

**PROPOSED MIXED USE DEVELOPMENT
342 MAIN STREET EAST, KINGSVILLE**

TRAFFIC IMPACT ASSESSMENT

**F.R. Berry & Associates
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PROPOSED MIXED USE DEVELOPMENT 342 MAIN STREET EAST, KINGSVILLE

TRAFFIC IMPACT ASSESSMENT

1. INTRODUCTION AND BACKGROUND

J. Moavro has proposed the development of a 95 unit condominium apartment building with ground floor commercial uses on a site on the north side of Main Street east of Jasperson Drive in Kingsville. The location of the site is shown in **Figure 1**.

Two accesses are proposed. One is located on Jasperson Drive north of the existing Libro Credit Union access. The other is located on Main Street opposite the Esso gas station.

The purpose of this report is to estimate the potential vehicle trip generation of the proposed development and to assess the impact of these trips on traffic operation and safety on the adjacent street system.

2. EXISTING CONDITIONS

Main Street and Jasperson Drive are two lane arterial streets with a posted speed limit of 50 km/h. Jasperson Drive has left turn lanes at key intersections within the study area including the Libro access, the Zehr's access immediately opposite and at the intersection with Main Street. Main Street has a continuous two-way left turn lane extending from west of Jasperson Drive to the access to the Otis shopping centre. This lane becomes an exclusive left turn lane on both approaches to Jasperson Drive and at the shopping centre.

The intersections of Main Street with Jasperson Drive and the shopping centre access are signalized. All other driveway accesses in the study area are subject to stop control.

Land uses in the area are primarily commercial. On the south side of Main Street, some of these uses have joint accesses. All turning movements are permitted to and from the commercial developments on Main Street.



It is understood that the Town of Kingsville is considering a proposal to rationalize the commercial accesses in order to mitigate existing traffic congestion on the two-way left turn lane.

For the purposes of this study, traffic counts were made at the intersections of Main Street with Jasperson Drive, the joint Tim Hortons/Esso access and the shopping centre access and at the intersection of Jasperson Drive with the Libro and Zehr's accesses on Friday, June 10 and Saturday, June 11, 2016. Peak hour turning movements derived from these counts are shown in **Figures 2A, 2B and 2C**. Count reports are contained in Appendix A.

3. PROPOSED DEVELOPMENT

The proposed development will include 95 apartment units on eight floors plus 13 489sf of retail and office space on the ground floor. The site plan is shown in **Figure 3**.

Access is proposed to and from Jasperson Drive with all turning movements permitted. The site plan also shows an access to and from Main Street restricted to right turns only. The traffic impact analysis was based on this site plan. However, in Section 4 below, the implications of permitting left turns in and out were considered.

3.1 Vehicle Trip Generation

Estimates of peak hour vehicle trip generation were based on average rates and regression equations contained in the Institute of Transportation Engineers (ITE) Trip Generation Manual, Eighth Edition. The estimates are summarized in **Table 1**.

For each of the residential and commercial uses, two alternatives were considered. For the commercial portion, ITE Land Use 820, Shopping Centre, and ITE Land Use 814, Specialty Retail, were considered. While LU 814 more accurately describes the type of retail uses contemplated for the development, no data are available for the morning peak hour and the Saturday peak hour. The shopping centre use has a more generic description and includes such uses as offices and small restaurants. For this reason, ITE Land Use 820 was assumed for this study.



For the residential component, ITE Land Uses 220, Apartment, and 232, High Rise Condo, were considered. Regression equations for the apartment use are based on a large number of data points and are therefore more reliable. In addition, trip generations for this use were higher in the critical afternoon and Saturday peak hours. For these reasons, ITE Land Use 220 was assumed for this study.

The volumes of site generated trips used in the following analysis are the aggregates of the trip generations for ITE Land Uses 820 and 220 as shown in **Table 1**. The volumes were not discounted to allow for internal trips between individual uses on site.

3.2 Vehicle Trip Distribution and Assignment

Based on the peak hour directional traffic flows on Main Street and Jasperson Drive and on previous traffic studies in the area, peak hour site generated trips were distributed as follows:

north	14 percent
east	46 percent
west	40 percent

Figure 4 shows the assignment of peak hour site generated trips based on this distribution.

4. ANALYSIS

4.1 Projected Traffic

A five year planning horizon was assumed for this study. Existing peak hour turning volumes shown in **Figure 2** were projected to 2022 assuming a two percent annual growth rate. The growth factor was also applied to vehicle trips entering and leaving commercial driveways on Jasperson Drive and Main Street.

The Otis Group confirmed that approximately 32 600sf of the shopping centre remains to be developed. Peak hour vehicle movements in and out of the centre were increased beyond the background traffic projections to account for this additional traffic. The increases were based on estimates for full development of the centre taken from the traffic impact assessment.¹

¹ Proposed Commercial Development, Main Street, Kingsville. Traffic Impact Study, Addendum Report. F.R. Berry & Associates, March 2012.



Projected background peak hour turning movements, rounded to the nearest five vehicles, are shown in **Figures 5A, 5B and 5C**. Projected total peak hour turning movements are shown in **Figures 6A, 6B and 6C**. The turning movements volumes shown in **Figure 6** were obtained by adding site generated traffic from **Figure 4** to background traffic from **Figure 5**.

4.2 Level of Service Analysis

Each of the intersections in the study area was analyzed for volume to capacity (v/c) ratios, delays and queue lengths using the Synchro 6 analysis program. Analyses were made for the existing, projected background and projected total traffic peak hour conditions. An analysis was also made for the site access on Jasperson Drive for total peak hour traffic conditions. No analysis was made for the right turns only access on Main Street.

The results of the analyses are summarized in **Tables 2 to 6**. Analysis reports are contained in Appendix B.

Level of service is a measure of how well an intersection operates under prevailing traffic conditions. It is expressed on a scale of A to F where A is the highest level of service and F indicates unacceptable congestion and delay. Level of service is measured in terms of average delay to all vehicles passing through the intersection in the peak hour.

4.2.1 Jasperson Drive and Libro/Zehr's Access (Table 2)

Under existing and projected peak hour conditions, this intersection will operate at a good level of service. Of particular significance is the calculated 95th percentile queue length for the southbound left turn movement. The 95th percentile means that there is only a five percent probability of a traffic queue exceeding this length. The maximum 95th percentile queue length is 0.2 metres, or less than one car length. Storage available in the left turn lane is 25 metres, indicating that there is space available in this lane for vehicles turning left at the site access to the north.

4.2.2 Jasperson Drive and Main Street (Table 3)

The signal phasing at this intersection permits an advance green indication for eastbound through and left turn traffic. There are left turn lanes on the eastbound, westbound and southbound approaches.



In general, the intersection will operate at a good level of service under projected peak hour conditions. While the westbound through movement has a high v/c ratio, average delays are less than 35 seconds (level of service C). The only area of concern is the southbound left turn movement. While v/c ratios and delays (level of service D) are within acceptable limits, the calculated 95th percentile queue length can reach 66.3 metres in the Saturday peak hour. The available storage length in this lane is approximately 20 metres, indicating that the queue of southbound left turn traffic will actually encroach on the through lane.

The analysis indicates that, under projected background conditions, the southbound traffic queue on Jasperson Drive would interfere with turning movements to and from the Zehr's plaza and the Libro office less than five percent of the time. However, under projected total traffic conditions there is likely to be some interference in the afternoon and Saturday peak hours.

4.2.3 Main Street and Shopping Centre Access (Table 4)

As noted above, projected peak hour turning movements at this intersection were adjusted to reflect full development of the shopping centre.

All movements at this intersection will operate at a good level of service under projected background and total traffic peak hour conditions.

4.2.4 Main Street and Esso/Hortons Access (Table 5)

A traffic count was made at this mid-block location in order to gauge the impact of left and right turns on the operation of the two-way left turn lane on Main Street. The analysis shows that, while the through movements on Main Street will operate at acceptable levels of service, the exit movement on the shared Tim Hortons/Esso driveway would be subject to unacceptable delays in the afternoon and Saturday peak hours.

It can be inferred from this that turning movements in this section of Main Street, particularly left turns, will be subject to congestion and delay in the peak hours. For example, the distance between the shared exit lane between Tim Hortons and Esso and the driveway to the west, providing access to the Tim Hortons drive-through window, is only about 20 metres. Although the left turn movement into the Tim Hortons drive-through lane was not counted, it would be reasonable to assume a significant queue length in the left turn lane, potentially impeding the exit movement on the shared lane.



4.2.5 Jasperson Drive and Site Access (Table 6)

This intersection would operate at a good level of service under projected peak hour conditions. There is sufficient space in the existing southbound left turn lane to permit storage of vehicles entering the site.

4.3 Main Street and Site Access

As noted above, level of service analyses were predicated on the assumption that left turn movements at the site access on Main Street would not be permitted. The site plan shows a "pork chop" island designed to discourage left turn movements.

