



**SALVINI**  
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June 25, 2025

Chris Corosky, RPP  
VanHarten Land Surveyors - Engineers  
2106 Gordon Street  
Guelph, ON · N1L 1G6

**Re: Traffic Brief – Dakota’s Truck Services Ltd.  
Wellington Road 109, Arthur**

Dear Chris,

This Traffic Brief has been prepared in support of a proposed new large agricultural vehicle and truck service facility on the south side of WR109 just west of First Line in Arthur. The site is currently used for agricultural purposes and is proposed to be redeveloped to accommodate a new second location for Dakota’s Truck Services Ltd. A site location plan and concept plan are attached for context.

Dakota’s Truck Services Ltd. has an existing facility in Elora at 7831 6 Line. The facility services all makes and models of large agricultural equipment and vehicles, and heavy and medium duty trucks and trailers. They are a fully licensed safety inspection station and service fleets of all size. The subject site is intended to be an additional facility that provides similar services in the local area.

Wellington County asked that this Traffic Brief be prepared to review the traffic volumes at the site driveway intersection with WR109 along with the First Line intersection with WR109. This review considers the study area traffic volumes under existing and future conditions with and without the proposal. A left turn lane warrant analysis was undertaken for both intersections along with capacity analyses. The finding of this review is that left turn lanes on WR109 are not recommended at either intersection and that the traffic generated by the proposal can be accommodated at acceptable levels in the transportation network.

### **Transportation Context**

On June 24, 2025, I visited the site to review the transportation context in the area and to review the available sight distance at both the proposed site driveway and at the First Line intersection with WR109. WR109 is a busy rural County road. There is currently construction on the bridge to the west of the site and the posted speed limit has been lowered to 50 kph in the area. Previously, the posted speed limit was 80 kph in the vicinity of the site driveway. The

proposed site driveway is located midway between two existing driveways for the residential home at 8051 WR109 and Hort Manufacturing at 8065 WR109.

The County's entrance policy requires that new intersections have a minimum of 200 metres of sight distance in both directions on a County road posted at 80 kph. The site visit confirms that there is more than 200 metres of sight distance available in both directions from both the proposed site driveway and First Line on WR109, conforming to the County's requirements for access and also to the Transportation Association of Canada requirements for intersection sight distance.

The First Line intersection with WR109 is a t-intersection with single lane approaches northbound (on First Line) and westbound on WR109. There is a short right turn lane/taper on the eastbound approach to the intersection along with a through lane. The First Line approach to the intersection is stop controlled and the WR109 approaches to the intersection are free flowing.

Existing traffic data was collected at the First Line intersection with WR109 on Wednesday, April 16, 2025. The data was collected during the weekday morning and afternoon peak periods to capture traffic volumes at the intersection when both area traffic and site traffic related to the proposal will be highest. The weekday morning peak hour occurred starting at 7:30AM and the afternoon peak hour occurred starting at 4:30PM. The existing traffic data is attached to this letter and is illustrated for the morning and afternoon peak hours in the attached traffic volume figures.

A future five-year horizon year of 2030 was chosen for assessment in consultation with County staff. Future background traffic volumes on WR109 and First Line were estimated by growing traffic by two (2) percent per year over the five-year horizon. The resulting future background traffic volumes are illustrated in the attached figures as well.

## **The Proposal and Site Traffic**

A trip generation survey was conducted at the existing Dakota's Truck Services facility in Elora to assist in estimating traffic at the proposed facility. The existing site is served by one long driveway that provides access to the site. The survey was also undertaken on Wednesday, April 16, 2025 and the survey data is attached for reference. The existing site includes four buildings:

1. The mechanical shop in the largest building (13,750 s.f.)
2. A second building for auto mechanics (3,500 s.f.)
3. An unrelated sawmill building to the east
4. An unrelated house where someone lives

The two Dakota buildings total 17,250 s.f. of floor area and accommodate about 20 staff. Hours of operation are 8AM to 5:30PM Monday to Thursday, 8AM to 5PM Fridays, and 8AM to noon



on Saturdays. Saturday operations are limited with only four to five staff onsite to finish work that wasn't completed during the week. Parts are regularly delivered throughout the weekdays and customers also arrive and depart throughout the weekday. Staff start and end times are staggered, and deliveries generally end before 4PM on weekdays. There is typically someone onsite until about 6PM.

