional opinion that the traffic volumes associated with the addition of two pumps, with 4 vehicle fueling positions, to the existing Sam's convenience market can readily be accommodated by the existing roadway network without causing undue harm to the traveling public.

The site access driveways are properly located and designed to accommodate the anticipated driveway volumes. The narrowing of the Circle Drive access and the elimination of the four parking spaces fronting to Circle Drive will result in improved access to local roadways.

We appreciate the opportunity to provide this analysis to you. We will be available to offer testimony in support of your application before local planning agencies upon your request. If you require additional information regarding this application, please do not hesitate to contact our office.

Very truly yours,
F. A. Hesketh & Associates, Inc.



Scott F. Hesketh, P.E.
Manager of Transportation Engineering

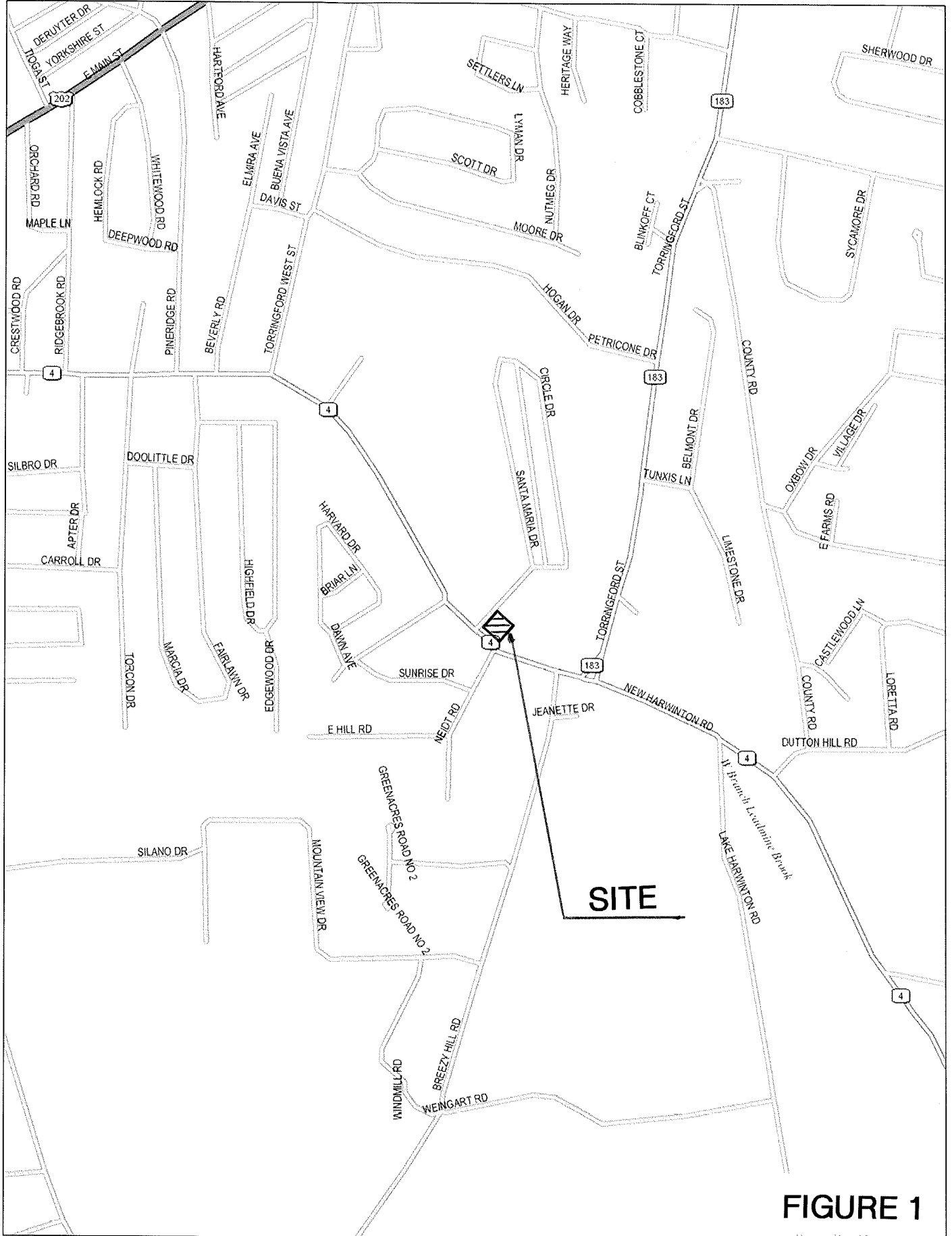


FIGURE 1

Table 1
 ConnDOT TRAFFIC VOLUMES
 Route 4 west of Route 83
 Torrington, CT - Station 252

	7-May-12 Monday			8-May-12 Tuesday			9-May-12 Wednesday		
	EB	WB	Total	EB	WB	Total	EB	WB	Total
12:00				16	26	42	30	35	65
1:00				22	12	34	10	10	20
2:00				11	7	18	6	6	12
3:00				13	8	21	16	10	26
4:00				31	21	52	38	23	61
5:00				112	64	176	115	72	187
6:00	265	211	476	232	200	432			
7:00	345	371	716	319	360	679			
8:00	285	293	578	273	318	591			
9:00	246	276	522	235	262	497			
10:00	261	227	488	239	268	507			
11:00	311	310	621	254	294	548			
12:00	341	342	683	279	295	574			
1:00	284	328	612	287	306	593			
2:00	353	367	720	336	347	683			
3:00	381	474	855	369	439	808			
4:00	400	505	905	434	480	914			
5:00	436	570	1006	384	494	878			
6:00	314	394	708	276	379	655			
7:00	243	281	524	234	298	532			
8:00	196	202	398	145	189	334			
9:00	133	122	255	123	106	229			
10:00	60	98	158	65	76	141			
11:00	39	42	81	37	43	80			
	4893	5413	10306	4726	5292	10018	215	156	371

2012 ADT = 9,400 for Station 252

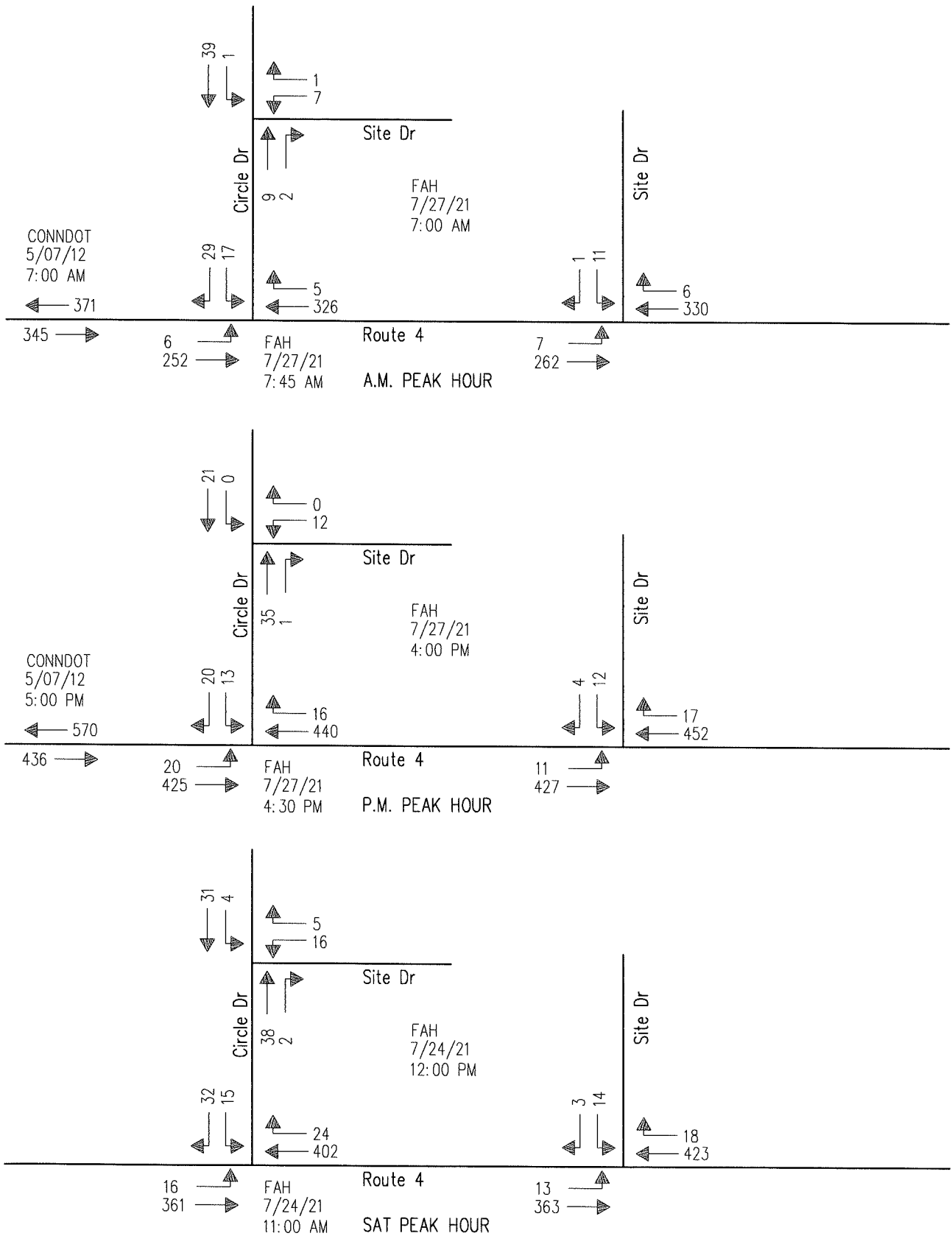


FIGURE 2

07-27-2021

<p>OBSERVED TRAFFIC VOLUMES A.M., P.M. & SAT PEAK HOURS</p> <p>SAM'S CONVENIENCE STORE ROUTE 4 (NEW HARWINTON ROAD) TORRINGTON, CONNECTICUT</p>	<p>F. A. Heeketh & Associates, Inc. <small>6 CREAMERY BROOK, EAST GRANBY, CT 06026</small></p> <p>FAH TRAFFIC PLANNING ENGINEERING DESIGN</p>
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NOT TO SCALE

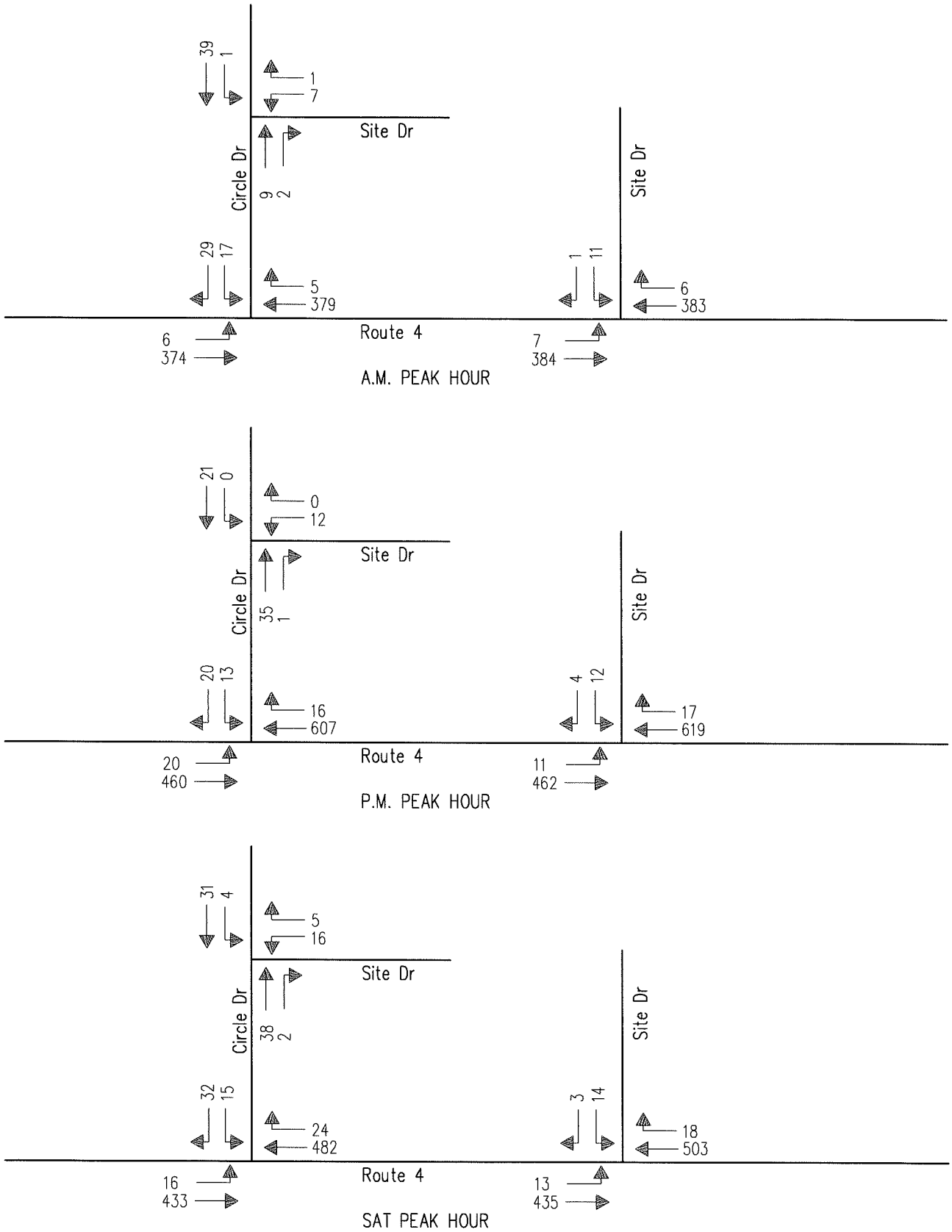


FIGURE 3

07-27-2021

<p>2022 BACKGROUND TRAFFIC A.M., P.M. & SAT PEAK HOURS</p> <p>SAM'S CONVENIENCE STORE ROUTE 4 (NEW HARWINTON ROAD) TORRINGTON, CONNECTICUT</p>	<p>F. A. Hesketh & Associates, Inc. 6 CREAMERY BROOK, EAST GRANBY, CT 06026</p> <p>FAH</p> <p>TRAFFIC PLANNING ENGINEERING DESIGN</p>
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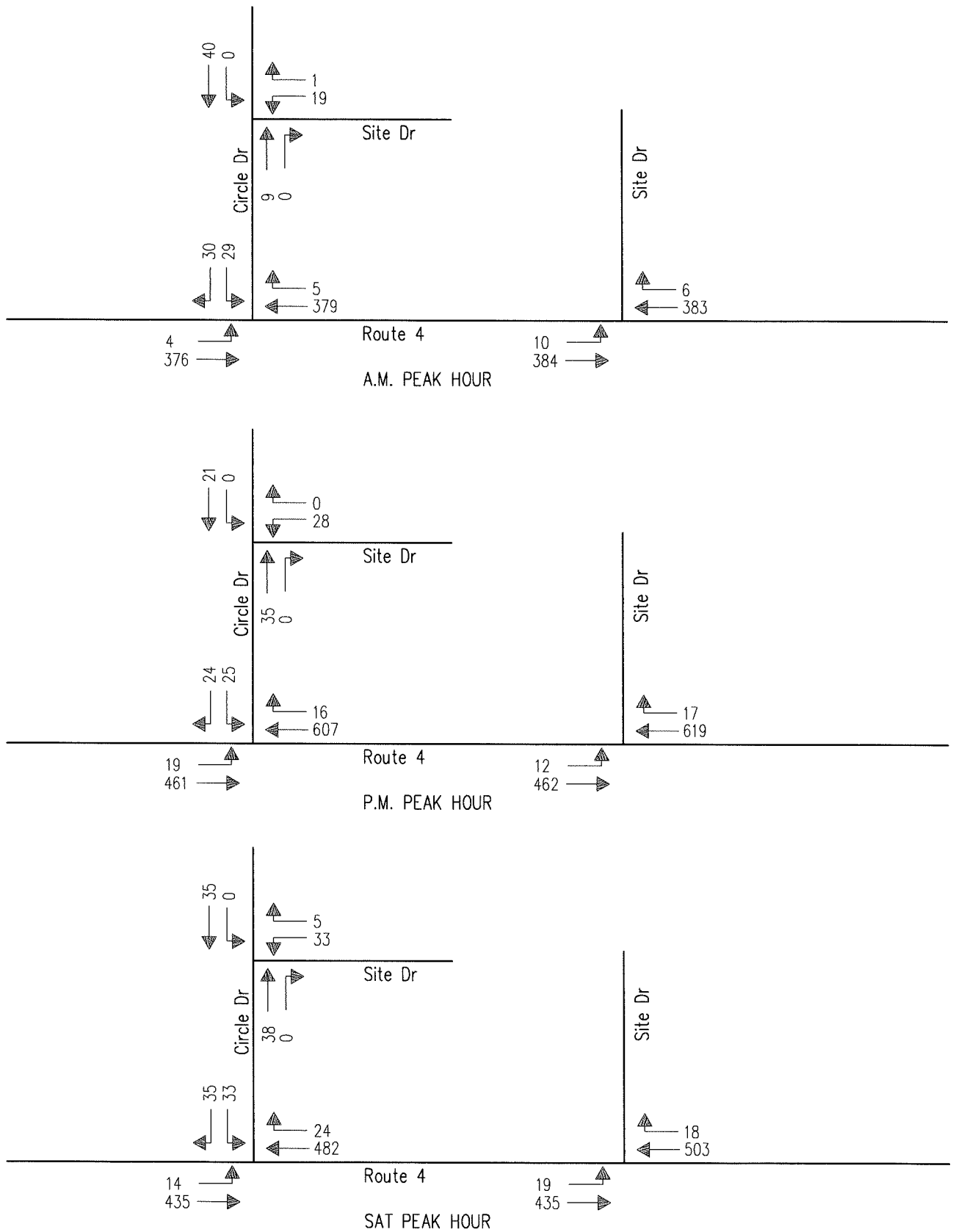