Experience has shown that such designs are not always effective, especially in situations such as this where left turns are permitted from a centre two-way left turn lane. Only a median barrier is truly effective at preventing left turns.

In order to assess the feasibility of permitting left turns at this access, a re-assignment of site generated trips was made as shown in **Figure 7**. The significant difference between this assignment and that shown in **Figure 4** is a reduction in the southbound left turn movement on Jasperson Drive at Main Street by up to 21 vehicles in the peak hours. As noted above, there is insufficient capacity in the southbound lane on Jasperson Drive to accommodate the peak hour demand, even under existing conditions.

Table 7 shows an analysis of total peak hour traffic demand at the site access assuming left turns are permitted. While the storage requirement in the left turn lane on Main Street is minimal, the exit movement in the afternoon and Saturday peak hour would be subject to significant delays.

Coupled with the analysis of the exit movement on the south side of Main Street, in close proximity to the proposed site access, the results of this assessment suggest that left turn movements between Main Street and the site would be subject to delays and to the risks inherent in conflicting turning movements in a confined space.



5. CONCLUSIONS

The proposed development will generate 61 vehicle trips in the morning peak hour, 118 vehicle trips in the afternoon peak hour and 123 vehicle trips in the Saturday peak hour. Vehicle trips were assigned to Jasperson Drive and Main Street East assuming all turning movements would be permitted at the Jasperson Drive access while the Main Street access would be restricted to right turns only.

There is sufficient storage space available in the existing southbound left turn lane on Jasperson Drive at the Libro Credit Union access to accommodate left turns to the site and to Libro. The intersection of Jasperson Drive and the accesses to Libro and Zehr's will continue to operate at a good level of service.

The signalized intersection of Main Street and Jasperson Drive will continue to operate at a good level of service despite a high volume to capacity ratio for the westbound through movement. The southbound left turn movement currently exceeds the capacity of the left turn lane with the result that left turning traffic encroaches on the through lane in the peak hours. Under projected peak hour traffic demand, this queue may interfere with turning movements at the Libro/Zehr's accesses.

The signalized intersection of Main Street and the shopping centre access will continue to operate at a good level of service.

An analysis of turning movements in the vicinity of the proposed access to Main Street indicates that it would not be feasible to permit left turns to and from the site. It should be noted, however, that the proposed "pork chop" island at the site access would not be completely effective in preventing left turns. It is recommended that the driveway access configuration shown in the site plan be approved and that traffic operation in this section of Main Street be monitored with a view to developing improvements that would mitigate turning movement conflicts.



ITE Land Use	AM Peak Hour			PM Peak Hour			Sat. Peak Hour		
	Ave. Rate	total	in out	Ave. Rate	total	in out	Ave. Rate	total	in out
820 Shopping Centre 13 489sf	1.00	13	8 5	3.73	50	25 25	4.89	66	34 32
814 Specialty Retail Centre 13 489sf				2.71	37	18 19			
220 Apartment 95du	eq'n	48	10 38	eq'n	68	44 24	eq'n	57	28 29
232 High Rise Condo 95du	eq'n	55	10 45	eq'n	46	29 17	eq'n	56	24 32

Table 1
Vehicle Trip Generation

Table 1
Vehicle Trip Generation

	AM Peak Hour				PM Peak Hour				Sat. Peak Hour			
	v/c	Del.	LofS	Q	v/c	Del.	LofS	Q	v/c	Del.	LofS	Q
Existing, June 10, 2016												
Eastbound LTR	0.04	9.8	A	1.0	0.17	11.6	B	4.6	0.18	12.9	B	5.1
Westbound LTR	0.03	10.1	B	0.6	0.07	12.8	B	1.8	0.04	13.0	B	1.0
Northbound L	0.01	7.6	A	0.2	0.04	7.9	A	0.8	0.06	7.9	A	1.6
Northbound TR	0.06	0.0	-	0.0	0.10	0.0	-	0.0	0.10	0.0	-	0.0
Southbound L	0.00	7.4	A	0.1	0.01	7.6	A	0.2	0.00	7.6	A	0.1
Southbound TR	0.09	0.0	-	0.0	0.11	0.0	-	0.0	0.11	0.0	-	0.0
Intersection ICU	19.9%				33.8%				34.9%			
LofS	A				A				A			
Background 2022												
Eastbound LTR	0.04	10.0	B	1.1	0.20	12.3	B	5.7	0.24	14.2	B	6.9
Westbound LTR	0.03	10.1	B	0.7	0.10	13.8	B	2.4	0.07	14.2	B	1.6
Northbound L	0.01	7.6	A	0.3	0.04	8.0	A	0.9	0.07	8.0	A	1.8
Northbound TR	0.07	0.0	-	0.0	0.11	0.0	-	0.0	0.12	0.0	-	0.0
Southbound L	0.01	7.4	A	0.2	0.01	7.6	A	0.2	0.00	7.6	A	0.1
Southbound TR	0.10	0.0	-	0.0	0.12	0.0	-	0.0	0.13	0.0	-	0.0
Intersection ICU	23.3%				36.2%				37.1%			
LofS	A				A				A			
Total 2022												
Eastbound LTR	0.05	10.3	B	1.1	0.22	12.9	B	6.2	0.26	15.6	C	7.9
Westbound LTR	0.03	10.4	B	0.8	0.10	14.7	B	2.7	0.07	15.2	C	1.8
Northbound L	0.01	7.7	A	0.3	0.04	8.0	A	0.9	0.08	8.2	A	1.9
Northbound TR	0.07	0.0	-	0.0	0.13	0.0	-	0.0	0.14	0.0	-	0.0
Southbound L	0.01	7.5	A	0.2	0.01	7.7	A	0.2	0.00	7.7	A	0.1
Southbound TR	0.12	0.0	-	0.0	0.14	0.0	-	0.0	0.15	0.0	-	0.0
Intersection ICU	23.3%				37.6%				39.1%			
LofS	A				A				A			

Note: Del. - ave. delay (secs.)

LofS - level of service

v/c - volume to capacity ratio

ICU - intersection capacity utilization

Q - maximum queue length (metres)
(95th percentile)

Table 2

Level of Service Jasperson Drive and Libro/Zehr's Access

	AM Peak Hour				PM Peak Hour				Sat. Peak Hour			
	v/c	Del.	LofS	Q	v/c	Del.	LofS	Q	v/c	Del.	LofS	Q
Existing, June 10, 2016												
Eastbound L	0.08	6.6	A	3.7	0.18	5.7	A	5.2	0.17	5.8	A	5.6
Eastbound TR	0.71	11.2	B	60.2	0.67	10.0	B	76.6	0.70	10.4	B	74.8
Westbound L	0.07	9.2	A	5.0	0.05	7.4	A	3.7	0.06	7.7	A	4.5
Westbound TR	0.69	13.8	B	69.4	0.90	21.4	C	185.9	0.87	18.2	B	130.6
Northbound LTR	0.09	16.3	B	9.9	0.25	25.6	C	19.9	0.26	22.1	C	22.7
Southbound L	0.25	20.0	B	26.6	0.39	34.4	C	37.6	0.41	33.2	C	40.5
Southbound TR	0.09	10.7	B	8.4	0.26	13.0	B	17.1	0.19	11.5	B	13.3
Intersection ICU LofS	51.9% B				66.3% B				67.1% B			
Background 2022												
Eastbound L	0.09	6.4	A	3.9	0.24	6.3	A	5.7	0.22	5.7	A	6.1
Eastbound TR	0.76	12.0	B	72.6	0.70	10.9	B	97.0	0.72	11.3	B	95.4
Westbound L	0.08	8.7	A	5.3	0.06	7.5	A	4.4	0.08	7.8	A	5.1
Westbound TR	0.72	14.3	B	81.1	0.95	32.0	C	225.6	0.91	24.0	C	191.3
Northbound LTR	0.11	17.8	B	12.0	0.34	30.5	C	23.1	0.33	25.4	C	24.5
Southbound L	0.31	23.3	C	32.6	0.52	40.5	D	41.5	0.56	41.9	D	52.0
Southbound TR	0.11	11.7	B	10.4	0.33	13.1	B	18.5	0.25	12.2	B	14.9
Intersection ICU LofS	56.2% B				72.0% C				75.3% B			
Total 2022												
Eastbound L	0.11	6.6	A	4.4	0.38	8.5	A	7.9	0.32	7	A	8.1
Eastbound TR	0.75	11.9	B	72.2	0.69	10.9	B	97.0	0.72	11.2	B	95.4
Westbound L	0.08	8.6	A	5.2	0.06	7.5	A	4.4	0.08	7.8	A	5.1
Westbound TR	0.73	14.4	B	83.5	0.96	34.1	C	231.2	0.92	25.4	C	198.9
Northbound LTR	0.11	18.2	B	12.3	0.35	30.9	C	23.2	0.34	25.6	C	24.5
Southbound L	0.37	24.5	C	38.8	0.62	44.9	D	53.2	0.68	48.2	D	66.3
Southbound TR	0.13	11.3	B	11.2	0.35	12.9	B	18.7	0.27	11.9	B	15.6
Intersection ICU LofS	57.5% B				C				80.5% C			

Note: Del. - ave. delay (secs.)