The sawmill has limited traffic activity other than one staff member who typically arrives in the weekday morning peak period and departs in the weekday afternoon peak period.

The proposed site is planned to be served by two driveway connections. The primary driveway connects directly to WR109 and is intended to carry lighter duty traffic created by customers, some deliveries, and staff. A second driveway connection serving the rear of the site is proposed across an existing easement that connects to First Line and will be designed and intended for larger agricultural vehicles and trucks.

In order to estimate site traffic at the new facility, existing traffic at the Elora facility was scaled by the increase in floor area. The existing facility has about 17,250 s.f. of floor area while the proposed facility will include about 31,000 s.f. (2,850 s.m.) of floor area – an increase of about 80 percent. Traffic was split between heavier vehicle traffic (agricultural vehicles and trucks) – intended to use the driveway connection to First Line, and other lighter duty vehicle traffic which will use the WR109 driveway. Also, one trip inbound in the morning peak hour and outbound in the afternoon peak hour was removed from the trip generation for the sawmill use. The existing and estimated site traffic is summarized in the table below.

**Table 1: Traffic Generation Estimates**

Description		AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Total Trips	Existing	21	5	26	1	9	10
Truck Trips		1	0	1	1	1	2
Sawmill Trips		1	0	1	0	1	1
Other Vehicle Trips		19	5	24	0	7	7
Truck Trips	Future (+80%)	2	0	2	2	2	4
Other Vehicle Trips		34	9	43	0	13	13
Total Trips		36	9	45	2	15	17

The proposal is expected to generate 45 and 17 total trips measured in both directions in the weekday morning and afternoon peak hours, respectively. Discussions with the owner suggest that the majority of the traffic (likely about 75 percent) will be destined to and from the Highway 6 and WR109 intersection and has been assigned in that manner. This is generally consistent with traffic patterns at the First Line intersection with WR109. The site traffic for both trucks and other vehicles is illustrated in the attached figures.



## Future Total Traffic Conditions

Future total traffic in 2030 was calculated by adding the site traffic to the future background traffic and is illustrated in the attached figures.

### *Westbound Left Turn Lane Warrant Analysis*

The MTO Design Supplement for the TAC (Transportation Association of Canada) Geometric Design Guide for Canadian Roads provides a methodology for assessing whether or not a left turn lane is warranted at an intersection on a two-lane road based on the percentage of left turns in the approaching stream of traffic, the design speed and the volumes at the intersection. The methodology applies when the percentage of left turns in the approaching stream of traffic is 2.5 percent or greater. When the percentage of left turns in the approaching stream of traffic is less than 2.5 percent, the left turn lane is not warranted.