FIGURE 4

9-13-2021

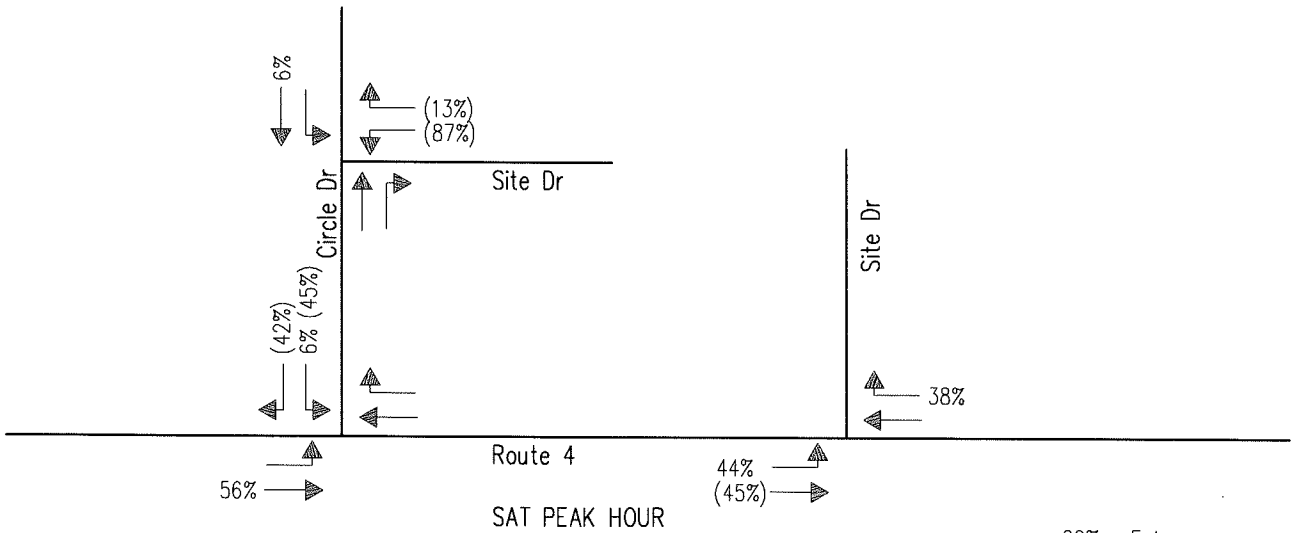
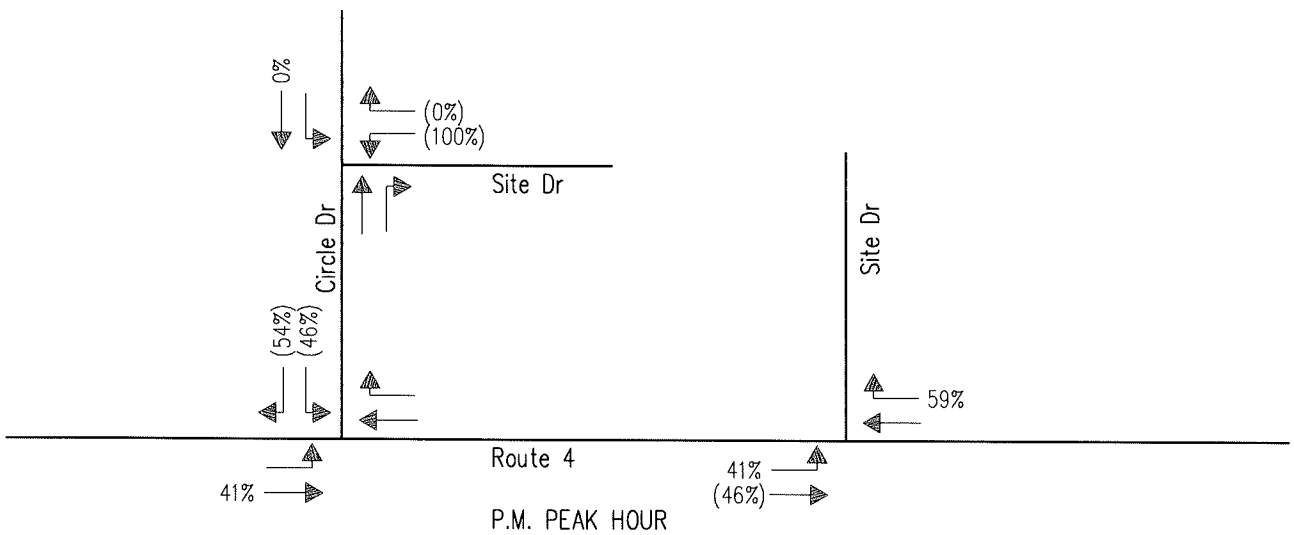
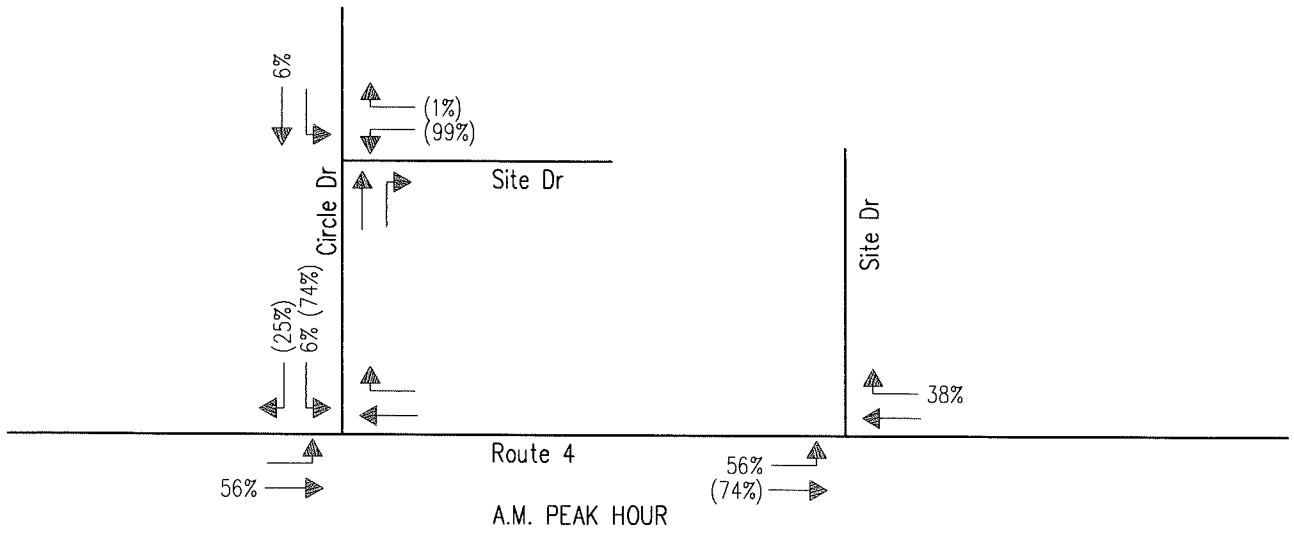
<p>2022 ADJUSTED TRAFFIC A.M., P.M. & SAT PEAK HOURS</p> <p>SAM'S CONVENIENCE STORE ROUTE 4 (NEW HARWINTON ROAD) TORRINGTON, CONNECTICUT</p>	<p>F. A. Heeketh & Associates, Inc. 6 CREAMERY BROOK, EAST GRANBY, CT 06026</p> <p>FAH</p> <p>TRAFFIC PLANNING ENGINEERING DESIGN</p>
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NOT TO SCALE

Table 2
Trip Generation Summary
Proposed Gasoline Pumps at Existing Convenience Store
Route 4 - Torrington, CT

Land Use	Size	ADT	A.M. Peak Hour			P.M. Peak Hour			Saturday			
			Enter	Exit	Total	Enter	Exit	Total	ADT	Enter	Exit	Total
Existing Development	2,612 s.f. Counts	1990	81	82	163	65	63	128	2830	103	104	207
			16	20	36	29	28	57		37	38	75
Proposed Development												
Convenience Market/ Gas Pumps Vehicle Fueling Postions	4 v.f.p. 2,613 s.f.* 788 veh 1107 veh	1290	41	42	83	46	46	92				
			53	53	106	64	65	129	1629	64	65	129
			28	27	55	44	45	89				
Difference			37	33	70	35	37	72		27	27	54

* - Saturday peak hour volumes assumed equal to PM Peak Hour Volumes. Saturday ADT assumed equal to weekday ADT.



00% - Enter
 (00%) - Exit

FIGURE 5

9-13-2021

DIRECTIONAL DISTRIBUTION OF SITE GENERATED TRAFFIC A.M., P.M. & SAT PEAK HOURS SAM'S CONVENIENCE STORE ROUTE 4 (NEW HARWINTON ROAD) TORRINGTON, CONNECTICUT	F. A. Hesketh & Associates, Inc. <small>6 CREAMERY BROOK, EAST GRANBY, CT 06026</small>  TRAFFIC PLANNING ENGINEERING DESIGN
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NOT TO SCALE

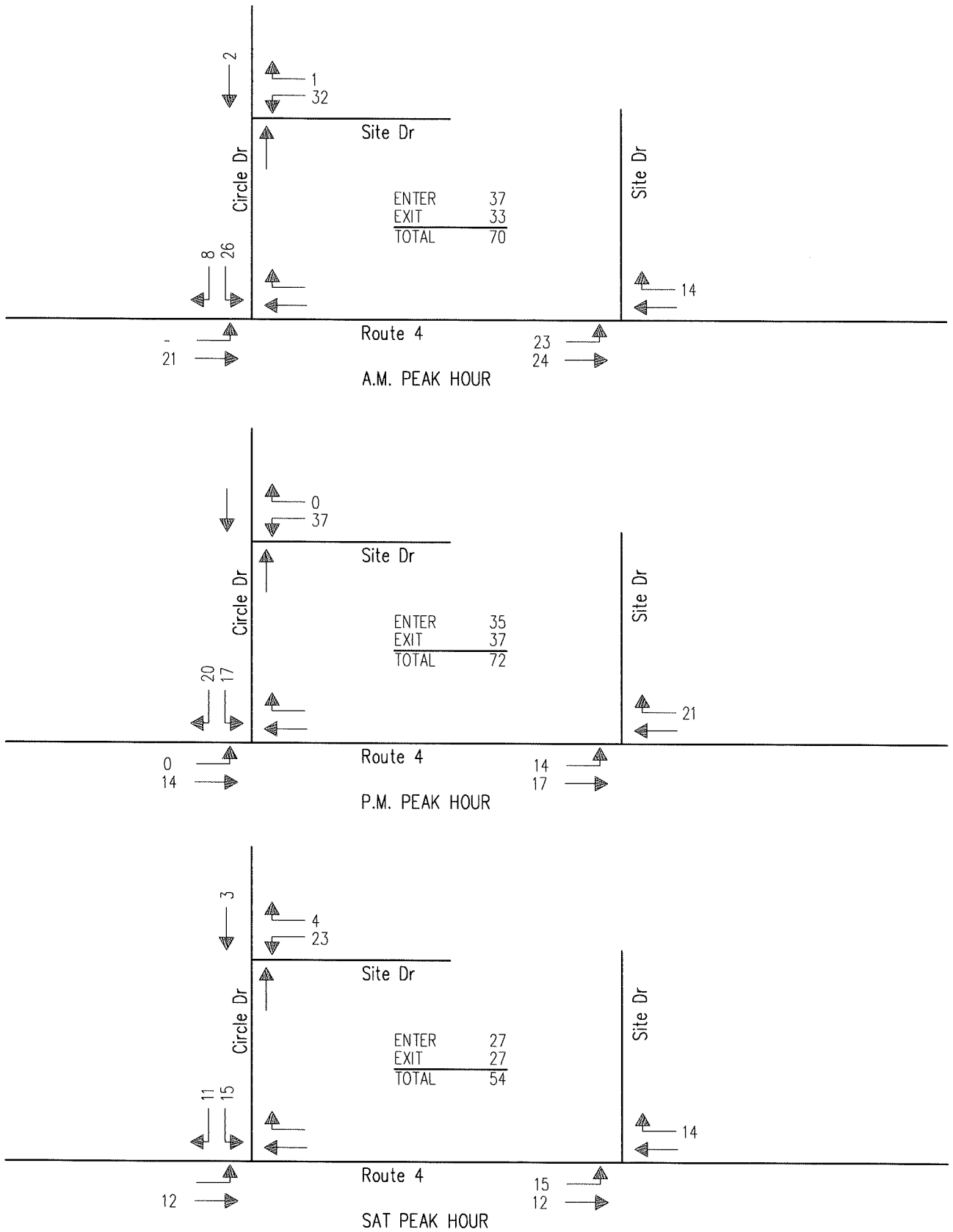


FIGURE 6

9-13-2021

<p>SITE GENERATED TRAFFIC A.M., P.M. & SAT PEAK HOURS</p> <p>SAM'S CONVENIENCE STORE ROUTE 4 (NEW HARWINTON ROAD) TORRINGTON, CONNECTICUT</p>	<p>F. A. Hesketh & Associates, Inc. 6 CREAMERY BROOK, EAST GRANBY, CT 06026</p> <p>FAH</p> <p>TRAFFIC PLANNING ENGINEERING DESIGN</p>
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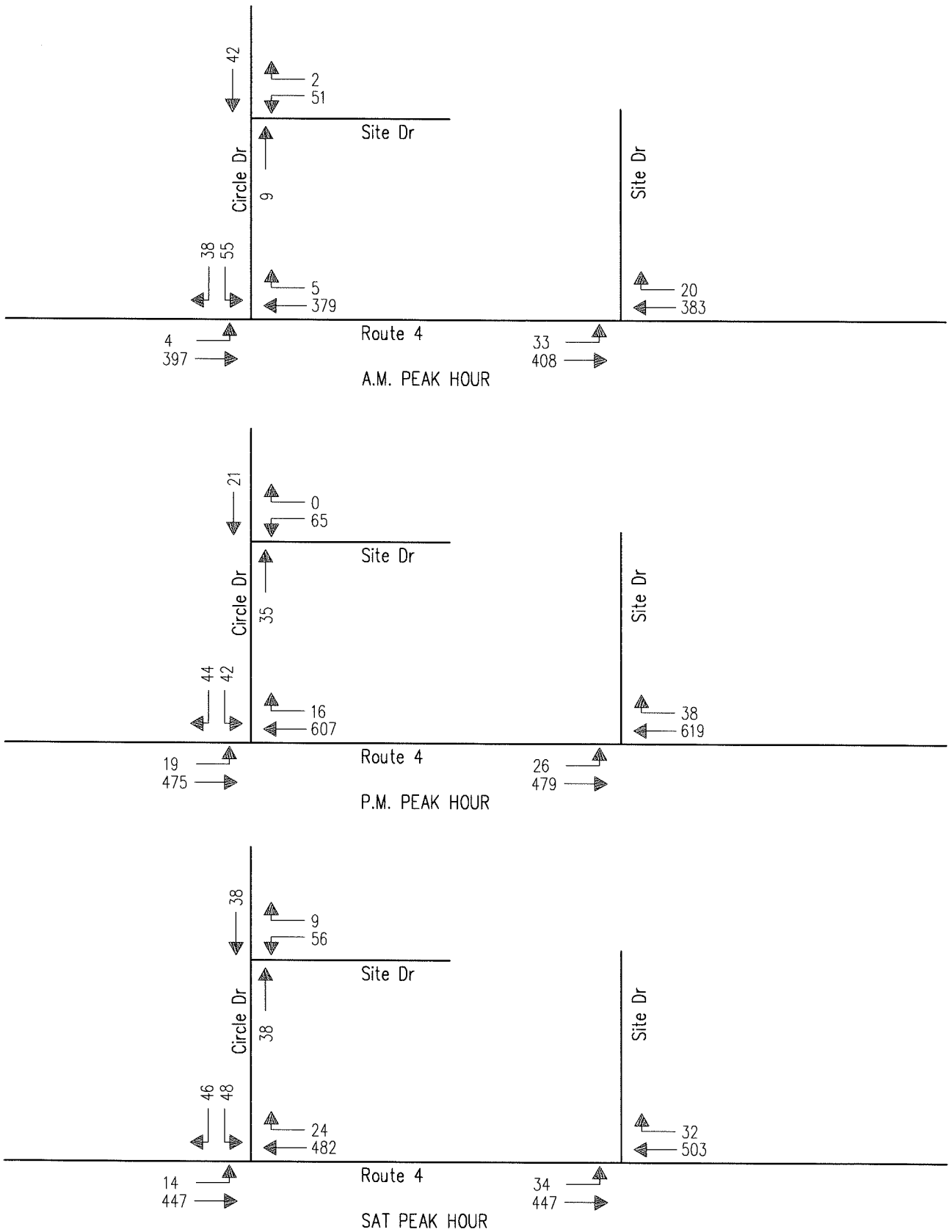