LofS - level of service

v/c - volume to capacity ratio

ICU - intersection capacity utilization

Q - maximum queue length (metres)
(95th percentile)

Table 3

Level of Service

Jasperson Drive and Main Street

	AM Peak Hour				PM Peak Hour				Sat. Peak Hour			
	v/c	Del.	LofS	Q	v/c	Del.	LofS	Q	v/c	Del.	LofS	Q
Existing, June 10, 2016												
Eastbound L	0.10	7.9	A	4.8	0.41	9.0	A	12.1	0.40	9.4	A	14.9
Eastbound TR	0.75	12.2	B	59.9	0.64	10.3	B	61.0	0.72	11.9	B	66.5
Westbound L	0.01	10	A	1.1	0.00	8.0	A	0.7	0.00	0.0	-	0.0
Westbound T	0.53	13.1	B	49.1	0.75	16.4	B	90.0	0.66	15.4	B	63.3
Westbound R	0.01	6.7	A	1.8	0.13	3.8	A	6.5	0.13	3.2	A	5.8
Northbound LTR	0.00	0.0	-	0.0	0.02	19.6	B	3.9	0.02	17.2	B	2.4
Southbound L	0.02	14.0	B	3.7	0.10	21.8	C	12.6	0.10	17.3	B	11.4
Southbound TR	0.03	0.1	A	0.0	0.30	1.2	A	0.0	0.28	0.9	A	0.0
Intersection ICU LofS	42.0% B				61.6% B				60.1% B			
Background 2022												
Eastbound L	0.17	7.4	A	6.8	0.52	11.5	B	13.4	0.48	10.7	B	16.4
Eastbound TR	0.78	12.6	B	70.3	0.69	11.1	B	74.6	0.78	12.9	B	80.4
Westbound L	0.02	10.2	B	1.9	0.00	8.0	A	0.7	0.00	0.0	-	0.0
Westbound T	0.58	14.2	B	55.2	0.80	17.6	B	109.1	0.70	15.7	B	73.6
Westbound R	0.08	4.0	A	4.3	0.14	4.1	A	7.6	0.14	3.2	A	6.2
Northbound LTR	0.00	0.0	-	0.0	0.04	19.6	B	5.8	0.02	19.2	B	3.0
Southbound L	0.07	16.1	B	8.9	0.11	23.5	C	13.3	0.11	19.2	B	13.0
Southbound TR	0.06	0.1	A	0.0	0.35	2.5	A	4.5	0.35	1.3	A	0.0
Intersection ICU LofS	50.7% B				67.6% B				66.6% B			
Total 2022												
Eastbound L	0.17	7.4	A	7.0	0.56	12.8	B	13.8	0.51	11.3	B	16.9
Eastbound TR	0.80	12.9	B	73.6	0.70	11.3	B	78.5	0.80	13.3	B	85.4
Westbound L	0.02	10.0	A	1.9	0.00	8.0	A	0.7	0.00	0.0	-	0.0
Westbound T	0.58	14.1	B	56.5	0.81	18.1	B	116.5	0.71	15.8	B	77.1
Westbound R	0.07	3.9	A	4.3	0.13	4.1	A	7.7	0.14	3.3	A	6.3
Northbound LTR	0.00	0.0	-	0.0	0.04	19.9	B	5.8	0.03	20.2	C	3.1
Southbound L	0.07	16.6	B	9.2	0.11	24.1	C	13.3	0.12	20.0	C	13.5
Southbound TR	0.06	0.1	A	0.0	0.37	3.2	A	7.2	0.37	1.6	A	0.2
Intersection ICU LofS	51.8% B				69.6% B				68.6% B			

Note: Del. - ave. delay (secs.)

LofS - level of service

v/c - volume to capacity ratio

ICU - intersection capacity utilization

Q - maximum queue length (metres)
(95th percentile)

Table 4

Level of Service

Main Street and

Shopping Centre Access

	AM Peak Hour				PM Peak Hour				Sat. Peak Hour			
	v/c	Del.	LofS	Q	v/c	Del.	LofS	Q	v/c	Del.	LofS	Q
Existing, June 10, 2016												
Eastbound TR	0.30	0.0	-	0.0	0.41	0.0	-	0.0	0.43	0.0	-	0.0
Westbound L	0.02	8.7	A	0.4	0.02	9.2	A	0.4	0.01	9.1	A	0.2
Westbound T	0.24	0.0	-	0.0	0.49	0.0	-	0.0	0.41	0.0	-	0.0
Northbound LR	0.48	23.4	C	19.0	0.48	37.2	E	17.7	0.55	39.5	E	22.9
Intersection ICU LofS	45.7% A				52.4% A				55.3% B			
Background 2022												
Eastbound TR	0.34	0.0	-	0.0	0.47	0.0	-	0.0	0.49	0.0	-	0.0
Westbound L	0.02	8.9	A	0.4	0.02	9.6	A	0.5	0.01	9.6	A	0.3
Westbound T	0.27	0.0	-	0.0	0.55	0.0	-	0.0	0.47	0.0	-	0.0
Northbound LR	0.62	33.0	D	30.0	0.71	69.1	F	32.3	0.81	79.4	F	41.7
Intersection ICU LofS	50.9% A				58.6% B				61.8% B			
Total 2022												
Eastbound TR	0.35	0.0	-	0.0	0.48	0.0	-	0.0	0.51	0.0	-	0.0
Westbound L	0.02	9.0	A	0.4	0.02	9.7	A	0.5	0.01	9.7	A	0.3
Westbound T	0.27	0.0	-	0.0	0.56	0.0	-	0.0	0.48	0.0	-	0.0
Northbound LR	0.65	35.8	E	32.2	0.75	77.4	F	34.7	0.86	93.2	F	45.6
Intersection ICU LofS	52.1% A				59.3% B				63.6% B			

Note: Del. - ave. delay (secs.)

LofS - level of service

v/c - volume to capacity ratio

ICU - intersection capacity utilization

Q - maximum queue length (metres)
(95th percentile)

Table 5

Level of Service Main Street and Esso/Hortons Access

	AM Peak Hour				PM Peak Hour				Sat. Peak Hour			
	v/c	Del.	LofS	Q	v/c	Del.	LofS	Q	v/c	Del.	LofS	Q
Total 2022												
Westbound LR	0.05	10.3	B	1.2	0.07	11.7	B	1.6	0.09	12.1	B	2.2
Northbound TR	0.07	0.0	-	0.0	0.15	0.0	-	0.0	0.16	0.0	-	0.0
Southbound L	0.00	7.5	A	0.1	0.01	7.7	A	0.2	0.01	7.8	A	0.2
Southbound T	0.11	0.0	-	0.0	0.13	0.0	-	0.0	0.13	0.0	-	0.0
Intersection ICU			18.9%				24.3%				25.7%	
LofS			A				A				A	

Note: Del. - ave. delay (secs.)

LofS - level of service

v/c - volume to capacity ratio

ICU - intersection capacity utilization

Q - maximum queue length (metres)
(95th percentile)

Table 6

Level of Service Jasperson Drive and Site Access

	AM Peak Hour				PM Peak Hour				Sat. Peak Hour			
	v/c	Del.	LofS	Q	v/c	Del.	LofS	Q	v/c	Del.	LofS	Q
Total 2022												
Eastbound L	0.00	8.3	A	0.1	0.03	10.2	B	0.6	0.02	9.6	A	0.5
Eastbound T	0.33	0.0	-	0.0	0.45	0.0	-	0.0	0.47	0.0	-	0.0
Westbound TR	0.27	0.0	-	0.0	0.57	0.0	-	0.0	0.49	0.0	-	0.0
Southbound LR	0.11	17.6	C	2.7	0.33	49.0	E	9.8	0.35	43.5	E	10.8
Intersection ICU LofS			37.1% A				64.4% C				56.3% B	

Note: Del. - ave. delay (secs.)