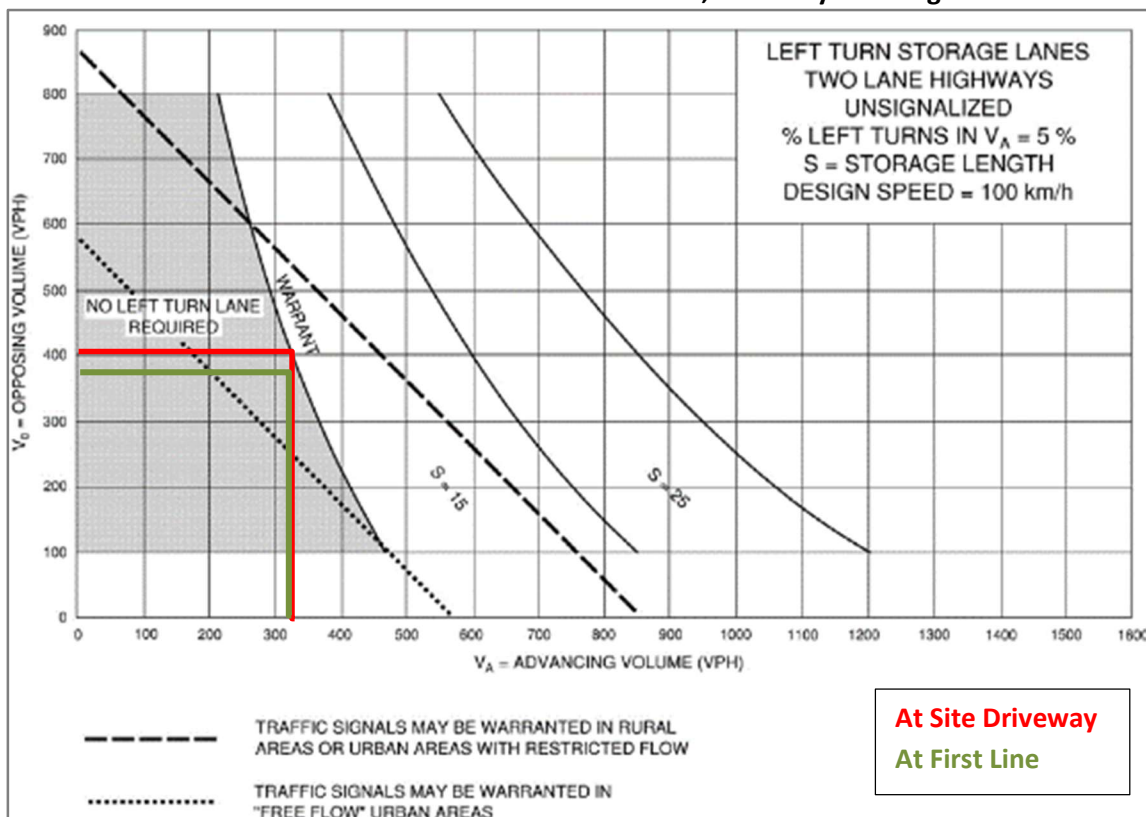
Under future total traffic conditions, the percentage of left turns in the westbound approaching stream of traffic to both the site driveway and First Line is expected to be less than one (1) percent in the weekday afternoon peak hour. In the morning peak hour, the percentage of left turns in the approaching stream of traffic to both the site driveway and First Line is expected to be just over 2.5 percent although the left turn volumes themselves are expected to be low (nine vehicles per hour or one vehicle every six to seven minutes on average at each intersection).

The appropriate nomograph was consulted for the morning peak hour and the forecast traffic volumes at the driveway and the First Line intersections on WR109 were plotted to determine if a left turn lane is warranted in the westbound direction. A design speed of 100 kph was chosen given that the posted speed is typically 80 kph in the vicinity of the two intersections.

The assessment is illustrated in the figure below.



### Westbound Left Turn Lane Warrant Assessment – WR109, Weekday Morning Peak Hour



The assessment illustrates that the future total traffic volumes at the First Line intersection do not meet the threshold for a westbound left turn lane. At the site driveway, the traffic volumes are on the warrant line. Given that the percentage of left turns in the traffic stream is low (2.65 percent) and the actual left turn volume is also low (nine vehicles in the peak hour), a left turn lane is not recommended. To confirm the recommendation, a traffic operations assessment was consulted at the two intersections to confirm that the delays to westbound traffic are not expected to be high.

#### ***Traffic Operations Assessment***

An assessment of the traffic operations at the site driveway connection to WR109 along with the First Line intersection with WR109 was undertaken to estimate how the intersections will operate in the weekday peak hours under existing and future traffic conditions. The assessment was undertaken using Synchro 12 software. The existing geometry was used as an input along with existing truck percentages at the First Line intersection. At the site driveway intersection, a single lane approach was included under stop control for the south (site) leg of the intersection. For other inputs, default Synchro parameters were used.