FIGURE 7

9-23-2021

<p>2022 COMBINED TRAFFIC A.M., P.M. & SAT PEAK HOURS</p> <p>SAM'S CONVENIENCE STORE ROUTE 4 (NEW HARWINTON ROAD) TORRINGTON, CONNECTICUT</p>	<p>F. A. Hesketh & Associates, Inc. 6 CREAMERY BROOK, EAST GRANBY, CT 06026</p> <p>FAH</p> <p>TRAFFIC PLANNING ENGINEERING DESIGN</p>
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NOT TO SCALE

Table 3
Level Of Service Summary
Sam's Convenience market
Torrington, CT

Land Use	A.M. Peak Hour			P.M. Peak Hour			Saturday Peak Hour		
	Background Traffic LOS	Delay	v/c	Background Traffic LOS	Delay	v/c	Background Traffic LOS	Delay	v/c
Route 4 at Circle Drive									
EB	A	0.2	0.01	A	0.1	0.00	A	0.6	0.02
WB	A	0.0	0.29	A	0.0	0.29	A	0.0	0.40
SB	B	14.5	0.12	C	19.0	0.29	D	29.9	0.47
Route 4 at Site Driveway									
EB	A	0.2	0.01	A	1.0	0.04	A	0.9	0.03
WB	A	0.0	0.29	A	0.0	0.30	A	0.0	0.42
SB	C	17.9	0.05	C	22.8	0.09	C	19.3	0.08
Circle Drive at Site Driveway									
NB	A	0.0	0.01	A	0.0	0.01	A	0.0	0.03
SB	A	0.2	0.00	A	0.0	0.03	A	0.0	0.02
WB	A	8.8	0.01	A	9.1	0.07	A	9.3	0.09
Combined Traffic									
	LOS	Delay	v/c	LOS	Delay	v/c	LOS	Delay	v/c
	A	0.4	0.01	A	1.0	0.04	A	0.0	0.04
	A	0.0	0.32	A	0.0	0.34	A	0.0	0.34
	C	23.7	0.44	C	23.7	0.44	C	23.7	0.44
	A	0.5	0.02	A	0.5	0.02	A	0.5	0.02
	A	0.0	0.32	A	0.0	0.32	A	0.0	0.32
	C	16.1	0.19	C	16.1	0.19	C	16.1	0.19
	A	0.4	0.01	A	0.4	0.01	A	0.4	0.01
	A	0.0	0.33	A	0.0	0.33	A	0.0	0.33
	C	19.3	0.08	C	19.3	0.08	C	19.3	0.08
	A	0.0	0.04	A	0.0	0.04	A	0.0	0.04
	A	0.8	0.00	A	0.8	0.00	A	0.8	0.00
	A	9.1	0.03	A	9.1	0.03	A	9.1	0.03

Appendix

ConnDOT Traffic Counts

Status: OK

East

Combined

West

TORR-252 - Combined - e/w

Route 4 - 25.68 mi West of Route 183

Town.....	Torrington	07-May	08-May	09-May
Station.....	252	Mon	Tue	Wed
Location.....	41.799975,-73.087585	12:00am	42	65
A.K.A.....	252 2252	01:00am	34	20
2015-Principal Arterial - Other	3...2015-Urban	02:00am	18	12
HPMS Section ID.....		03:00am	21	26
Start Report.....	07-May-2012 06:00AM	04:00am	52	61
End Report.....	09-May-2012 06:00AM	05:00am	176	187
Axle Correction Factor.....	None	06:00am	432	
		07:00am	476	
		08:00am	716	
24-Hour Count.....	10649 * G4(0.91) = 9690.6	09:00am	578	
Day 1.....	+10018 * G4(0.91) = 18807.0	10:00am	522	
UnRounded AADT.....	18807.0 / 2 = 9403.5	11:00am	488	
OK 2012 Mon 07-May -this report-	9400	12:00pm	621	
OK 2009 Thu 22-Jan	10200	01:00pm	683	
OK 2006 Thu 25-May	11100	02:00pm	612	
		03:00pm	720	
		04:00pm	855	
		05:00pm	905	
		06:00pm	1006	
		07:00pm	708	
		08:00pm	524	
		09:00pm	398	
		10:00pm	255	
		11:00pm	158	
		Totals	81	
			10306	
			10018	
				371

Status: OK

East

Combined

West

TORR-252 - East

Route 4 - 25.68 mi West of Route 183

	07-May	08-May	09-May
	Mon	Tue	Wed
Town.....Torrington			
Station.....252			
Location..... 41.799975,-73.087585	12:00am	16	30
A.K.A.....252 2252	01:00am	22	10
2015-Principal Arterial - Other 3...2015-Urban	02:00am	11	6
HPMS Section ID.....	03:00am	13	16
Start Report.....07-May-2012 06:00AM	04:00am	31	38
End Report.....09-May-2012 06:00AM	05:00am	112	115
Axle Correction Factor.....None	06:00am	265	232
	07:00am	345	319
	08:00am	285	273
24-Hour Count..... 5098 * G4(0.91) = 4639.2	09:00am	246	235
Day 1.....+ 4726 * G4(0.91) = 8939.8	10:00am	261	239
UnRounded AADT.....8939.8 / 2 = 4469.9	11:00am	311	254
OK 2012 Mon 07-May -this report-.....9400	12:00pm	341	279
OK 2009 Thu 22-Jan10200	01:00pm	284	287
OK 2006 Thu 25-May11100	02:00pm	353	336
	03:00pm	381	369
	04:00pm	400	434
	05:00pm	436	384
	06:00pm	314	276
	07:00pm	243	234
	08:00pm	196	145
	09:00pm	133	123
	10:00pm	60	65
	11:00pm	39	37
Totals	4893	4726	215

Status: OK

East

Combined

West

TORR-252 - West

Route 4 - 25.68 mi West of Route 183

	07-May Mon	08-May Tue	09-May Wed
Town.....Torrington			
Station.....252			
Location..... 41.799975,-73.087585	12:00am	26	35
A.K.A.....252 2252	01:00am	12	10
2015-Principal Arterial - Other 3...2015-Urban	02:00am	7	6
HPMS Section ID.....	03:00am	8	10
Start Report.....07-May-2012 06:00AM	04:00am	21	23
End Report.....09-May-2012 06:00AM	05:00am	64	72
Axle Correction Factor.....None	06:00am	211	200
24-Hour Count..... 5551 * G4(0.91) = 5051.4	07:00am	371	360
Day 1.....+ 5292 * G4(0.91) = 9867.1	08:00am	293	318
UnRounded AADT.....9867.1 / 2 = 4933.6	09:00am	276	262
OK 2012 Mon 07-May -this report-.....9400	10:00am	227	268
OK 2009 Thu 22-Jan10200	11:00am	310	294
OK 2006 Thu 25-May11100	12:00pm	342	295
	01:00pm	328	306
	02:00pm	367	347
	03:00pm	474	439
	04:00pm	505	480
	05:00pm	570	494
	06:00pm	394	379
	07:00pm	281	298
	08:00pm	202	189
	09:00pm	122	106
	10:00pm	98	76
	11:00pm	42	43
Totals	5413	5292	156

Status: OK

West

Combined

East

Class

Speed

HARW-001 - Combined - e/w

Route 4 - 26.02 mi SE of Dutton Hill Road

		09-Mar	10-Mar
		Mon	Tue
Town.....	Harwinton		
Station.....	1		
Location.....	41.797668,-73.081603	12:00am	31
Posted Speed Limit.....	50 MPH	01:00am	15
2015-Principal Arterial - Other 3...2015-Urban		02:00am	13
Start Report.....	09-Mar-2020 10:00AM	03:00am	18
End Report.....	10-Mar-2020 02:00PM	04:00am	57
.....	05:00am	202
.....	06:00am	450
24-Hour Count.....	9176 * G4(0.97) = 8900.7	07:00am	627
UnRounded AADT.....	8900.7 / 1 = 8900.7	08:00am	564
OK 2020 Mon 09-Mar	8900	09:00am	x 470
OK 2020 Mon 09-Mar -this report-.....	8900	10:00am	467 438
OK 2017 Mon 26-Jun	8100	11:00am	495 453
REV 2013 Mon 28-Oct	8200	12:00pm	582 515
REV 2011 Mon 21-Nov	8900	01:00pm	508 540
OK 2008 Mon 08-Sep	8600	02:00pm	632 x
		03:00pm	804
		04:00pm	853
		05:00pm	893
		06:00pm	532
		07:00pm	361
		08:00pm	256
		09:00pm	195
		10:00pm	97
		11:00pm	54
		Totals	6729 4393

Manual Turning Movement Counts

Route 4 at Circle Drive

Existing C-Store

F.A. Hesketh & Associates, Inc.

6 Creamery Brook

Route 4 (New Harwinton Road)
at Circle Drive
Torrington, CT
Job No.21120

East Granby, CT 06026
PH: (860) 653-8000 Fax: (860) 844-8600

File Name : AM Count
Site Code : 12121212
Start Date : 7/27/2021
Page No : 1

Groups Printed- Unshifted

Start Time	Circle Drive From North			Route 4 From East				Commercial Drive From South				Route 4 From West				Int. Total
	Right	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Factor	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
07:00 AM	2	3	5	0	49	0	49	0	0	0	0	0	44	1	45	99
07:15 AM	6	4	10	1	43	0	44	0	0	0	0	0	67	1	68	122
07:30 AM	8	1	9	2	79	0	81	0	0	0	0	0	64	2	66	156
07:45 AM	7	3	10	0	106	0	106	0	0	0	0	2	73	1	76	192
Total	23	11	34	3	277	0	280	0	0	0	0	2	248	5	255	569
08:00 AM	5	8	13	2	60	1	63	0	0	0	0	1	66	1	68	144
08:15 AM	8	4	12	2	80	1	83	3	0	0	3	0	44	1	45	143
08:30 AM	9	2	11	1	80	1	82	0	0	0	0	0	69	3	72	165
08:45 AM	6	0	6	0	70	0	70	0	0	0	0	1	53	1	55	131
Total	28	14	42	5	290	3	298	3	0	0	3	2	232	6	240	583
Grand Total	51	25	76	8	567	3	578	3	0	0	3	4	480	11	495	1152
Apprch %	67.1	32.9		1.4	98.1	0.5		100.0	0.0	0.0		0.8	97.0	2.2		
Total %	4.4	2.2	6.6	0.7	49.2	0.3	50.2	0.3	0.0	0.0	0.3	0.3	41.7	1.0	43.0	

Start Time	Circle Drive From North			Route 4 From East				Commercial Drive From South				Route 4 From West				Int. Total
	Right	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1																
Intersection	07:45 AM															
Volume	29	17	46	5	326	3	334	3	0	0	3	3	252	6	261	644
Percent	63.0	37.0		1.5	97.6	0.9		100.0	0.0	0.0		1.1	96.6	2.3		
07:45																
Volume	7	3	10	0	106	0	106	0	0	0	0	2	73	1	76	192
Peak Factor																0.839
High Int.	08:00 AM			07:45 AM				08:15 AM				07:45 AM				
Volume	5	8	13	0	106	0	106	3	0	0	3	2	73	1	76	
Peak Factor	0.885			0.788				0.250				0.859				
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1																
By Approach	07:45 AM			07:45 AM				07:30 AM				07:15 AM				
Volume	29	17	46	5	326	3	334	3	0	0	3	3	270	5	278	
Percent	63.0	37.0		1.5	97.6	0.9		100.0	0.0	0.0		1.1	97.1	1.8		
High Int.	08:00 AM			07:45 AM				08:15 AM				07:45 AM				
Volume	5	8	13	0	106	0	106	3	0	0	3	2	73	1	76	
Peak Factor	0.885			0.788				0.250				0.914				

F.A. Hesketh & Associates, Inc.
6 Creamery Brook

Route 4 (New Harwinton Road)
at Circle Drive
Torrington, CT
Job No.20120

East Granby, CT 06026
PH: (860) 653-8000 Fax: (860) 844-8600

File Name : PM COUNT
Site Code : 34343434
Start Date : 7/27/2021
Page No : 1

Groups Printed- Unshifted

Start Time	Circle Drive From North				Route 4 From East				Commerical drive From South				Route 4 From West				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
04:00 PM	5	0	4	9	7	93	1	101	0	0	0	0	0	94	5	99	209
04:15 PM	5	0	4	9	8	93	1	102	0	0	1	1	0	88	4	92	204
04:30 PM	5	0	4	9	4	122	0	126	1	0	0	1	2	110	7	119	255
04:45 PM	9	0	3	12	4	111	0	115	0	0	1	1	2	95	4	101	229
Total	24	0	15	39	23	419	2	444	1	0	2	3	4	387	20	411	897
05:00 PM	3	0	1	4	3	89	1	93	0	0	1	1	0	119	7	126	224
05:15 PM	3	0	5	8	5	118	0	123	1	0	1	2	0	101	2	103	236
05:30 PM	10	0	8	18	4	98	0	102	0	0	0	0	0	81	9	90	210
05:45 PM	2	0	6	8	3	74	0	77	0	0	1	1	0	81	5	86	172
Total	18	0	20	38	15	379	1	395	1	0	3	4	0	382	23	405	842
Grand Total	42	0	35	77	38	798	3	839	2	0	5	7	4	769	43	816	1739
Apprch %	54.5	0.0	45.5		4.5	95.1	0.4		28.6	0.0	71.4		0.5	94.2	5.3		
Total %	2.4	0.0	2.0	4.4	2.2	45.9	0.2	48.2	0.1	0.0	0.3	0.4	0.2	44.2	2.5	46.9	

Start Time	Circle Drive From North				Route 4 From East				Commerical drive From South				Route 4 From West				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Intersection	04:30 PM				04:30 PM				05:15 PM				05:00 PM				
Volume	20	0	13	33	16	440	1	457	2	0	3	5	4	425	20	449	944
Percent	60.6	0.0	39.4		3.5	96.3	0.2		40.0	0.0	60.0		0.9	94.7	4.5		
04:30	5	0	4	9	4	122	0	126	1	0	0	1	2	110	7	119	255
Volume																	
Peak Factor																	0.925
High Int.	04:45 PM				04:30 PM				05:15 PM				05:00 PM				
Volume	9	0	3	12	4	122	0	126	1	0	1	2	0	119	7	126	
Peak Factor	0.688				0.907				0.625				0.891				
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																	
By Approach	04:45 PM				04:30 PM				04:30 PM				04:30 PM				
Volume	25	0	17	42	16	440	1	457	2	0	3	5	4	425	20	449	
Percent	59.5	0.0	40.5		3.5	96.3	0.2		40.0	0.0	60.0		0.9	94.7	4.5		
High Int.	05:30 PM				04:30 PM				05:15 PM				05:00 PM				
Volume	10	0	8	18	4	122	0	126	1	0	1	2	0	119	7	126	
Peak Factor	0.583				0.907				0.625				0.891				

F.A. Hesketh & Associates, Inc.