LofS - level of service

v/c - volume to capacity ratio

ICU - intersection capacity utilization

Q - maximum queue length (metres)
(95th percentile)

Table 7

Level of Service Main Street and Site Access



Figure 1

Area Plan

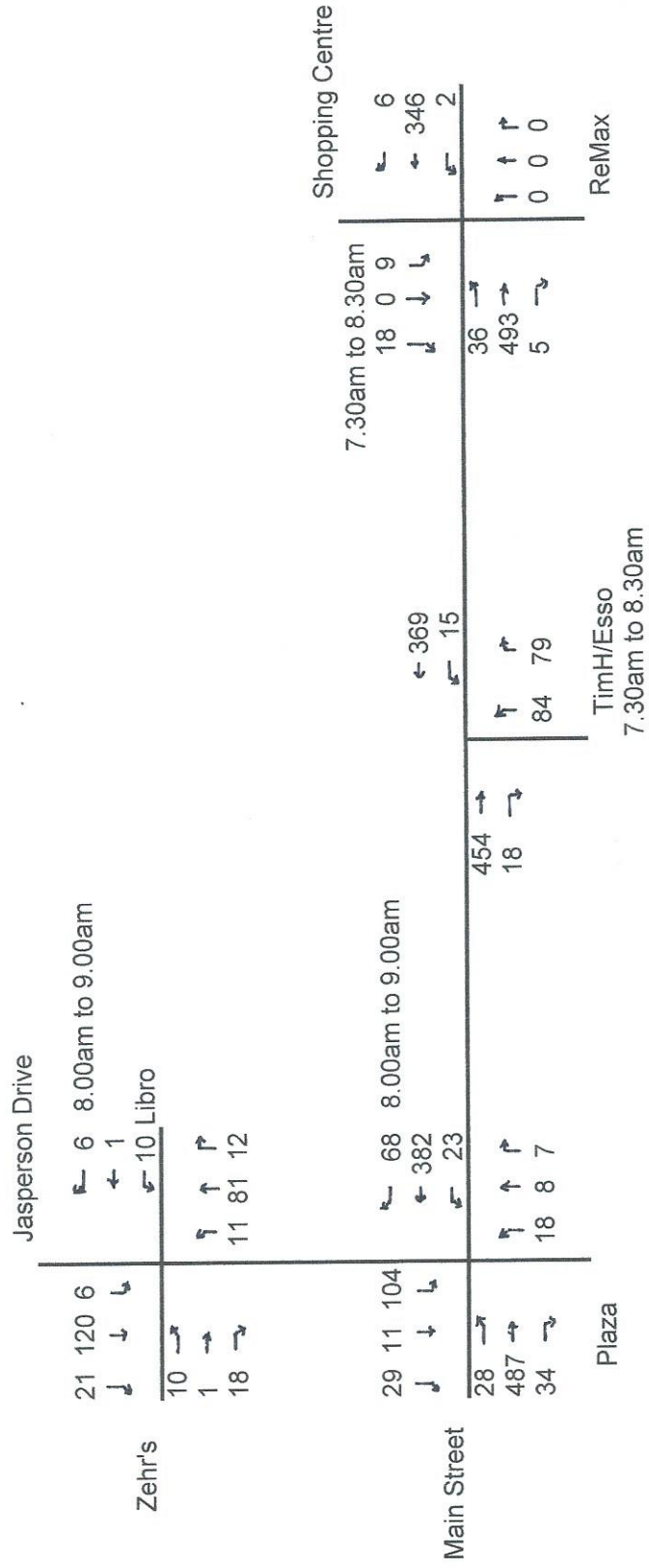


Figure 2A
Existing Traffic
AM Peak Hour
Friday, June 10, 2016

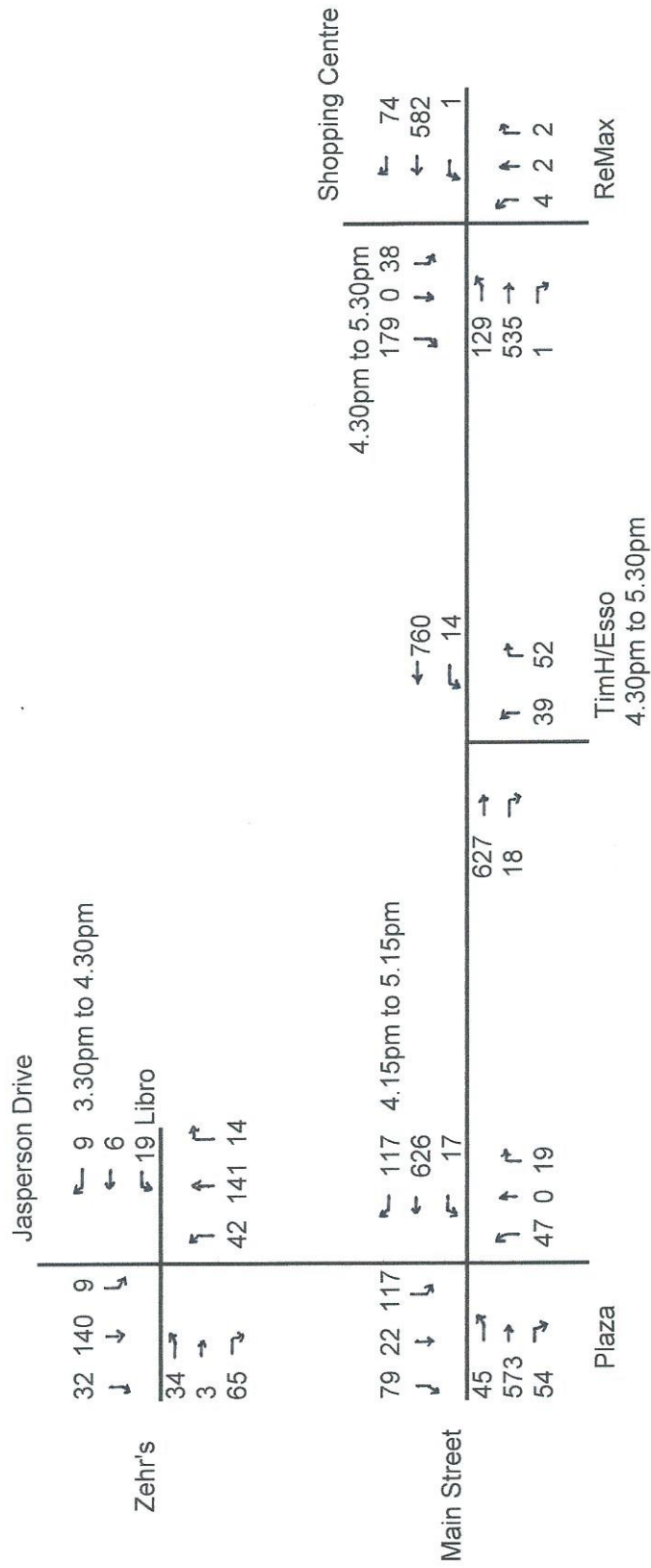