The assessment is summarized in the tables below and the Synchro worksheets are attached. Westbound left turn lanes at the two intersections were not included to test the delay to westbound traffic under this scenario.

**Table 2: Traffic Operations Assessment – WR109/First Line**

Measure of Effectiveness	Approach Direction/Lane							
	AM Peak Hour				PM Peak Hour			
	EBT	EBR	WB	NB	EBT	EBR	WB	NB
<i>Existing Traffic</i>								
Level of Service	-	-	A	B	-	-	A	B
Delay (s)	-	-	0.3	12.9	-	-	0.1	14.4
Volume/Capacity	-	-	0.01	0.04	-	-	-	0.07
95 <sup>th</sup> Percentile Queue (m)	-	-	0.2	0.9	-	-	-	1.7
<i>Future Background Traffic</i>								
Level of Service	-	-	A	B	-	-	A	C
Delay (s)	-	-	0.3	13.6	-	-	0.1	15.5
Volume/Capacity	-	-	0.01	0.05	-	-	-	0.08
95 <sup>th</sup> Percentile Queue (m)	-	-	0.2	1.1	-	-	-	2.0
<i>Future Total Traffic</i>								
Level of Service	-	-	A	B	-	-	A	C
Delay (s)	-	-	0.3	13.7	-	-	0.1	15.5
Volume/Capacity	-	-	0.01	0.05	-	-	-	0.09
95 <sup>th</sup> Percentile Queue (m)	-	-	0.2	1.2	-	-	0.1	2.2

**Table 3: Traffic Operations Assessment – WR109/Site Driveway**

Measure of Effectiveness	Approach Direction/Lane					
	AM Peak Hour			PM Peak Hour		
	EB	WB	NB	EB	WB	NB
<i>Future Total Traffic</i>						
Level of Service	-	A	B	-	-	B
Delay (s)	-	0.3	14.4	-	-	14.9
Volume/Capacity	-	0.01	0.03	-	-	0.03
95 <sup>th</sup> Percentile Queue (m)	-	0.2	0.6	-	-	0.8

The First Line intersection with WR109 is currently operating at acceptable levels of service B or better on all approaches and is expected to continue to operate at acceptable levels of service C or better on all approaches in the future with and without the proposal. The site driveway intersection with WR109 is also expected to operate at acceptable levels of service B or better in the future with the proposal.

The westbound approach to the two intersections is expected to operate at level of service A with average delays of 0.3 seconds or less as a result of left turning traffic. The analyses confirm



that left turning traffic does not introduce significant delays to through traffic and a left turn lane westbound at the two intersections is not needed.

## Summary and Conclusions

This Traffic Brief provides an overview of the transportation considerations for a proposed agricultural vehicle and truck service facility at the subject site on WR109 east of Arthur and includes the following information:

- The proposal is expected to generate 45 and 17 trips measured in both directions in the weekday morning and afternoon peak hours, respectively.
- There is more than 200 metres of sight distance available at the proposed site driveway connection to WR109 and at the First Line intersection meeting the County's criteria for sight distance as well as the requirements of the Transportation Association of Canada for intersection sight distance.
- Westbound left turn lanes on WR109 to the site driveway and First Line are not recommended with the proposal.
- The two study area intersections with WR109 are expected to operate at acceptable levels under future traffic conditions with the proposal and the current intersection geometry in both weekday peak hours.

If you have any questions about the analysis presented in this letter, please contact me to discuss.