6 Creamery Brook

Route 4 (New Harwinton Rd)
at Circle Drive
Torrington, CT
Job No. 21120

East Granby, CT 06026
PH: (860) 653-8000 Fax: (860) 844-8600

File Name : SAT COUNT
Site Code : 00767676
Start Date : 7/24/2021
Page No : 1

Groups Printed- Unshifted

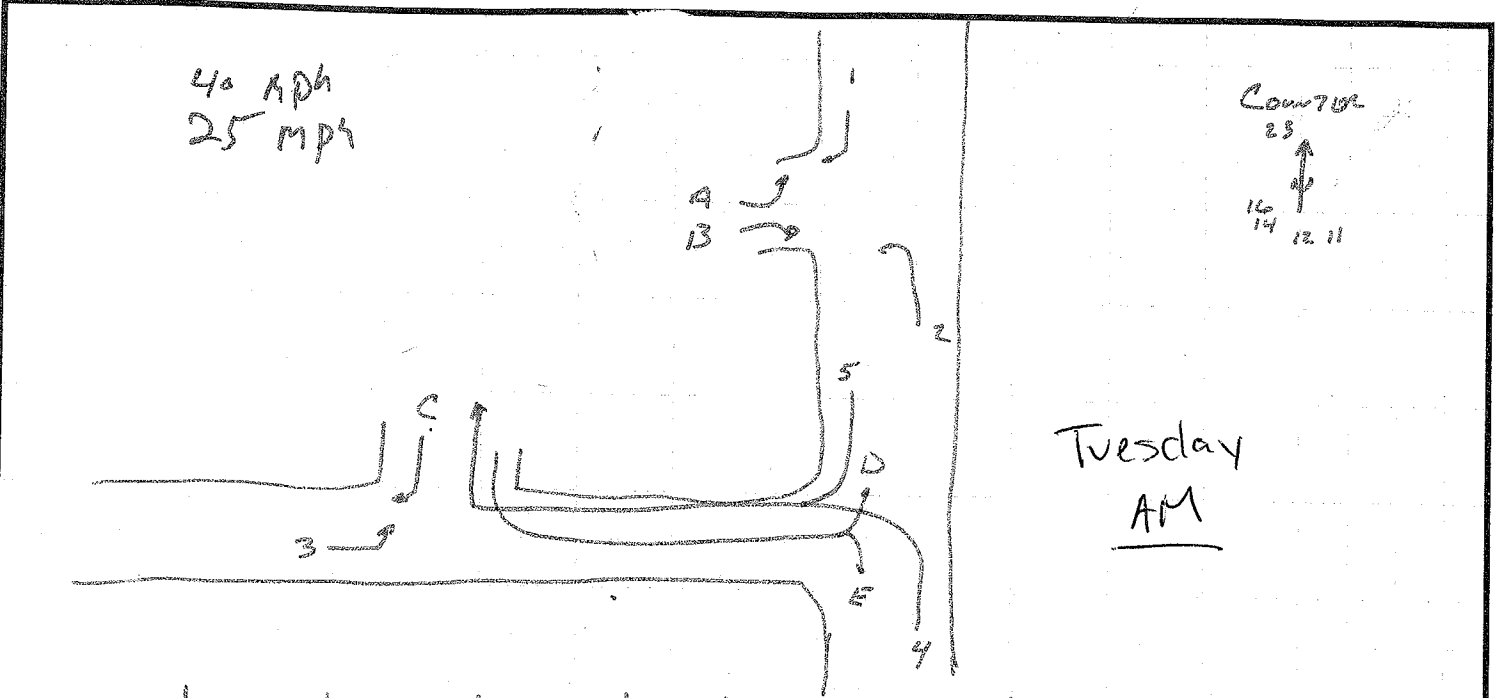
Start Time	Circle Drive From North			From South <i>EAST</i>			Route 4 From West			Int. Total
	Right	Left	App. Total	Right	Thru	App. Total	Thru	Left	App. Total	
Factor	1.0	1.0		1.0	1.0		1.0	1.0		
11:00 AM	12	2	14	4	92	96	92	8	100	210
11:15 AM	9	10	19	5	98	103	83	6	89	211
11:30 AM	7	2	9	8	108	116	98	2	100	225
11:45 AM	4	1	5	7	104	111	88	0	88	204
Total	32	15	47	24	402	426	361	16	377	850
12:00 PM	12	2	14	3	82	85	86	4	90	189
12:15 PM	5	4	9	4	80	84	93	8	101	194
12:30 PM	8	4	12	7	77	84	81	5	86	182
12:45 PM	10	8	18	4	110	114	79	4	83	215
Total	35	18	53	18	349	367	339	21	360	780
Grand Total	67	33	100	42	751	793	700	37	737	1630
Apprch %	67.0	33.0		5.3	94.7		95.0	5.0		
Total %	4.1	2.0	6.1	2.6	46.1	48.7	42.9	2.3	45.2	

Start Time	Circle Drive From North			From South			Route 4 From West			Int. Total
	Right	Left	App. Total	Right	Thru	App. Total	Thru	Left	App. Total	
Peak Hour From 11:00 AM to 12:45 PM - Peak 1 of 1										
Intersection	11:00 AM									
Volume	32	15	47	24	402	426	361	16	377	850
Percent	68.1	31.9		5.6	94.4		95.8	4.2		
11:30 Volume	7	2	9	8	108	116	98	2	100	225
Peak Factor										0.944
High Int.	11:15 AM			11:30 AM			11:00 AM			
Volume	9	10	19	8	108	116	92	8	100	
Peak Factor			0.618			0.918			0.943	
Peak Hour From 11:00 AM to 12:45 PM - Peak 1 of 1										
By Approach	12:00 PM			11:00 AM			11:30 AM			
Volume	35	18	53	24	402	426	365	14	379	
Percent	66.0	34.0		5.6	94.4		96.3	3.7		
High Int.	12:45 PM			11:30 AM			12:15 PM			
Volume	10	8	18	8	108	116	93	8	101	
Peak Factor			0.736			0.918			0.938	



F.A. Hesketh & Associates, Inc.
 3 Creamery Brook
 East Granby, CT 06026

Civil & Traffic Engineers • Surveyors • Planners • Landscape Architects

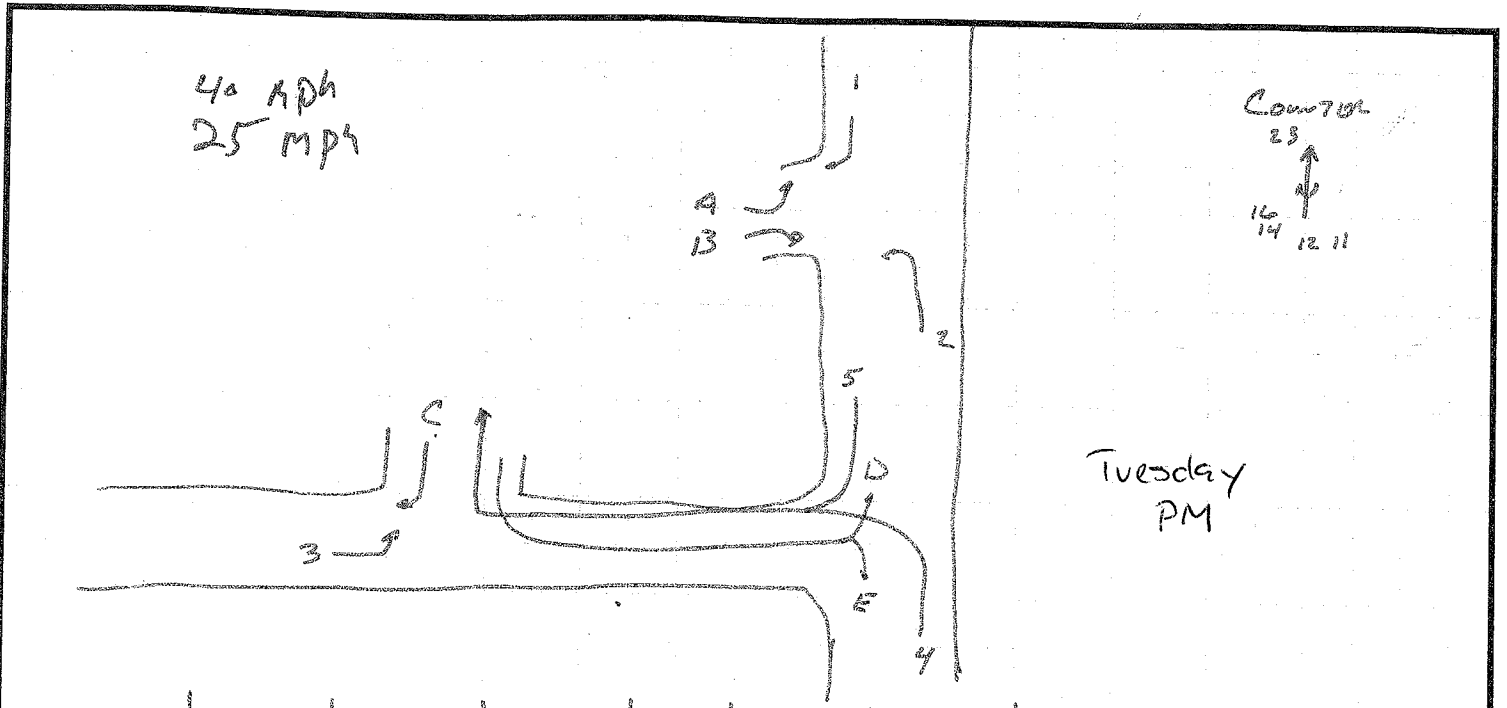


TIME	1	2	3	4	5	A	B	C	D	E	T
7:00	11	111		1		111			11	1	6/8
7:15	11	1	1			1111		1		1	4/6
7:30	1	11		1		11				1	4/3
7:45	1	1					1		1	1	2/3
8:00	111	11				1	1		1	1	5/4
8:15	1					1			1	111	1/5
8:30	111								1	111	5/4
8:45	1111									1111	4/5
7 ⁰⁰ -8 ⁰⁰	6	7	1	2	0	11	1	1	3	4	16/20
	13	2	0	0	0	2	1	0	3	12	15/20



F.A. Hesketh & Associates, Inc.
 3 Creamery Brook
 East Granby, CT 06026

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TIME	1	2	3	4	5	A	B	C	D	E	T
4:00											6/7 ¹³
4:15											8/7 ¹⁵
4:30											9/8 ¹⁷
4:45											6/6 ¹²
5:00											6/3 ⁶
5:15											4/4 ⁸
5:30											10/9 ¹⁴
5:45											5/4 ⁹
	17	11	0	1	0	12	4	0	1	11	29/28
	14	10	1	0	0	7	3	0	3	7	25/20



F.A. Hesketh & Associates, Inc.
 3 Creamery Brook
 East Granby, CT 06026

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JOB SAM'S TORRINGTON

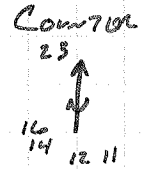
SHEET NO. 11⁰⁰ - 1⁰⁰ OF 767676

CALCULATED BY SATURDAY DATE 7/24/21

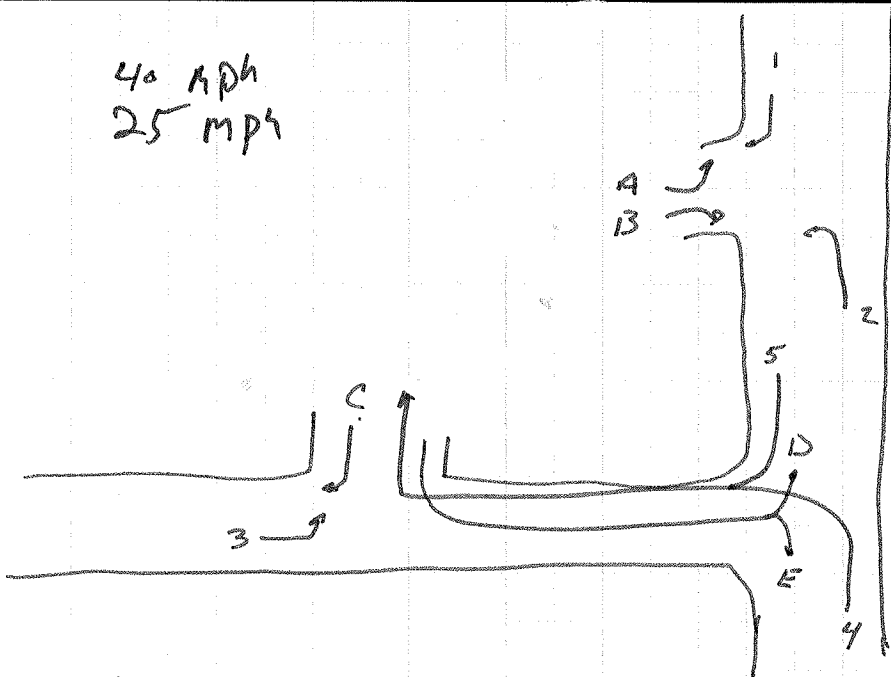
CHECKED BY _____ DATE S.F.H.

SCALE _____

40 MPH
 25 MPH



CARS IN LOT #
 11⁰⁰ 2
 1⁰⁰ 2



	1	2	3	4	5	A	B	C	D	E	T
11											9/9
11 ¹⁵											9/9
11 ³⁰											9/4
11 ⁴⁵											2/4
	15	9	2	2	1	7	3	2	5	8 9	29/26
12											11/11
12 ¹⁵											10/6
12 ³⁰											8/10
12 ⁴⁵											8/11
	18	13	4	2	0	14	3	5	3	13	37/38

ITE Trip Generation Worksheets

Graph Look Up

Technical Support

Add Users

Comments

Query Filter

DATA SOURCE: Trip Gen Manual, 10th Ed + Supplement

SEARCH BY LAND USE CODE: 851

LAND USE GROUP: (800-999) Retail

LAND USE: 851 - Convenience Market

LAND USE SUBCATEGORY: All Sites

INDEPENDENT VARIABLE (IV): 1000 Sq. Ft. GFA

TIME PERIOD: Weekday

SETTING/LOCATION: General Urban/Suburban

TRIP TYPE: Vehicle

ENTER IV VALUE TO CALCULATE TRIPS: 2.61 Calculate



Data Plot and Equation

Land Use: Convenience Market (851) [Click for more details](#)

Independent Variable: 1000 Sq. Ft. GFA

Time Period: Weekday

Setting/Location: General Urban/Suburban

Trip Type: Vehicle

Number of Studies: 8

Avg. 1000 Sq. Ft. GFA: 3

Average Rate: 762.28

Range of Rates: 325.78 - 1433.00

Standard Deviation: 333.89

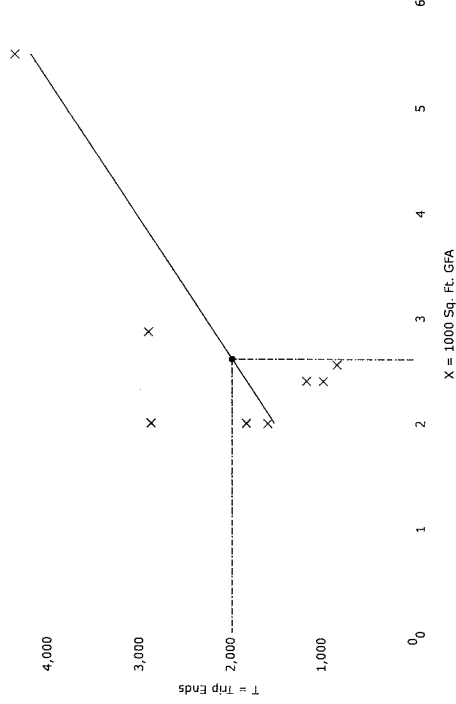
Fitted Curve Equation: $T = 761.44(X) + 2.27$

R²: 0.53

Directional Distribution: 50% entering, 50% exiting

Calculated Trip Ends: Average Rate: 1990 (Total), 995 (Entry), 995 (Exit)

Fitted Curve: 1990 (Total), 995 (Entry), 995 (Exit)