Figure 2B
Existing Traffic
PM Peak Hour
Friday, June 10, 2016

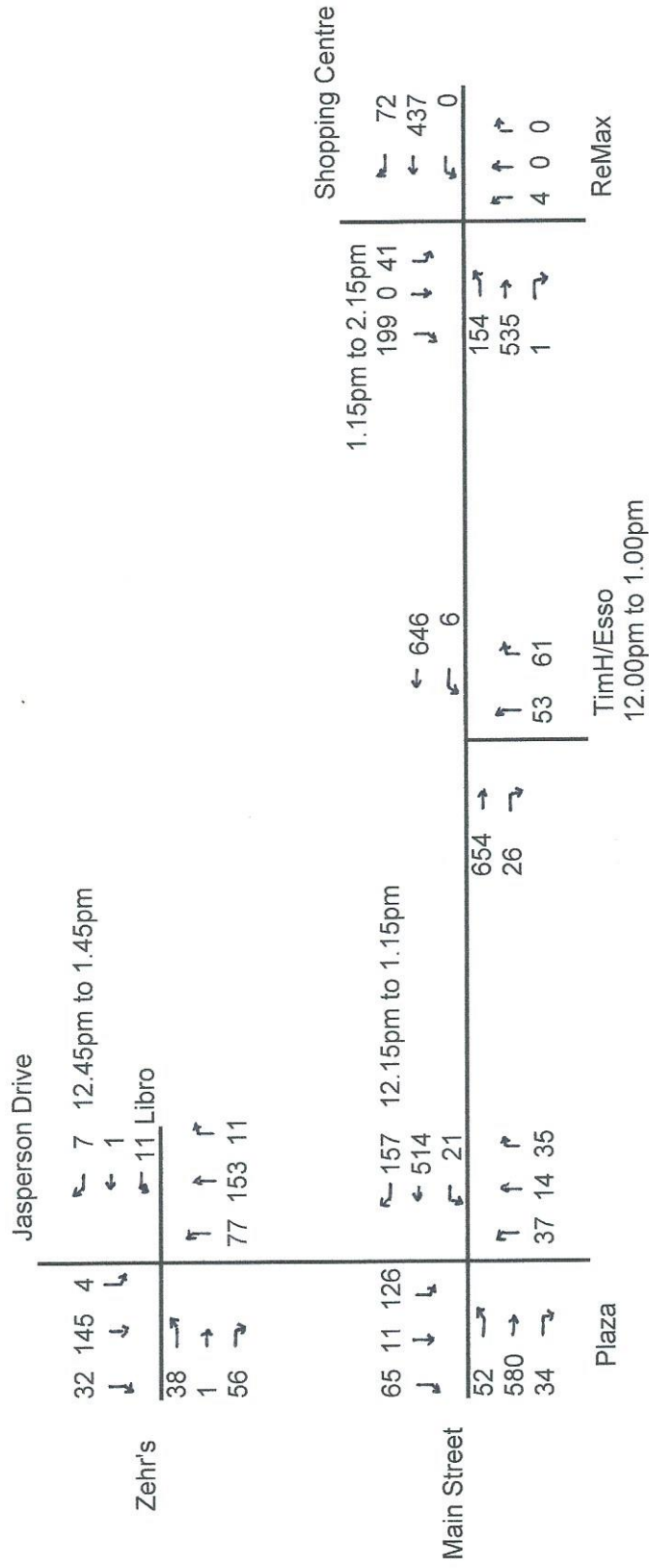
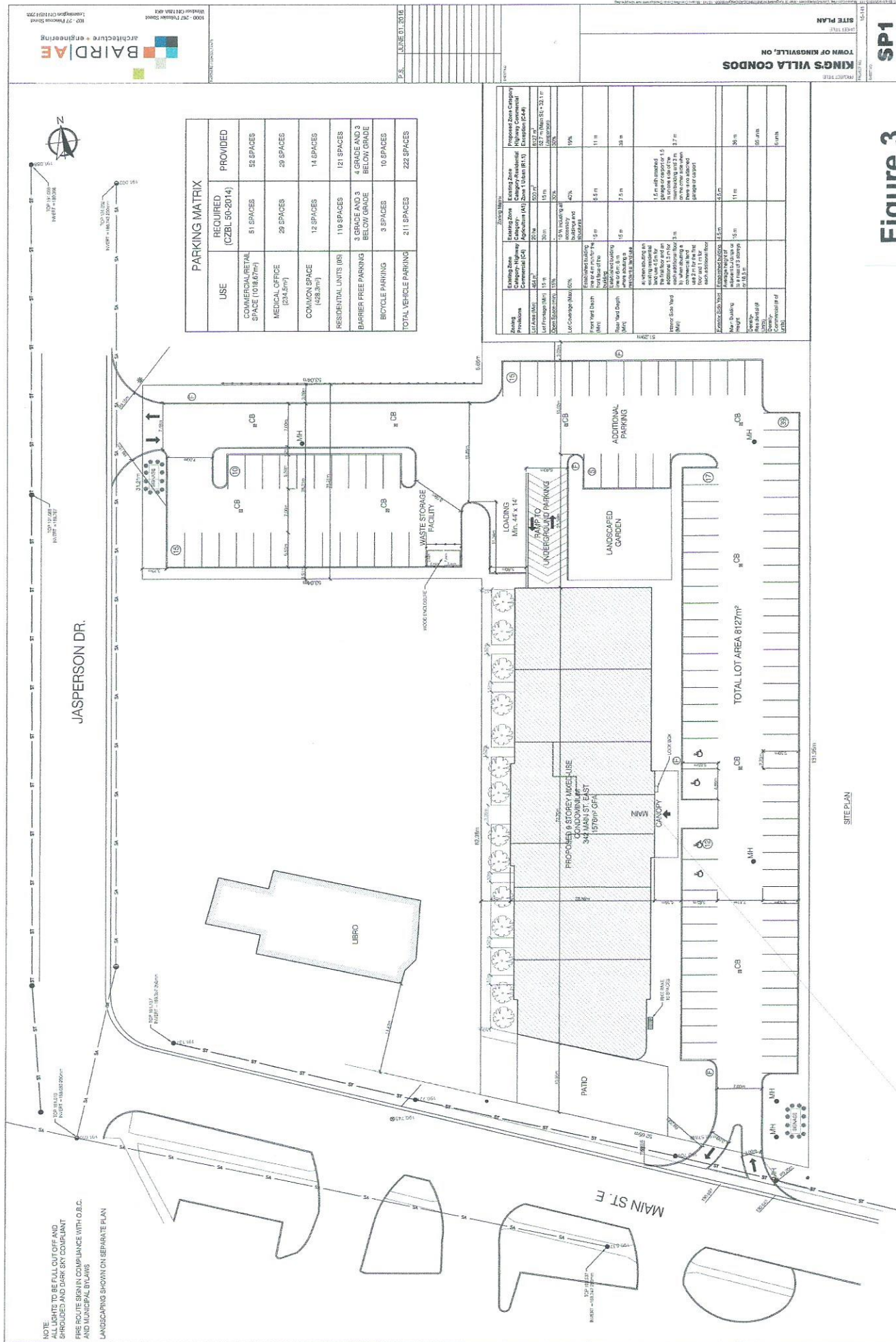


Figure 2C
Existing Traffic
Saturday Peak Hour
Saturday, June 11, 2016

Figure 3 Site Plan

Site Plan



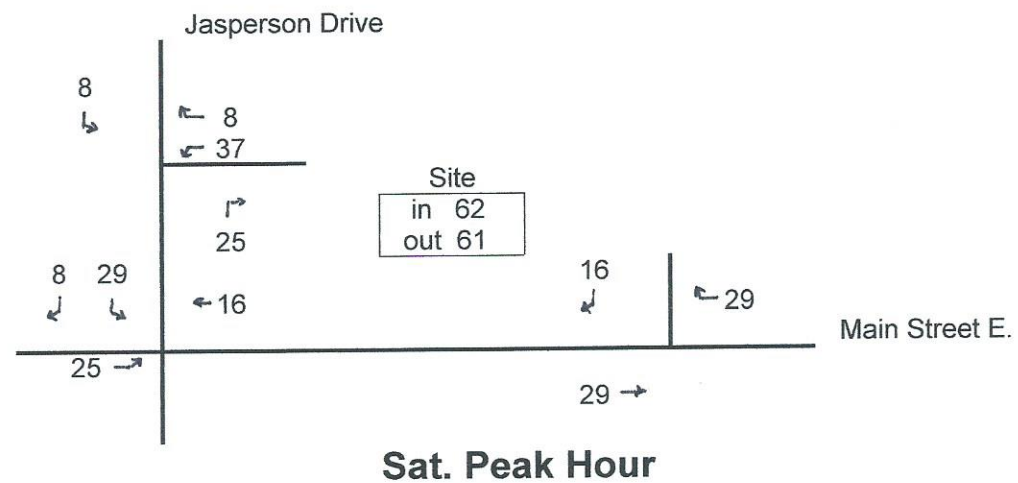
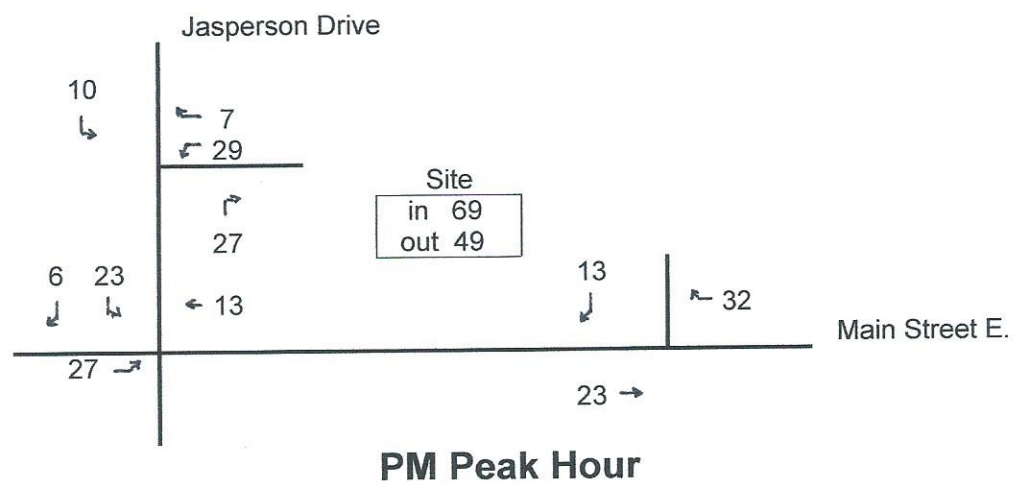
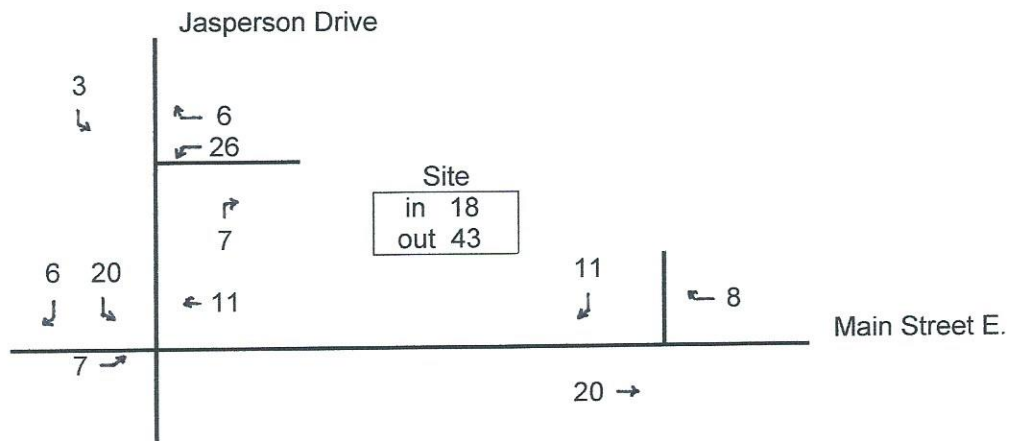