Sincerely,



Julia Salvini, MEng, PEng, FITE  
President

Attach:           Site Location Plan  
                      Site Concept Plan  
                      Traffic Count Data – WR109/First Line  
                      Traffic Volume Figures  
                      7831 Sixth Line, Elora (Existing Facility)  
                      Synchro Worksheets



# Attachments

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**Site Location Plan**

Source: OpenStreetMap.org





# Wellington Rd 109 @ First Line

## Morning Peak Diagram

### Specified Period

**From:** 7:00:00

**To:** 9:00:00

### One Hour Peak

**From:** 7:30:00

**To:** 8:30:00

**Municipality:** Arthur  
**Site #:** 0000000002  
**Intersection:** Wellington Rd 109 & First Line  
**TFR File #:** 2  
**Count date:** 16-Apr-2025

**Weather conditions:**  
 Cloudy/Dry  
**Person(s) who counted:**  
 Pyramid Traffic Inc

**\*\* Non-Signalized Intersection \*\***

**Major Road:** Wellington Rd 109 runs W/E

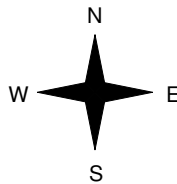
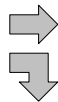
East Leg Total: 614  
 East Entering: 283  
 East Peds: 0  
 Peds Cross: ∞

Heavys	Trucks	Cars	Totals
66	9	211	286



Wellington Rd 109

Heavys	Trucks	Cars	Totals
52	4	268	324
0	0	18	18
52	4	286	



First Line

Cars	Trucks	Heavys	Totals
203	9	64	276
6	1	0	7
209	10	64	



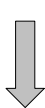
Wellington Rd 109

Cars	Trucks	Heavys	Totals
274	4	53	331

Peds Cross: ∞  
 South Peds: 0  
 South Entering: 17  
 South Leg Total: 42

Peds Cross: ∞  
 West Peds: 0  
 West Entering: 342  
 West Leg Total: 628

Cars	24
Trucks	1
Heavys	0
Totals	25



Cars	8	6	14
Trucks	0	0	0
Heavys	2	1	3
Totals	10	7	

## Comments

# Wellington Rd 109 @ First Line

## Afternoon Peak Diagram

### Specified Period

**From:** 16:00:00

**To:** 18:00:00

### One Hour Peak

**From:** 16:30:00

**To:** 17:30:00

**Municipality:** Arthur  
**Site #:** 000000002  
**Intersection:** Wellington Rd 109 & First Line  
**TFR File #:** 2  
**Count date:** 16-Apr-2025

**Weather conditions:**  
 Cloudy/Dry  
**Person(s) who counted:**  
 Pyramid Traffic Inc

**\*\* Non-Signalized Intersection \*\***

**Major Road:** Wellington Rd 109 runs W/E

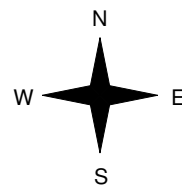
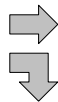
East Leg Total: 682  
 East Entering: 383  
 East Peds: 0  
 Peds Cross: ∞

Heavys	Trucks	Cars	Totals
35	5	360	400



Wellington Rd 109

Heavys	Trucks	Cars	Totals
35	12	246	293
1	0	13	14
36	12	259	



First Line

Cars	Trucks	Heavys	Totals
343	4	34	381
1	0	1	2
344	4	35	



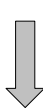
Wellington Rd 109

Cars	Trucks	Heavys	Totals
252	12	35	299

Peds Cross: ∞  
 South Peds: 0  
 South Entering: 25  
 South Leg Total: 41

Peds Cross: ∞  
 West Peds: 0  
 West Entering: 307  
 West Leg Total: 707

Cars	14
Trucks	0
Heavys	2
Totals	16



Cars	17	6	23
Trucks	1	0	1
Heavys	1	0	1
Totals	19	6	

## Comments

# Wellington Rd 109 @ First Line

## Total Count Diagram

**Municipality:** Arthur  
**Site #:** 000000002  
**Intersection:** Wellington Rd 109 & First Line  
**TFR File #:** 2  
**Count date:** 16-Apr-2025