X Study Site

--- Average Rate

— Fitted Curve

X = 1000 Sq. Ft. GFA

Reset Zoom

Restore

Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

Query Filter

DATA SOURCE: Trip Gen Manual, 10th Ed + Supplement

SEARCH BY LAND USE CODE: 851

LAND USE GROUP: (800-899) Retail

LAND USE: 851 - Convenience Market

LAND USE SUBCATEGORY: All Sites

INDEPENDENT VARIABLE (IV): 1000 Sq. Ft. GFA

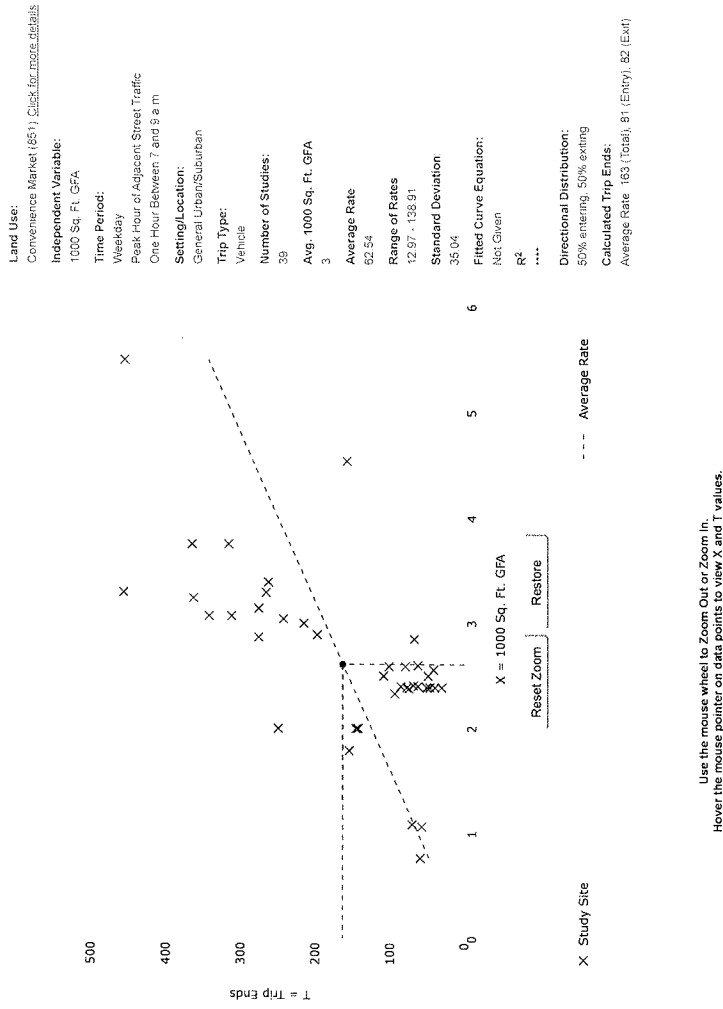
TIME PERIOD: Weekday, Peak Hour of Adjacent Street Traffic

SETTING/LOCATION: General Urban/Suburban

TRIP TYPE: Vehicle

ENTER IV VALUE TO CALCULATE TRIPS: 2.61 Calculate

Data Plot and Equation



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

Query Filter

DATA SOURCE: Trip Gen Manual, 10th Ed + Supplement

SEARCH BY LAND USE CODE: 851

LAND USE GROUP: (800-899) Retail

LAND USE: 851 - Convenience Market

LAND USE SUBCATEGORY: All Sites

INDEPENDENT VARIABLE (IV): 1000 Sq. Ft. GFA

TIME PERIOD: Weekday, Peak Hour of Adjacent Street Traffic

SETTING/LOCATION: General Urban/Suburban

TRIP TYPE: Vehicle

ENTER IV VALUE TO CALCULATE TRIPS: 2.61



Data Plot and Equation

DATA STATISTICS

Land Use: Convenience Market (851) [Click for more details](#)

Independent Variable: 1000 Sq. Ft. GFA

Time Period: Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Trip Type: Vehicle

Number of Studies: 36

Avg. 1000 Sq. Ft. GFA: 3

Average Rate: 49.11

Range of Rates: 15.90 - 88.18

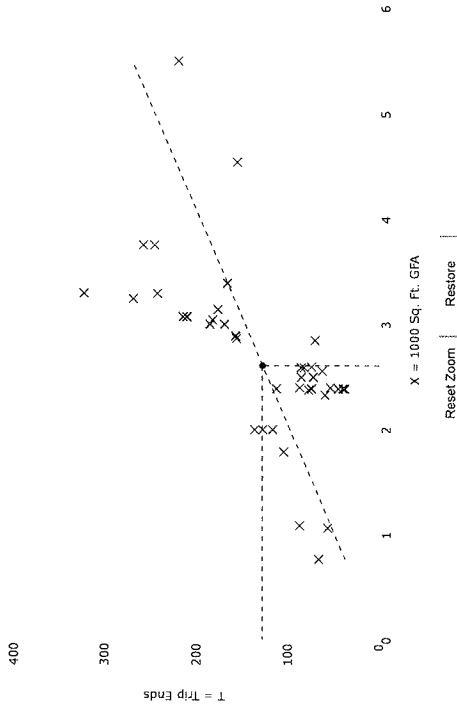
Standard Deviation: 20.84

Fitted Curve Equation: Not Given

R²:

Directional Distribution: 51% entering, 49% exiting

Calculated Trip Ends: Average Rate - 128 (Total), 65 (Entry), 63 (Exit)



X Study Site

--- Average Rate

Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and Y values.

[Add-ons to do more](#)

[Try OTISS Pro](#)

DATA SOURCE:
Trip Gen Manual, 10th Ed + Supplement

SEARCH BY LAND USE CODE:
851

LAND USE GROUP:
(600-899) Retail

LAND USE:
851 - Convenience Market

LAND USE SUBCATEGORY:
All Sites

INDEPENDENT VARIABLE (IV):
1000 Sq. Ft. GFA

TIME PERIOD:
Saturday

SETTING/LOCATION:
General Urban/Suburban

TRIP TYPE:
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:
2.61

Calculate



Data Plot and Equation

Caution - Small Sample Size

DATA STATISTICS

Land Use:
Convenience Market (851) [Click for more details](#)

Independent Variable:
1000 Sq. Ft. GFA

Time Period:
Saturday

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
3

Avg. 1000 Sq. Ft. GFA
2

Average Rate
1084.17

Range of Rates
732.50 - 1627.00

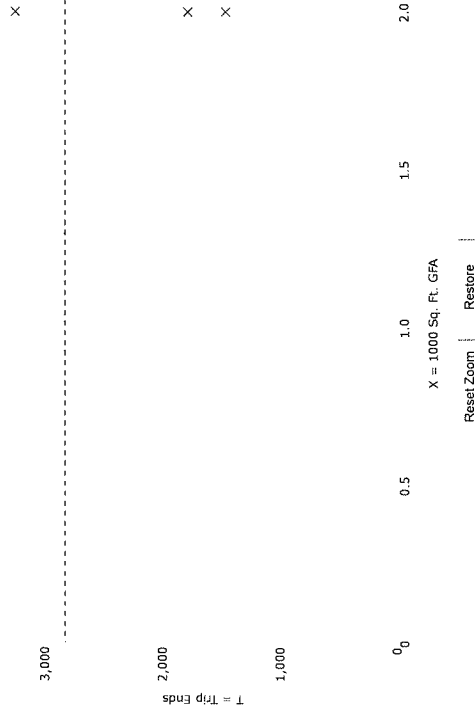
Standard Deviation
476.91

Fitted Curve Equation:
Not Given

R²

Directional Distribution:
50% entering, 50% exiting

Calculated Trip Ends:
Average Rate 2630 (Total), 1415 (Entry), 1415 (Exit)



Reset Zoom
X = 1000 Sq. Ft. GFA
Restore

Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.



Graph Look Up

ITE Trip Gen Web-based App

Query Filter

Graph Look Up

Technical Support

Add Users

Comments

DATA SOURCE: Trip Gen Manual, 10th Ed + Supplement

SEARCH BY LAND USE CODE: 851

LAND USE GROUP: (800-899) Retail

LAND USE: 851 - Convenience Market

LAND USE SUBCATEGORY: All Sites

INDEPENDENT VARIABLE (IV): 1000 Sq. Ft. GFA

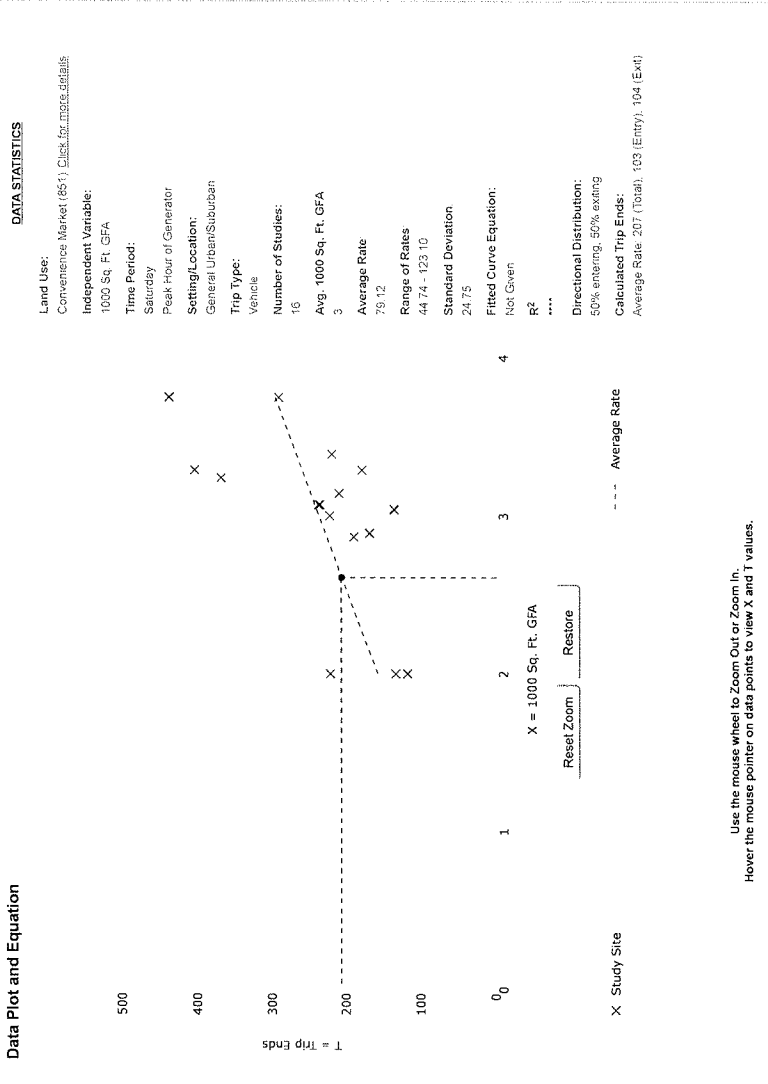
TIME PERIOD: Saturday, Peak Hour of Generator

SETTING/LOCATION: General Urban/Suburban

TRIP TYPE: Vehicle

ENTER IV VALUE TO CALCULATE TRIPS: 2.61 Calculate

Data Plot and Equation



Add-ons to do more

Try OTISS Pro



Graph Look Up

ITE TripGen Web-based App

Query Filter

Graph Look Up

Technical Support

Add Users

Comments

DATA SOURCE: Trip Gen Manual, 10th Ed + Supplement

SEARCH BY LAND USE CODE: 853

LAND USE GROUP: (800-899) Retail

LAND USE: 853 - Convenience Market with Gasoline Pump

LAND USE SUBCATEGORY: All Sites

INDEPENDENT VARIABLE (IV): Vehicle Fueling Positions

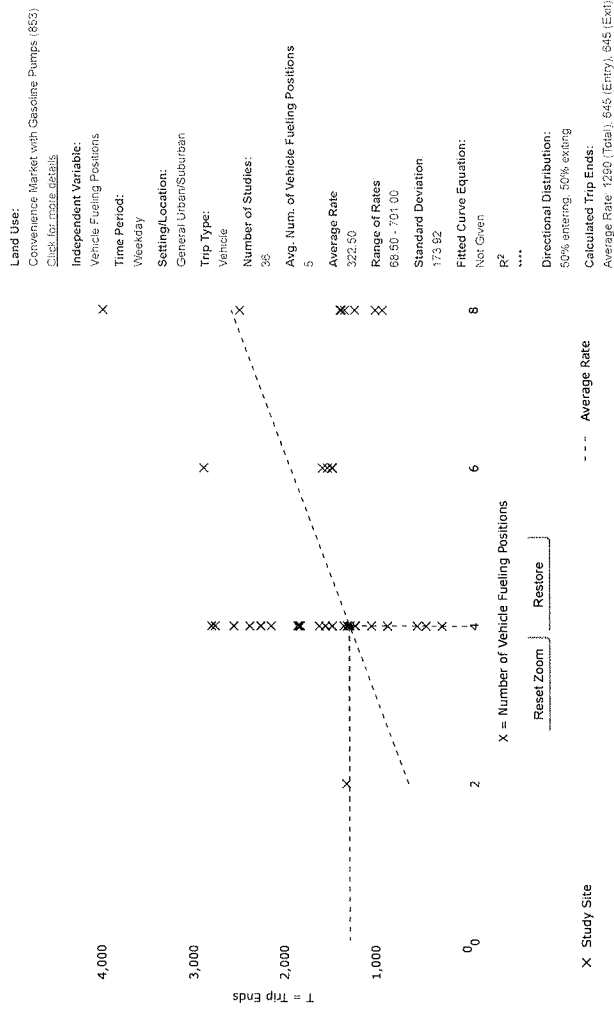
TIME PERIOD: Weekday

SETTING/LOCATION: General Urban/Suburban

TRIP TYPE: Vehicle

ENTER IV VALUE TO CALCULATE TRIPS: 4

Data Plot and Equation



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

Add-ons to do more

Try OTISS Pro



Graph Look Up

ITE TripGen Web-based App

Query Filter

DATA SOURCE: Trip Gen Manual, 10th Ed + Supplement

SEARCH BY LAND USE CODE: 853

LAND USE GROUP: (800-899) Retail

LAND USE: 853 - Convenience Market with Gasoline Pump

LAND USE SUBCATEGORY: All Sites

INDEPENDENT VARIABLE (IV): Vehicle Fueling Positions

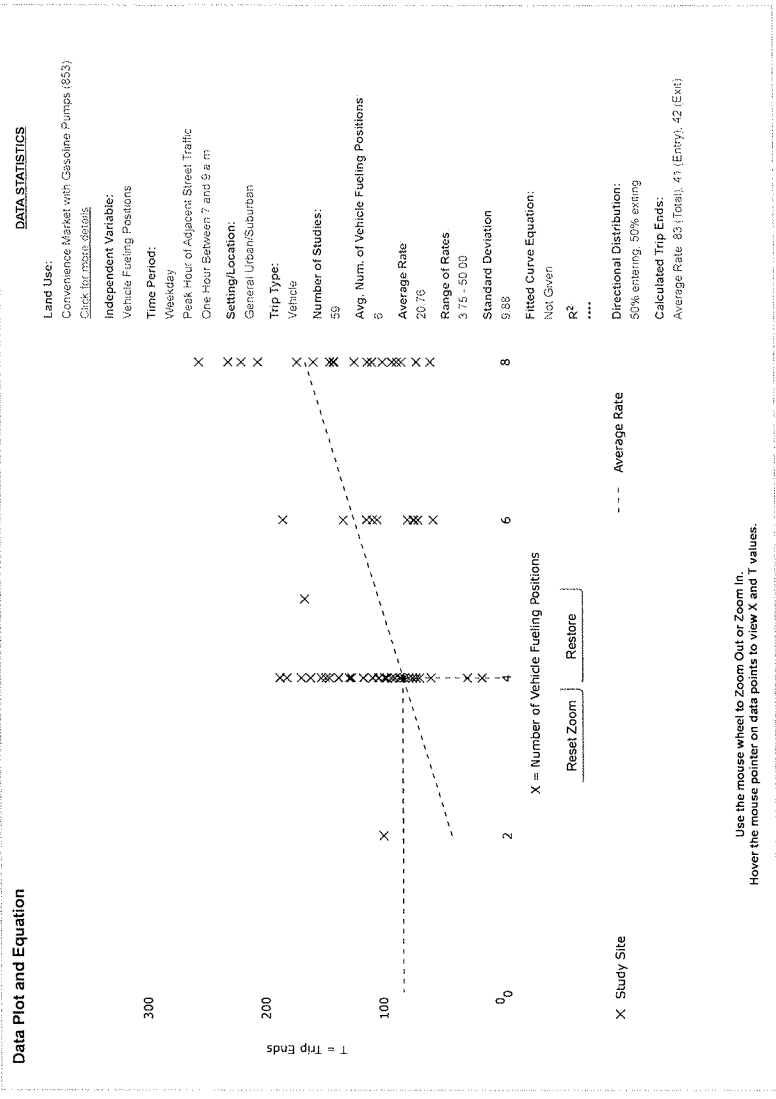
TIME PERIOD: Weekday, Peak Hour of Adjacent Street Traffic