Figure 4

Site Generated Trips

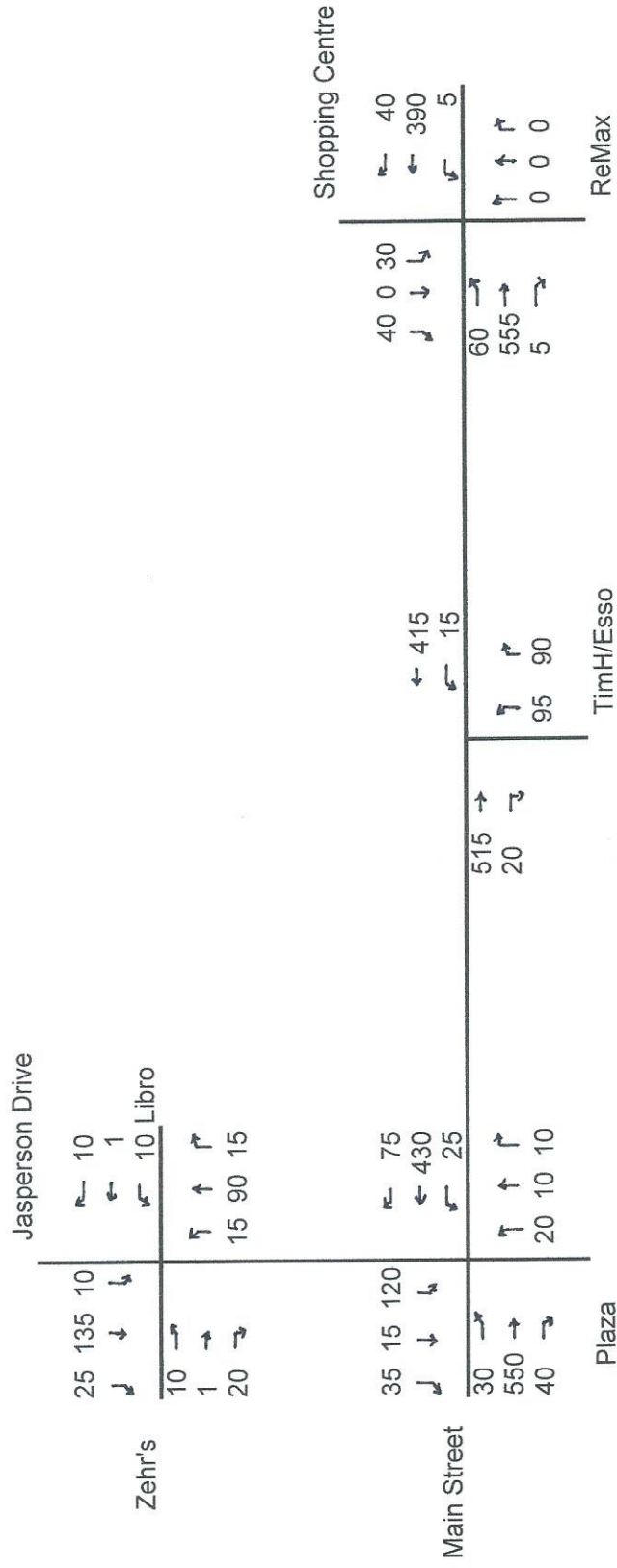


Figure 5A
Background Traffic 2022
AM Peak Hour

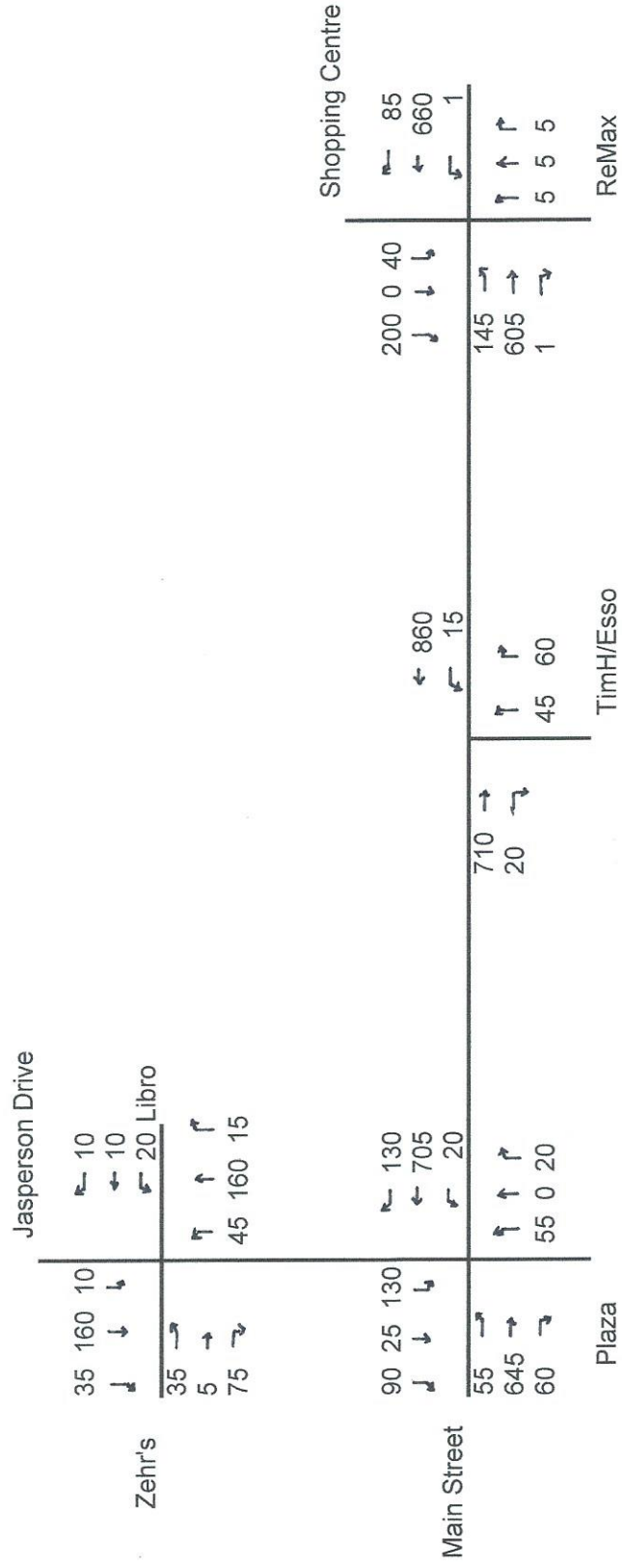