SETTING/LOCATION: General Urban/Suburban

TRIP TYPE: Vehicle

ENTER IV VALUE TO CALCULATE TRIPS: 4 Calculate

Data Plot and Equation



Add-ons to do more

Try OTISS Pro

Graph Look Up



ITE TripGen Web-based App

Graph Look Up

Technical Support

Add Users

Comments

Query Filter

DATA SOURCE: Trip Gen Manual, 10th Ed + Supplement

SEARCH BY LAND USE CODE: 853

LAND USE GROUP: (800-899) Retail

LAND USE: 853 - Convenience Market with Gasoline Pump

LAND USE SUBCATEGORY: All Sites

INDEPENDENT VARIABLE (IV): Vehicle Fueling Positions

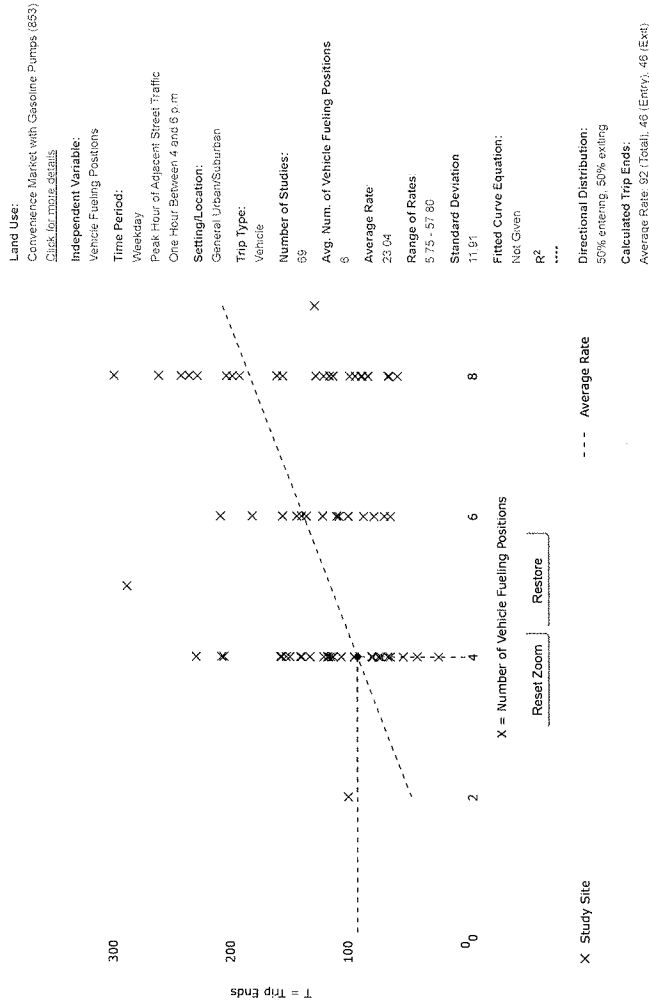
TIME PERIOD: Weekday, Peak Hour of Adjacent Street Traffic

SETTING/LOCATION: General Urban/Suburban

TRIP TYPE: Vehicle

ENTER IV VALUE TO CALCULATE TRIPS: 4 Calculate

Data Plot and Equation



Use the mouse wheel to Zoom Out or Zoom In.
 Hover the mouse pointer on data points to view X and T values.

Graph Look Up

ITE Trip Gen Web-based App

Query Filter

DATA SOURCE:
 Trip Gen Manual, 10th Ed + Supplement

SEARCH BY LAND USE CODE:
 853

LAND USE GROUP:
 (800-899) Retail

LAND USE:
 853 - Convenience Market with Gasoline Pum

LAND USE SUBCATEGORY:
 All Sites

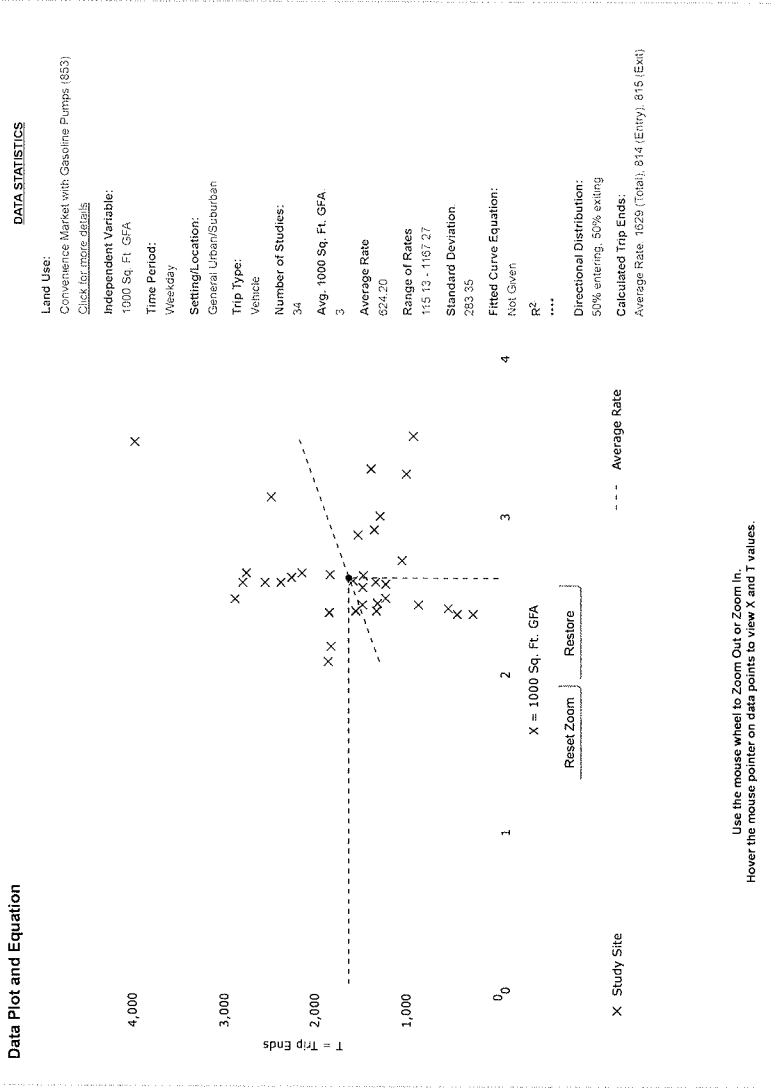
INDEPENDENT VARIABLE (IV):
 1000 Sq. Ft. GFA

TIME PERIOD:
 Weekday

SETTING/LOCATION:
 General Urban/Suburban

TRIP TYPE:
 Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:
 261



ADD-ONS TO GO MORE

TRY OTISS PRO

Graph Look Up

ITE TripGen Web-based App

Graph Look Up

Technical Support

Add Users

Comments

Query Filter

DATA SOURCE: Trip Gen Manual, 10th Ed + Supplement

SEARCH BY LAND USE CODE: 853

LAND USE GROUP: (800-899) Retail

LAND USE: 853 - Convenience Market with Gasoline Pum

LAND USE SUBCATEGORY: All Sites

INDEPENDENT VARIABLE (IV): 1000 Sq. Ft. GFA

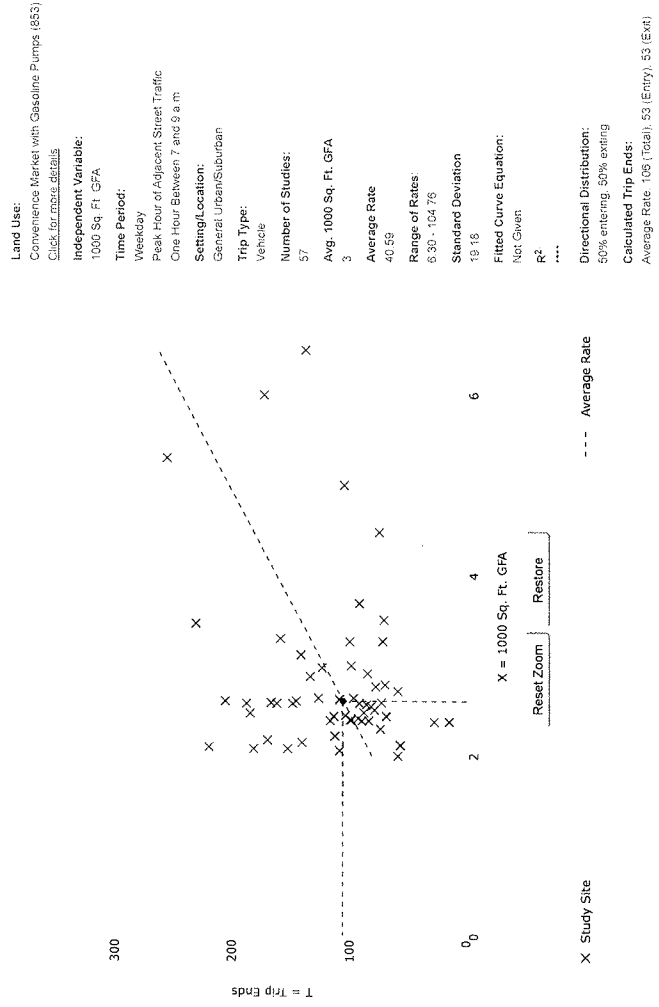
TIME PERIOD: Weekday, Peak Hour of Adjacent Street Traffic

SETTING/LOCATION: General Urban/Suburban

TRIP TYPE: Vehicle

ENTER IV VALUE TO CALCULATE TRIPS: 2.61 Calculate

Data Plot and Equation



Use the mouse wheel to Zoom Out or Zoom In.
 Hover the mouse pointer on data points to view X and T values.



DATA STATISTICS

Land Use: Convenience Market with Gasoline Pumps (853)
 Click for more details

Independent Variable: 1000 Sq. Ft. GFA

Time Period: Weekday
 Peak Hour of Adjacent Street Traffic
 One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Trip Type: Vehicle

Number of Studies: 57

Avg. 1000 Sq. Ft. GFA: 3

Average Rate: 40.59

Range of Rates: 6.30 - 104.76

Standard Deviation: 19.13

Fitted Curve Equation:
 Not Given
 R^2 :
 ...

Directional Distribution:
 50% entering, 50% exiting

Calculated Trip Ends:
 Average Rate, 106 (Total), 53 (Entry), 53 (Exit)

Add-ons to do more

Try OTISS Pro

Graph Look Up

ITE TripGen Web-based App

Query Filter

DATA SOURCE: Trip Gen Manual, 10th Ed + Supplement

SEARCH BY LAND USE CODE: 853

LAND USE GROUP: (600-899) Retail

LAND USE: 853 - Convenience Market with Gasoline Pump

LAND USE SUBCATEGORY: All Sites

INDEPENDENT VARIABLE (IV): 1000 Sq. Ft. GFA

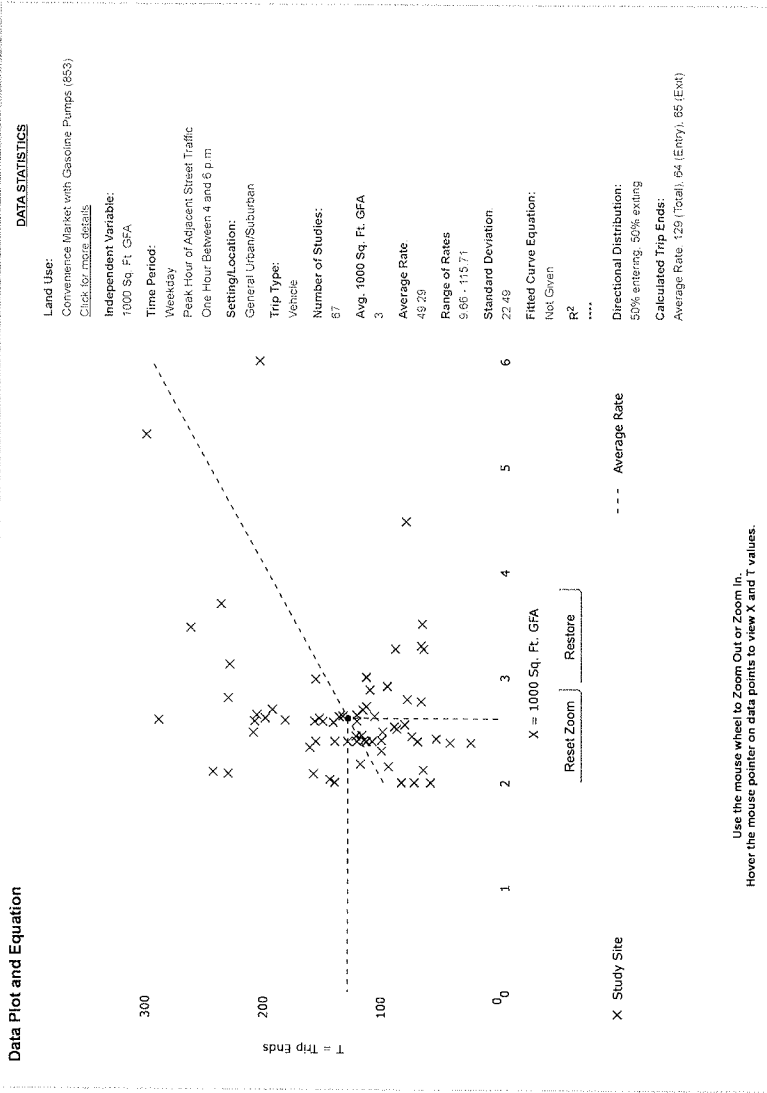
TIME PERIOD: Weekday, Peak Hour of Adjacent Street Traffic

SETTING/LOCATION: General Urban/Suburban

TRIP TYPE: Vehicle

ENTER IV VALUE TO CALCULATE TRIPS: 2.61

Calculate



Add-ons to do more

Try GTISS Pro

Graph Look Up



ITE TripGen Web-based App

Query Filter

Graph Look Up

Technical Support

Add Users

Comments

DATA SOURCE:
Trip Gen Manual, 10th Ed + Supplement

SEARCH BY LAND USE CODE:
853

LAND USE GROUP:
(800-899) Retail

LAND USE:
853 - Convenience Market with Gasoline Pum

LAND USE SUBCATEGORY:
All Sites

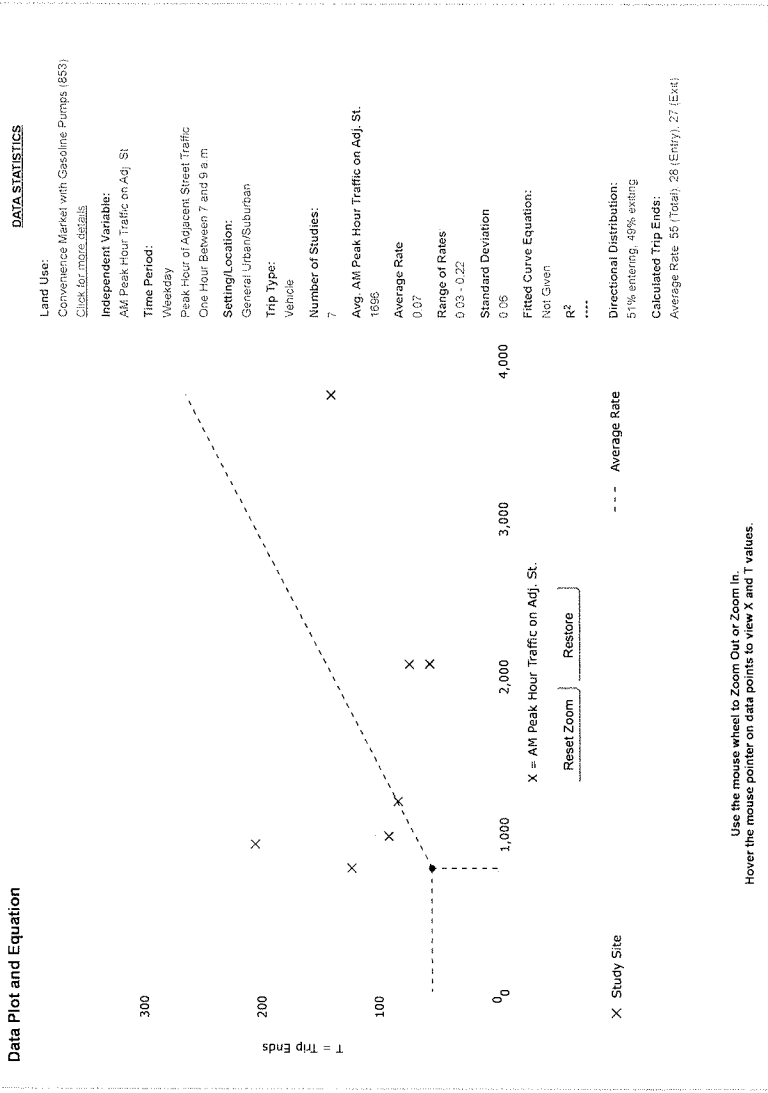
INDEPENDENT VARIABLE (IV):
AM Peak Hour Traffic on Adj. St.

TIME PERIOD:
Weekday, Peak Hour of Adjacent Street Traffic

SETTING/LOCATION:
General Urban/Suburban

TRIP TYPE:
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:
788



Add-ons to do more

Try OTISS Pro

Query Filter

DATA SOURCE: Trip Gen Manual, 10th Ed + Supplement

SEARCH BY LAND USE CODE: 853

LAND USE GROUP: (800-899) Retail

LAND USE: 853 - Convenience Market with Gasoline Pump

LAND USE SUBCATEGORY: All Sites

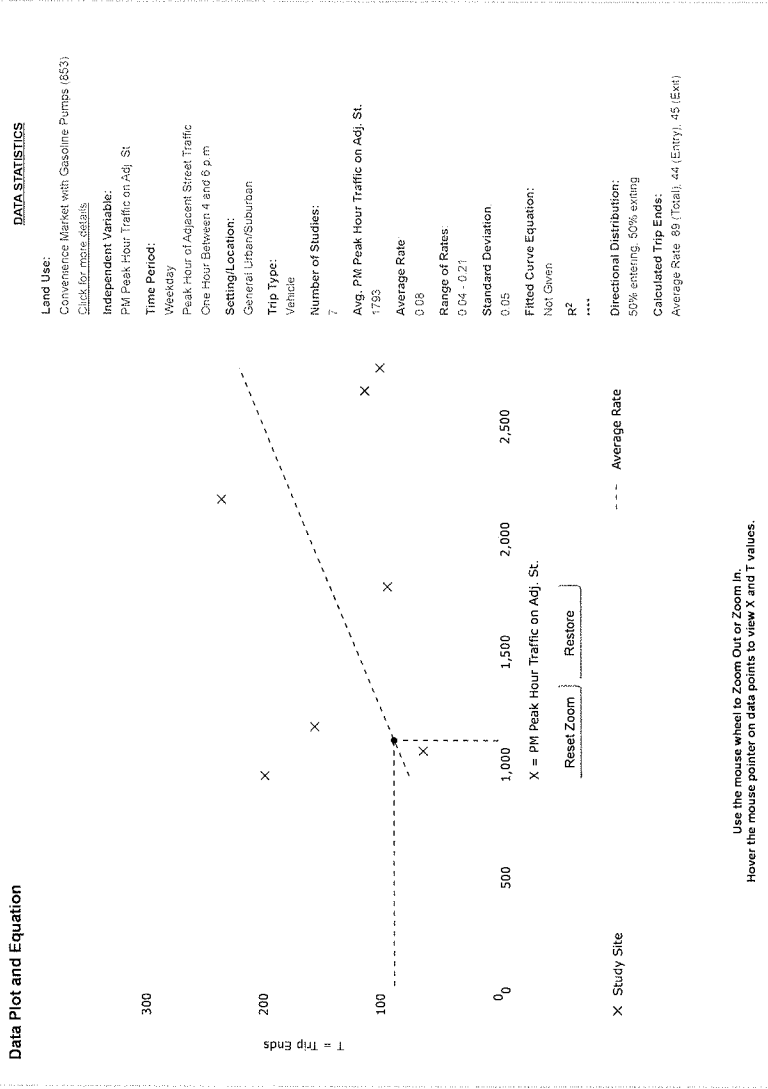
INDEPENDENT VARIABLE (IV): PM Peak Hour Traffic on Adj. St.

TIME PERIOD: Weekday, Peak Hour of Adjacent Street Traffic

SETTING/LOCATION: General Urban/Suburban

TRIP TYPE: Vehicle

ENTER IV VALUE TO CALCULATE TRIPS: 1107 Calculate



Additional Info

Try OTISS Pro

Table 5.18
Pass-By Trips and Diverted Linked Trips
Weekday, A.M. Peak Period
Land Use 853—Convenience Market with Gasoline Pumps

SIZE (1,000 SQ. FEET GFA)	LOCATION	WEEKDAY SURVEY DATE	NO. OF INTERVIEWS	TIME PERIOD	PRIMARY TRIP (%)	NON-PASS- BY TRIP (%)	DIVERTED LINKED TRIP (%)	PASS-BY TRIP (%)	ADJ. STREET PEAK HOUR VOLUME	SOURCE
2.8	Louisville area, KY	1993	n/a	7-9 A.M.	11	-	35	54	1,240	Barton-Aschman Assoc.
2.4	Louisville area, KY	1993	n/a	7-9 A.M.	17	-	35	48	1,210	Barton-Aschman Assoc.
4.2	Louisville area, KY	1993	47	7-9 A.M.	19	-	19	62	1,705	Barton-Aschman Assoc.
2.6	Crestwood, KY	1993	n/a	7-9 A.M.	15	-	13	72	940	Barton-Aschman Assoc.
3.7	Louisville area, KY	1993	49	7-9 A.M.	16	-	18	66	990	Barton-Aschman Assoc.
3.0	New Albany, IN	1993	62	7-9 A.M.	10	-	16	74	790	Barton-Aschman Assoc.
2.3	Louisville, KY	1993	58	7-9 A.M.	5	-	31	64	1,255	Barton-Aschman Assoc.
2.2	New Albany, IN	1993	79	7-9 A.M.	6	-	38	56	635	Barton-Aschman Assoc.
3.6	Louisville area, KY	1993	49	7-9 A.M.	4	-	29	67	1,985	Barton-Aschman Assoc.

Average Pass-By Trip Percentage: 63

Table 5.17
Pass-By Trips and Diverted Linked Trips
Weekday, P.M. Peak Period
Land Use 851 — Convenience Market (Open 24 Hours)

SIZE (1,000 SQ. FEET GFA)	LOCATION	WEEKDAY SURVEY DATE	NO. OF INTERVIEWS	TIME PERIOD	PRIMARY TRIP (%)	NON-PASS- BY TRIP (%)	DIVERTED LINKED TRIP (%)	PASS-BY TRIP (%)	ADJ. STREET PEAK HOUR VOLUME	SOURCE
3	Overland Park, KS	Aug. 1987	68	4:30-5:30 P.M.	53	-	13	34	n/a	n/a
3	Overland Park, KS	Jul. 1987	68	4:30-5:30 P.M.	50	-	22	28	n/a	n/a
~1.9	Billings, MT	1987	461	4-6 P.M.	13	-	25	62	n/a	ITE Montana Section Tech Comm
<50.0	Chicago suburbs, IL	1987	72	3-6 P.M.	-	72	-	28	n/a	Kenig, O'Hara, Humes, Flock
<50.0	Chicago suburbs, IL	1987	54	3-6 P.M.	-	22	-	78	n/a	Kenig, O'Hara, Humes, Flock
<50.0	Chicago suburbs, IL	1987	34	3-6 P.M.	-	31	-	69	n/a	Kenig, O'Hara, Humes, Flock
<50.0	Chicago suburbs, IL	1987	100	3-6 P.M.	-	37	-	63	n/a	Kenig, O'Hara, Humes, Flock
<50.0	Chicago suburbs, IL	1987	43	3-6 P.M.	-	57	-	43	n/a	Kenig, O'Hara, Humes, Flock
<50.0	Chicago suburbs, IL	1987	135	3-6 P.M.	-	61	-	39	n/a	Kenig, O'Hara, Humes, Flock
<50.0	Chicago suburbs, IL	1987	74	3-6 P.M.	-	47	-	53	n/a	Kenig, O'Hara, Humes, Flock
<50.0	Chicago suburbs, IL	1987	80	3-6 P.M.	-	36	-	64	n/a	Kenig, O'Hara, Humes, Flock
2.6	Seminole Co., FL	July 1989	82	4-6 P.M.	20	-	7	73	n/a	Tipton Associates, Inc.
2.6	Seminole Co., FL	July 1989	98	4-6 P.M.	15	-	4	81	n/a	Tipton Associates, Inc.
2.6	Seminole Co., FL	July 1989	115	4-6 P.M.	16	-	15	69	n/a	Tipton Associates, Inc.
2.6	Volusia Co., FL	July 1989	98	4-6 P.M.	15	-	11	74	n/a	Tipton Associates, Inc.
2.4	Volusia Co., FL	July 1989	38	4-6 P.M.	24	-	2	74	n/a	Tipton Associates, Inc.
2.6	Volusia Co., FL	July 1989	82	4-6 P.M.	8	-	5	87	n/a	Tipton Associates, Inc.
2.6	Seminole Co., FL	July 1989	98	2-4 P.M.	28	-	8	64	n/a	Tipton Associates, Inc.
2.4	Volusia Co., FL	July 1989	38	2-4 P.M.	21	-	11	68	n/a	Tipton Associates, Inc.

Average Pass-By Trip Percentage: 61

SYNCHRO Capacity Analysis Worksheets
Background Traffic Conditions

HCM Unsignalized Intersection Capacity Analysis
 3: New Harwinton Rd

2022 Background Traffic
 AM Peak Hour



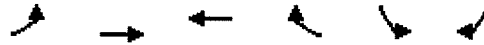
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	6	374	379	5	17	29
Future Volume (Veh/h)	6	374	379	5	17	29
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.86	0.86	0.79	0.79	0.89	0.89
Hourly flow rate (vph)	7	435	480	6	19	33
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	486				932	483
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	486				932	483
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				94	94
cM capacity (veh/h)	1077				294	584

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	442	486	52
Volume Left	7	0	19
Volume Right	0	6	33
cSH	1077	1700	429
Volume to Capacity	0.01	0.29	0.12
Queue Length 95th (ft)	0	0	10
Control Delay (s)	0.2	0.0	14.5
Lane LOS	A		B
Approach Delay (s)	0.2	0.0	14.5
Approach LOS			B

Intersection Summary			
Average Delay		0.9	
Intersection Capacity Utilization		34.5%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
5: Route 4 & Site Dr 1

2022 Background Traffic
AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	7	384	383	6	11	1
Future Volume (Veh/h)	7	384	383	6	11	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.86	0.86	0.79	0.79	0.75	0.75
Hourly flow rate (vph)	8	447	485	8	15	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	493				952	489
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	493				952	489
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				95	100
cM capacity (veh/h)	1071				286	579

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	455	493	16
Volume Left	8	0	15
Volume Right	0	8	1
cSH	1071	1700	295
Volume to Capacity	0.01	0.29	0.05
Queue Length 95th (ft)	1	0	4
Control Delay (s)	0.2	0.0	17.9
Lane LOS	A		C
Approach Delay (s)	0.2	0.0	17.9
Approach LOS			C

Intersection Summary			
Average Delay		0.4	
Intersection Capacity Utilization		35.8%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 7: Site Dr 2 & Circle Drive

2022 Background Traffic
 AM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	7	1	9	2	1	39
Future Volume (Veh/h)	7	1	9	2	1	39
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.75	0.75	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	9	1	10	2	1	44
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	57	11			12	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	57	11			12	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	950	1070			1607	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	10	12	45
Volume Left	9	0	1
Volume Right	1	2	0
cSH	961	1700	1607
Volume to Capacity	0.01	0.01	0.00
Queue Length 95th (ft)	1	0	0
Control Delay (s)	8.8	0.0	0.2
Lane LOS	A		A
Approach Delay (s)	8.8	0.0	0.2
Approach LOS	A		

Intersection Summary			
Average Delay		1.4	
Intersection Capacity Utilization		13.3%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 3: New Harwinton Rd

2022 Background Traffic
 PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↗		↘	
Traffic Volume (veh/h)	20	460	607	16	13	20
Future Volume (Veh/h)	20	460	607	16	13	20
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.91	0.91	0.69	0.69
Hourly flow rate (vph)	22	517	667	18	19	29
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	685				1237	676
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	685				1237	676
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				90	94
cM capacity (veh/h)	908				190	453

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	539	685	48
Volume Left	22	0	19
Volume Right	0	18	29
cSH	908	1700	292
Volume to Capacity	0.02	0.40	0.16
Queue Length 95th (ft)	2	0	14
Control Delay (s)	0.7	0.0	19.7
Lane LOS	A		C
Approach Delay (s)	0.7	0.0	19.7
Approach LOS			C

Intersection Summary			
Average Delay		1.0	
Intersection Capacity Utilization		50.4%	ICU Level of Service
Analysis Period (min)		15	A

HCM Unsignalized Intersection Capacity Analysis
5: Route 4 & Site Dr 1

2022 Background Traffic
PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↗		↘	
Traffic Volume (veh/h)	11	462	619	17	12	4
Future Volume (Veh/h)	11	462	619	17	12	4
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.91	0.91	0.75	0.75
Hourly flow rate (vph)	12	519	680	19	16	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	699				1232	690
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	699				1232	690
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				92	99
cM capacity (veh/h)	898				193	445

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	531	699	21
Volume Left	12	0	16
Volume Right	0	19	5
cSH	898	1700	223
Volume to Capacity	0.01	0.41	0.09
Queue Length 95th (ft)	1	0	8
Control Delay (s)	0.4	0.0	22.8
Lane LOS	A		C
Approach Delay (s)	0.4	0.0	22.8
Approach LOS			C

Intersection Summary			
Average Delay		0.5	
Intersection Capacity Utilization		43.6%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
7: Site Dr 2 & Circle Drive

2022 Background Traffic
PM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙		↑	↘		↓
Traffic Volume (veh/h)	12	0	35	1	0	21
Future Volume (Veh/h)	12	0	35	1	0	21
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.75	0.75	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	16	0	51	1	0	30
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	82	52			52	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	82	52			52	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	100			100	
cM capacity (veh/h)	921	1016			1554	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	16	52	30
Volume Left	16	0	0
Volume Right	0	1	0
cSH	921	1700	1554
Volume to Capacity	0.02	0.03	0.00
Queue Length 95th (ft)	1	0	0
Control Delay (s)	9.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay		1.5	
Intersection Capacity Utilization		13.3%	ICU Level of Service
Analysis Period (min)		15	A

HCM Unsignalized Intersection Capacity Analysis
 3: New Harwinton Rd

2022 BACKGROUND TRAFFIC
 SAT PEAK HOUR



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	16	433	482	24	15	32
Future Volume (Veh/h)	16	433	482	24	15	32
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.92	0.92	0.62	0.62
Hourly flow rate (vph)	17	461	524	26	24	52
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	550				1032	537
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	550				1032	537
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				91	90
cM capacity (veh/h)	1020				254	544

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	478	550	76
Volume Left	17	0	24
Volume Right	0	26	52
cSH	1020	1700	400
Volume to Capacity	0.02	0.32	0.19
Queue Length 95th (ft)	1	0	17
Control Delay (s)	0.5	0.0	16.1
Lane LOS	A		C
Approach Delay (s)	0.5	0.0	16.1
Approach LOS			C

Intersection Summary			
Average Delay		1.3	
Intersection Capacity Utilization		45.7%	ICU Level of Service
Analysis Period (min)		15	A

HCM Unsignalized Intersection Capacity Analysis
5: Route 4 & Site Dr 1

2022 BACKGROUND TRAFFIC
SAT PEAK HOUR



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖ ↗	↖ ↗		↘ ↙	
Traffic Volume (veh/h)	13	435	503	18	14	3
Future Volume (Veh/h)	13	435	503	18	14	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.92	0.92	0.75	0.75
Hourly flow rate (vph)	14	463	547	20	19	4
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	567				1048	557
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	567				1048	557
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				92	99
cM capacity (veh/h)	1005				249	530

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	477	567	23
Volume Left	14	0	19
Volume Right	0	20	4
cSH	1005	1700	274
Volume to Capacity	0.01	0.33	0.08
Queue Length 95th (ft)	1	0	7
Control Delay (s)	0.4	0.0	19.3
Lane LOS	A		C
Approach Delay (s)	0.4	0.0	19.3
Approach LOS			C

Intersection Summary			
Average Delay		0.6	
Intersection Capacity Utilization		43.4%	ICU Level of Service
Analysis Period (min)		15	A