Figure 5B
Background Traffic 2022
PM Peak Hour

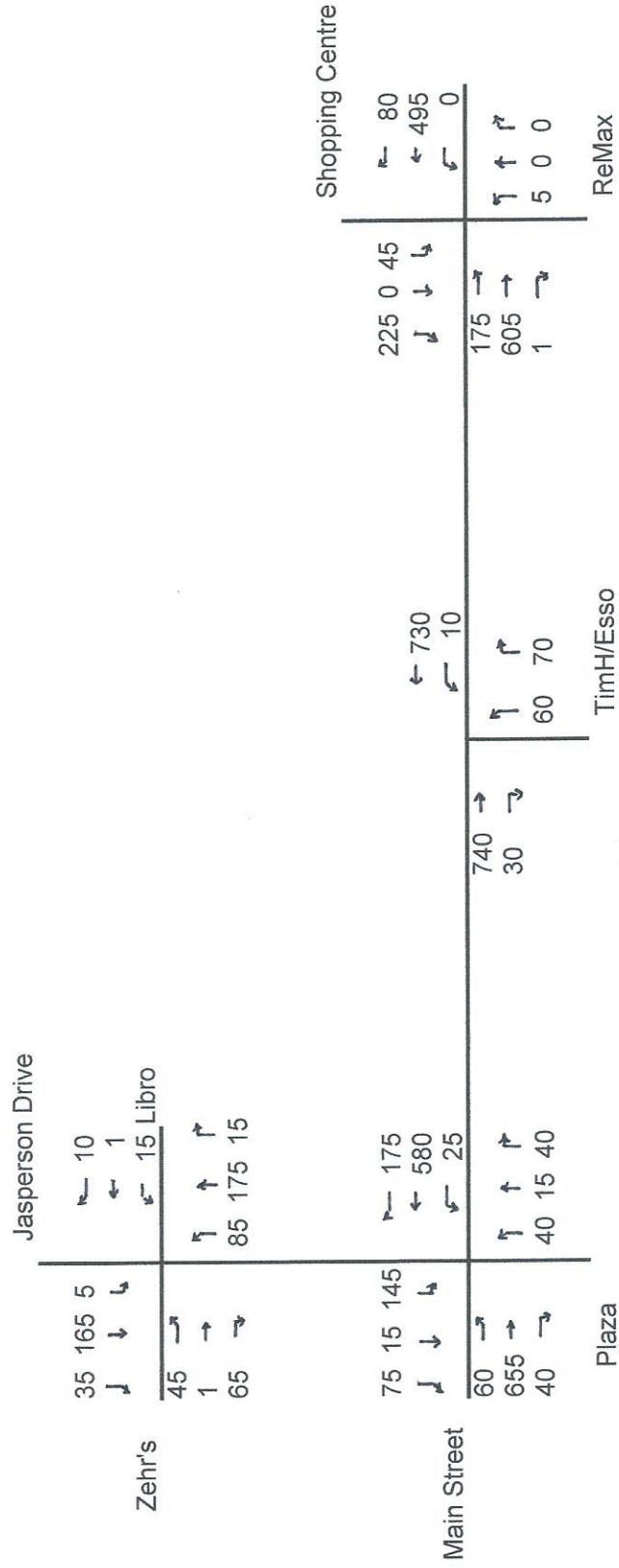
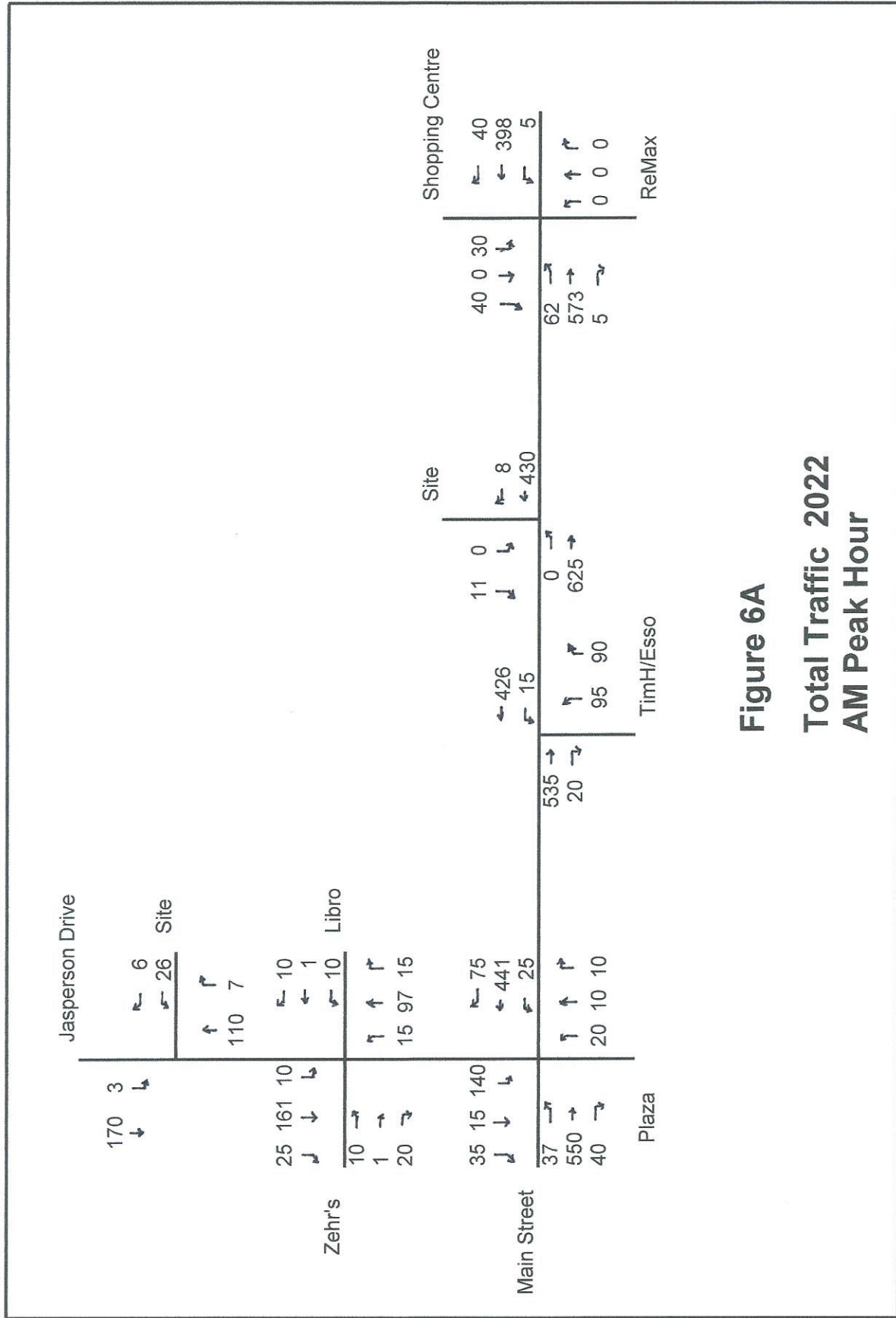
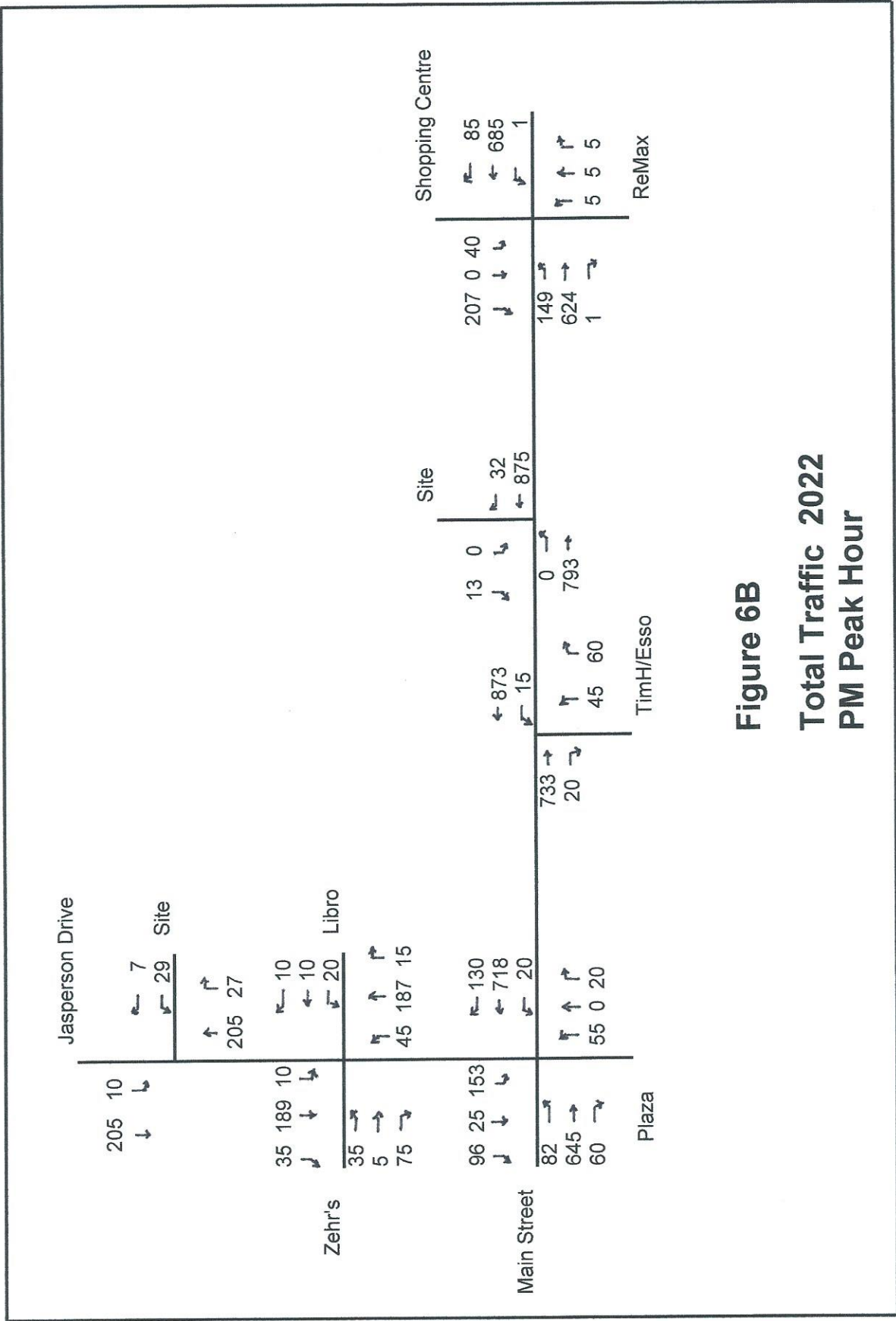