HCM Unsignalized Intersection Capacity Analysis
 7: Site Dr 2 & Circle Drive

2022 BACKGROUND TRAFFIC
 SAT PEAK HOUR



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	16	5	38	2	4	31
Future Volume (Veh/h)	16	5	38	2	4	31
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.75	0.75	0.62	0.62	0.62	0.62
Hourly flow rate (vph)	21	7	61	3	6	50
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	124	62			64	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	124	62			64	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	99			100	
cM capacity (veh/h)	867	1002			1538	

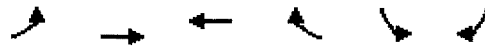
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	28	64	56
Volume Left	21	0	6
Volume Right	7	3	0
cSH	897	1700	1538
Volume to Capacity	0.03	0.04	0.00
Queue Length 95th (ft)	2	0	0
Control Delay (s)	9.1	0.0	0.8
Lane LOS	A		A
Approach Delay (s)	9.1	0.0	0.8
Approach LOS	A		

Intersection Summary			
Average Delay		2.0	
Intersection Capacity Utilization		15.0%	ICU Level of Service A
Analysis Period (min)		15	

SYNCHRO Capacity Analysis Worksheets
Combined Traffic Conditions

HCM Unsignalized Intersection Capacity Analysis
 3: New Harwinton Rd

2022 Combined Traffic - One Way
 AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↗		↘	
Traffic Volume (veh/h)	4	397	379	5	55	38
Future Volume (Veh/h)	4	397	379	5	55	38
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.86	0.86	0.79	0.79	0.89	0.89
Hourly flow rate (vph)	5	462	480	6	62	43
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	486				955	483
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	486				955	483
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				78	93
cM capacity (veh/h)	1077				285	584

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	467	486	105
Volume Left	5	0	62
Volume Right	0	6	43
cSH	1077	1700	361
Volume to Capacity	0.00	0.29	0.29
Queue Length 95th (ft)	0	0	30
Control Delay (s)	0.1	0.0	19.0
Lane LOS	A		C
Approach Delay (s)	0.1	0.0	19.0
Approach LOS			C

Intersection Summary			
Average Delay		2.0	
Intersection Capacity Utilization		36.1%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
5: Route 4 & Site Dr 1

2022 Combined Traffic - One Way
AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔			
Traffic Volume (veh/h)	33	408	383	20	0	0
Future Volume (Veh/h)	33	408	383	20	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.86	0.86	0.79	0.79	0.75	0.75
Hourly flow rate (vph)	38	474	485	25	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	510				1048	498
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	510				1048	498
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				100	100
cM capacity (veh/h)	1055				243	573

Direction, Lane #	EB 1	WB 1
Volume Total	512	510
Volume Left	38	0
Volume Right	0	25
cSH	1055	1700
Volume to Capacity	0.04	0.30
Queue Length 95th (ft)	3	0
Control Delay (s)	1.0	0.0
Lane LOS	A	
Approach Delay (s)	1.0	0.0
Approach LOS		

Intersection Summary			
Average Delay		0.5	
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
7: Site Dr 2 & Circle Drive

2022 Combined Traffic - One Way
AM Peak Hour



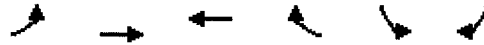
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	51	2	9	0	0	42
Future Volume (Veh/h)	51	2	9	0	0	42
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.75	0.75	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	68	3	10	0	0	47
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	57	10			10	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	57	10			10	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	93	100			100	
cM capacity (veh/h)	950	1071			1610	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	71	10	47
Volume Left	68	0	0
Volume Right	3	0	0
cSH	955	1700	1700
Volume to Capacity	0.07	0.01	0.03
Queue Length 95th (ft)	6	0	0
Control Delay (s)	9.1	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.1	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay		5.0	
Intersection Capacity Utilization		13.3%	ICU Level of Service
Analysis Period (min)		15	A

HCM Unsignalized Intersection Capacity Analysis
 3: New Harwinton Rd

2022 Combined Traffic - One Way
 PM PEAK HOUR



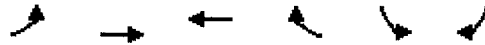
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	19	475	607	16	42	44
Future Volume (Veh/h)	19	475	607	16	42	44
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.91	0.91	0.69	0.69
Hourly flow rate (vph)	21	534	667	18	61	64
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	685				1252	676
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	685				1252	676
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				67	86
cM capacity (veh/h)	908				186	453

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	555	685	125
Volume Left	21	0	61
Volume Right	0	18	64
cSH	908	1700	266
Volume to Capacity	0.02	0.40	0.47
Queue Length 95th (ft)	2	0	59
Control Delay (s)	0.6	0.0	29.9
Lane LOS	A		D
Approach Delay (s)	0.6	0.0	29.9
Approach LOS			D

Intersection Summary			
Average Delay		3.0	
Intersection Capacity Utilization		52.1%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
5: Route 4 & Site Dr 1

2022 Combined Traffic - One Way
PM PEAK HOUR



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↗			
Traffic Volume (veh/h)	26	479	619	38	0	0
Future Volume (Veh/h)	26	479	619	38	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.91	0.91	0.75	0.75
Hourly flow rate (vph)	29	538	680	42	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	722				1297	701
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	722				1297	701
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				100	100
cM capacity (veh/h)	880				173	439

Direction, Lane #	EB 1	WB 1
Volume Total	567	722
Volume Left	29	0
Volume Right	0	42
cSH	880	1700
Volume to Capacity	0.03	0.42
Queue Length 95th (ft)	3	0
Control Delay (s)	0.9	0.0
Lane LOS	A	
Approach Delay (s)	0.9	0.0
Approach LOS		

Intersection Summary			
Average Delay		0.4	
Intersection Capacity Utilization		49.8%	ICU Level of Service
Analysis Period (min)		15	A

HCM Unsignalized Intersection Capacity Analysis
 7: Site Dr 2 & Circle Drive

2022 Combined Traffic - One Way
 PM PEAK HOUR



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙		↑			↓
Traffic Volume (veh/h)	65	0	35	0	0	21
Future Volume (Veh/h)	65	0	35	0	0	21
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.75	0.75	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	87	0	51	0	0	30
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	81	51			51	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	81	51			51	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	91	100			100	
cM capacity (veh/h)	921	1017			1555	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	87	51	30
Volume Left	87	0	0
Volume Right	0	0	0
cSH	921	1700	1700
Volume to Capacity	0.09	0.03	0.02
Queue Length 95th (ft)	8	0	0
Control Delay (s)	9.3	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.3	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay		4.8	
Intersection Capacity Utilization		13.6%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 3: New Harwinton Rd

2022 Combined Traffic - One Way
 Sat Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↗		↘	↙
Traffic Volume (veh/h)	14	447	482	24	48	46
Future Volume (Veh/h)	14	447	482	24	48	46
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.92	0.92	0.62	0.62
Hourly flow rate (vph)	15	476	524	26	77	74
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	550				1043	537
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	550				1043	537
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				69	86
cM capacity (veh/h)	1020				250	544

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	491	550	151
Volume Left	15	0	77
Volume Right	0	26	74
cSH	1020	1700	340
Volume to Capacity	0.01	0.32	0.44
Queue Length 95th (ft)	1	0	55
Control Delay (s)	0.4	0.0	23.7
Lane LOS	A		C
Approach Delay (s)	0.4	0.0	23.7
Approach LOS			C

Intersection Summary			
Average Delay		3.2	
Intersection Capacity Utilization		47.0%	ICU Level of Service
Analysis Period (min)		15	A

HCM Unsignalized Intersection Capacity Analysis
5: Route 4 & Site Dr 1

2022 Combined Traffic - One Way
Sat Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔			
Traffic Volume (veh/h)	34	447	503	32	0	0
Future Volume (Veh/h)	34	447	503	32	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.92	0.92	0.75	0.75
Hourly flow rate (vph)	36	476	547	35	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	582				1112	564
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	582				1112	564
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				100	100
cM capacity (veh/h)	992				222	525

Direction, Lane #	EB 1	WB 1
Volume Total	512	582
Volume Left	36	0
Volume Right	0	35
cSH	992	1700
Volume to Capacity	0.04	0.34
Queue Length 95th (ft)	3	0
Control Delay (s)	1.0	0.0
Lane LOS	A	
Approach Delay (s)	1.0	0.0
Approach LOS		

Intersection Summary			
Average Delay		0.5	
Intersection Capacity Utilization		54.9%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 7: Site Dr 2 & Circle Drive

2022 Combined Traffic - One Way
 Sat Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙		↑			↑
Traffic Volume (veh/h)	56	9	38	0	0	38
Future Volume (Veh/h)	56	9	38	0	0	38
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.75	0.75	0.62	0.62	0.62	0.62
Hourly flow rate (vph)	75	12	61	0	0	61
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	122	61			61	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	122	61			61	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	91	99			100	
cM capacity (veh/h)	873	1004			1542	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	87	61	61
Volume Left	75	0	0
Volume Right	12	0	0
cSH	889	1700	1700
Volume to Capacity	0.10	0.04	0.04
Queue Length 95th (ft)	8	0	0
Control Delay (s)	9.5	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.5	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay		3.9	
Intersection Capacity Utilization		13.7%	ICU Level of Service
Analysis Period (min)		15	A

ConnDOT Site Distance Criteria

Design Speed (V_{major}) (mph)	ISD (ft)		
	Passenger Cars	Single-Unit Trucks	Tractor/Semitrailers
20	225	280	340
25	280	350	425
30	335	420	510
35	390	490	595
40	445	560	680
45	500	630	765
50	555	700	850
55	610	770	930
60	665	840	1015
65	720	910	1100
70	775	980	1185

Notes:

1. These ISD values assume a left or right turn onto a 2-lane facility without a median.
2. These ISD values assume a minor road approach grade less than or equal to +3%.

**INTERSECTION SIGHT DISTANCES
(Two-Lane Highway or Street)**

Figure 11-2C

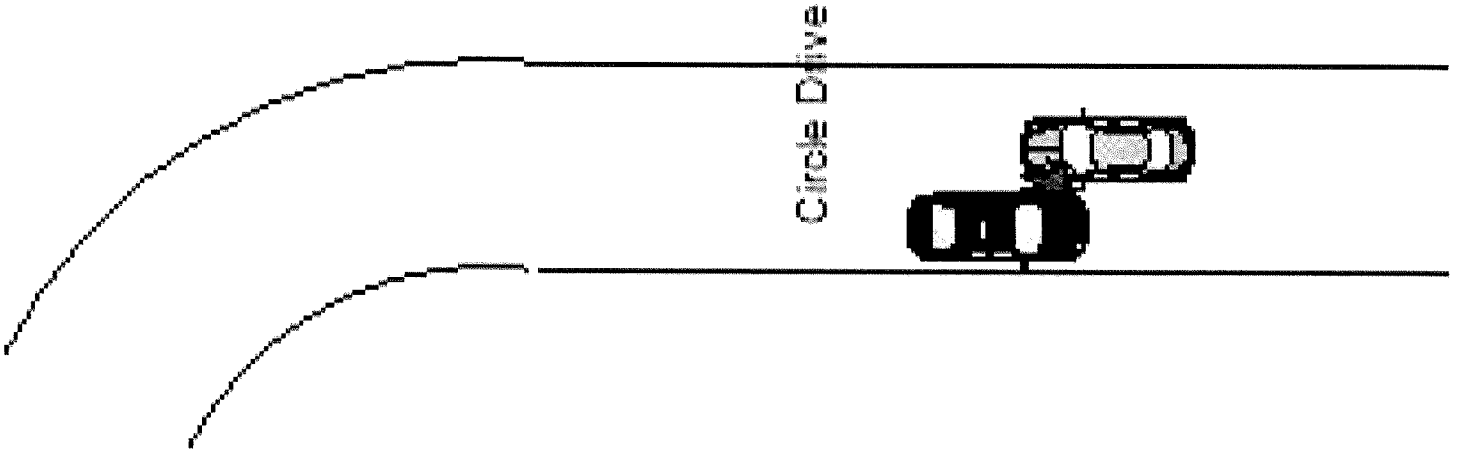
UCONN Crash Data

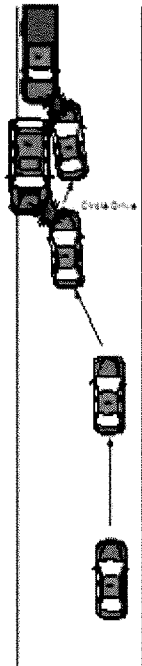
Route 4 Accidents

Crashid	Date	Day of the Week	Time	Severity	Text	Of Motor	Milemarker:	Roadway Name	Intersecting Roadway	Distance	Unit	From Nearest	Manner of Crash	Weather Cond	Road Surface
165524	1/28/2016	Thursday	8:00 AM	PDO		2	25.46	NEW HARWINTON RD (RT 4)	CITGO GAS STA(CL)	15	Feet		Front to rear	Clear	Dry
343002	12/30/2016	Friday	12:01 PM	PDO		2	25.55	NEW HARWINTON RD (RT 4)	NEIDT RD	30	Feet	E	Front to rear	Clear	Dry
377550	4/17/2017	Monday	8:11 AM	PDO		2	25.45	NEW HARWINTON RD (RT 4)	MORNINGSIDE DR(DE)	50	Feet	E	SSSD	Clear	Dry
489553	1/31/2018	Wednesday	9:08 AM	PDO		2	25.51	4-E	Circle Drive				Front to rear	Clear	Dry
678993	8/22/2019	Thursday	7:31 AM	PDO		2	25.5	4-E	CIRCLE DR				Front to rear	Clear	Dry
852397	12/17/2020	Thursday	5:41 PM	PDO		1	25.44	4-E	MORNINGSIDE DR				Not Applicable	Clear	Ice / Frost

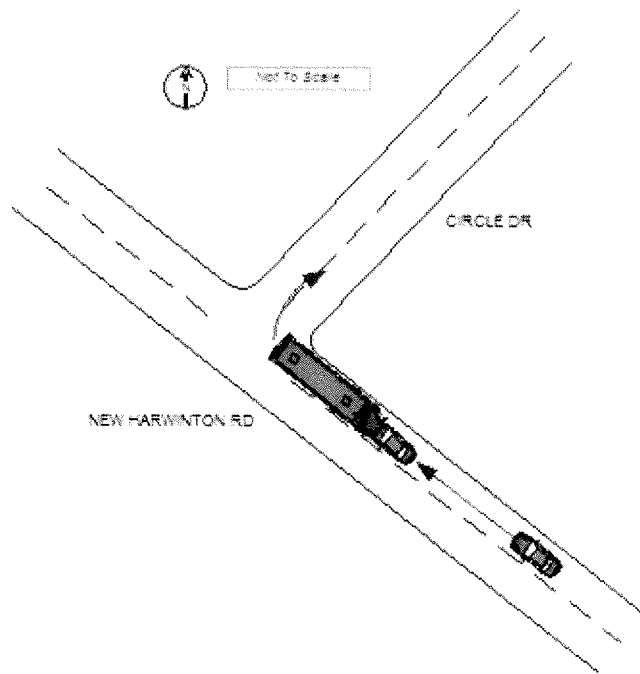


Not To Scale





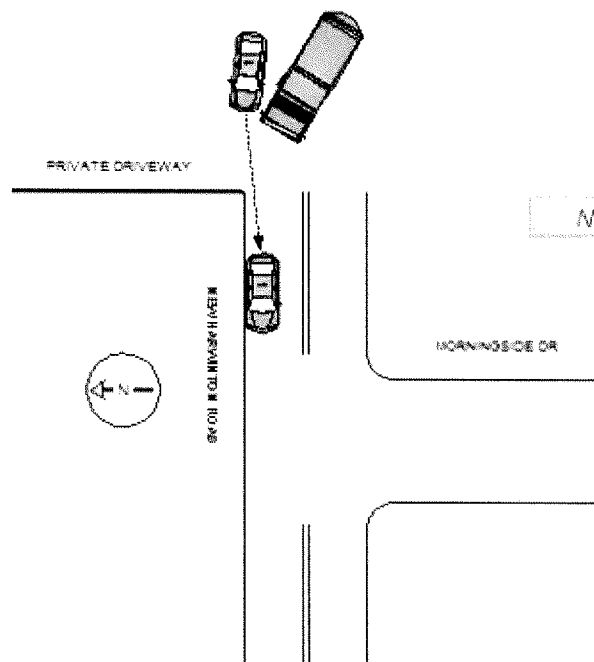
Not To Scale



Not To Scale

CIRCLE DR

NEW HARWINTON RD



Not To Scale



Not To Scale