Figure 5C
Background Traffic 2022
Saturday Peak Hour





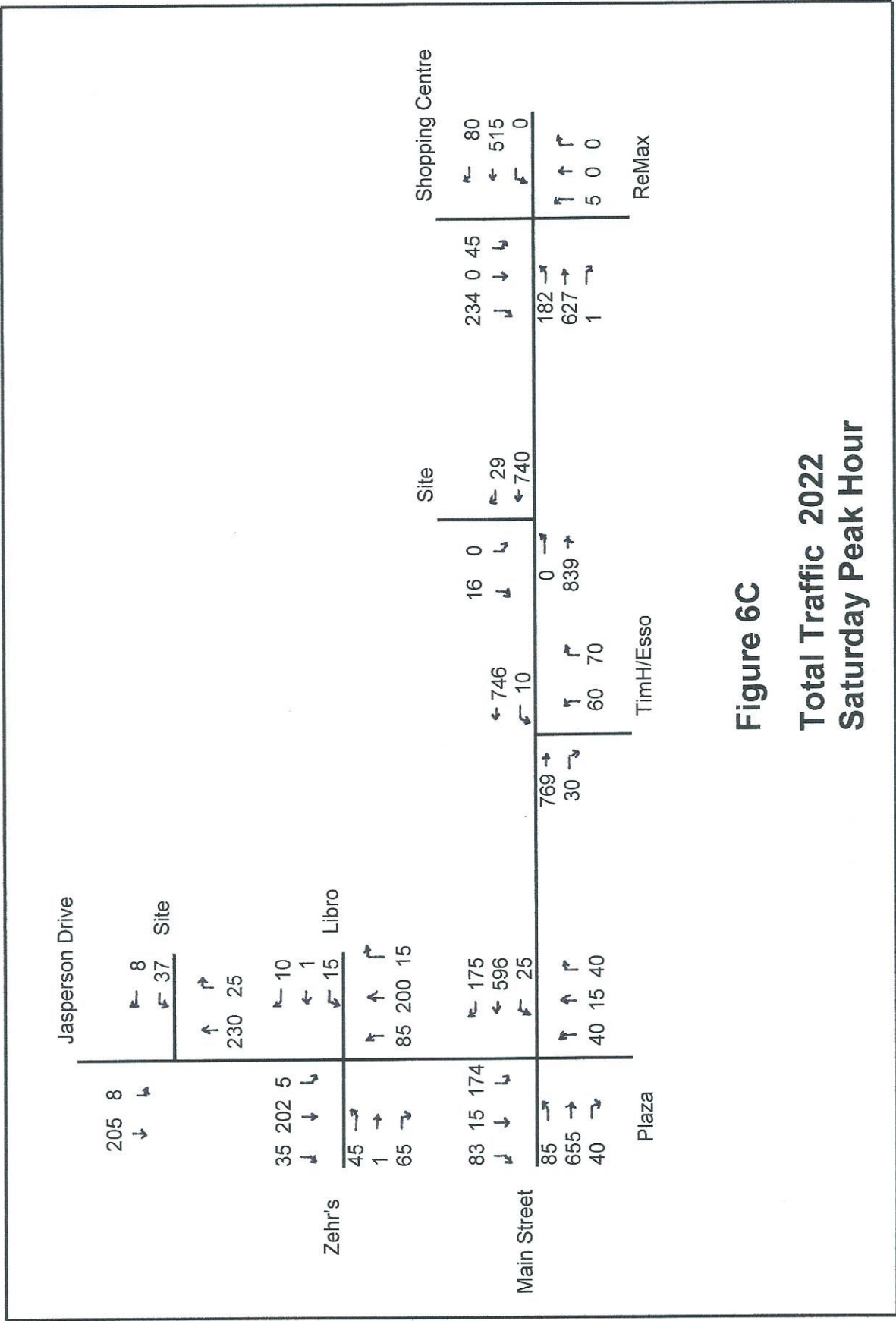
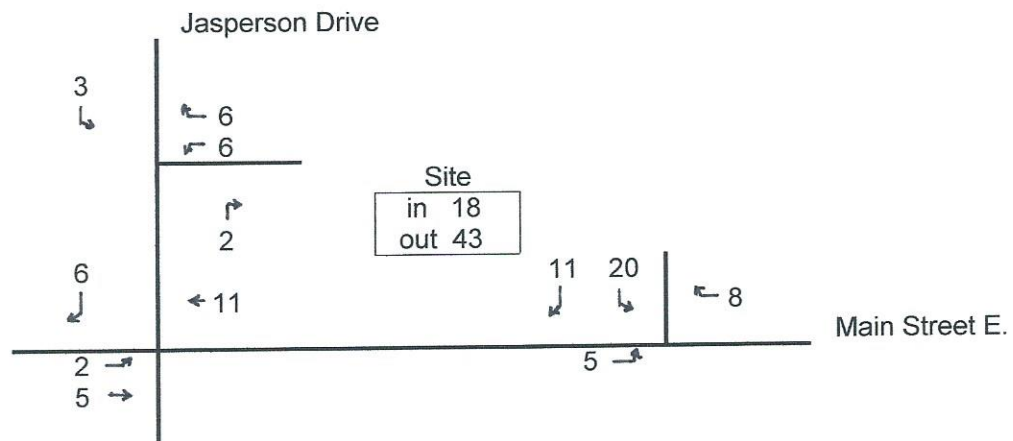
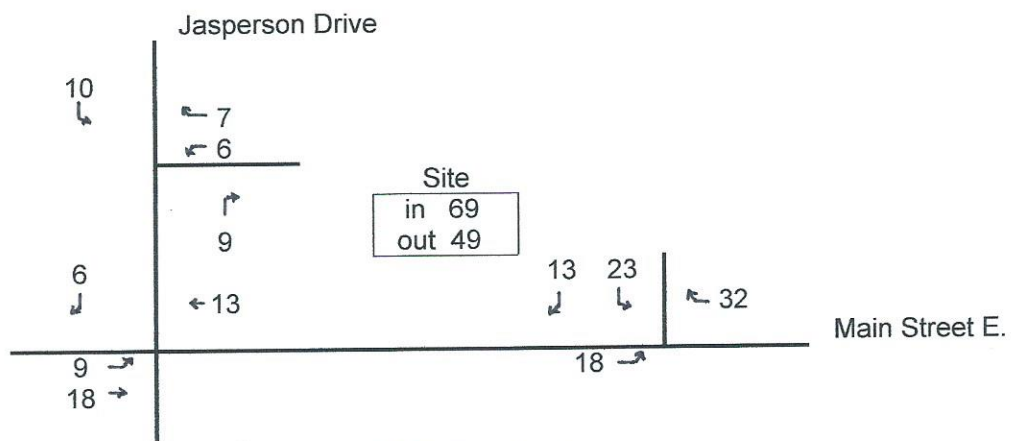


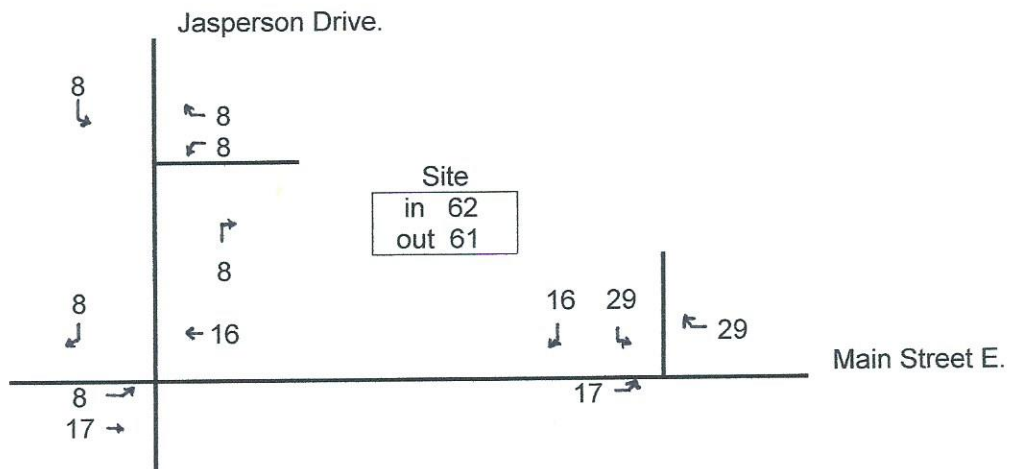
Figure 6C
Total Traffic 2022
Saturday Peak Hour



AM Peak Hour



PM Peak Hour



Sat. Peak Hour

Figure 7

**Site Generated Trips
Left Turns Permitted at Main St.**