**Weather conditions:**  
 Cloudy/Dry  
**Person(s) who counted:**  
 Pyramid Traffic Inc

**\*\* Non-Signalized Intersection \*\***

**Major Road:** Wellington Rd 109 runs W/E

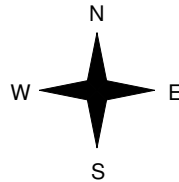
East Leg Total: 2404  
 East Entering: 1222  
 East Peds: 1  
 Peds Cross: 8

Heavys	Trucks	Cars	Totals
172	29	1064	1265



Wellington Rd 109

Heavys	Trucks	Cars	Totals
145	40	976	1161
4	0	68	72
149	40	1044	



First Line

Cars	Trucks	Heavys	Totals
1017	27	169	1213
7	1	1	9
1024	28	170	



Wellington Rd 109

Cars	Trucks	Heavys	Totals
993	41	148	1182

Peds Cross: 1  
 South Peds: 1  
 South Entering: 73  
 South Leg Total: 154

Peds Cross: 8  
 West Peds: 0  
 West Entering: 1233  
 West Leg Total: 2498

Cars	75		
Trucks	1		
Heavys	5		
Totals	81		



Cars	47	17	64
Trucks	2	1	3
Heavys	3	3	6
Totals	52	21	

### Comments

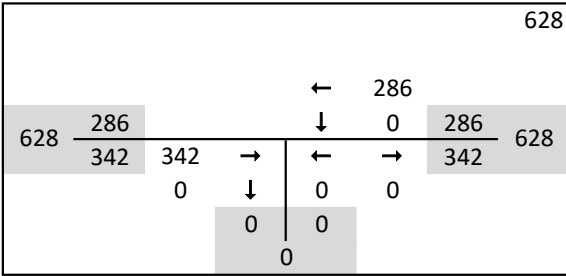
# Dakota's Truck Services, WR109, Arthur

## Traffic Diagrams

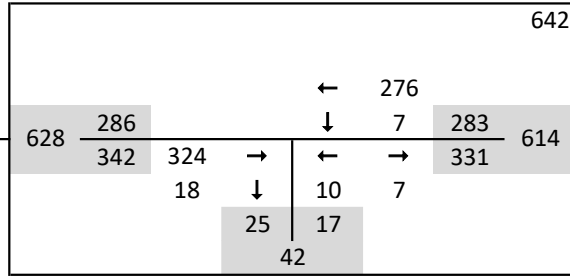
### AM Peak Hour

#### Existing Traffic

Wed April 16, 2025, 7:30

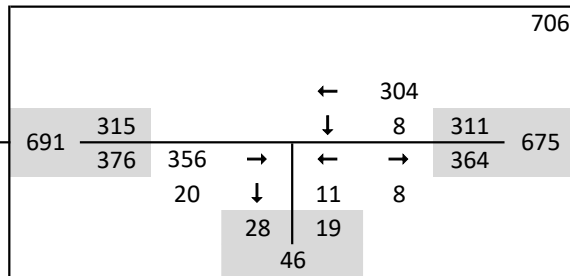
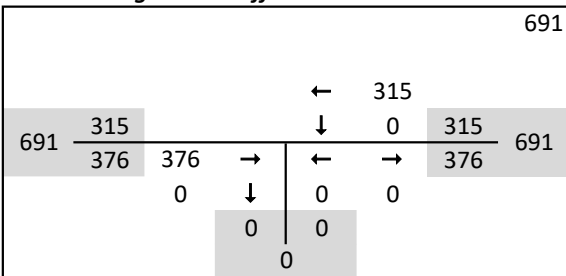


WR109 and Site Driveway

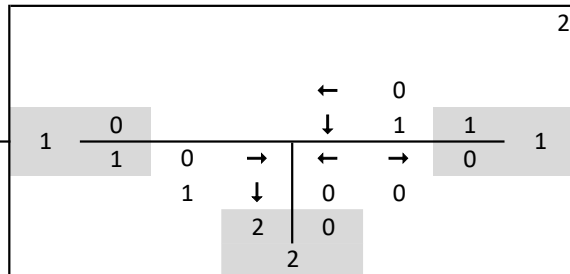
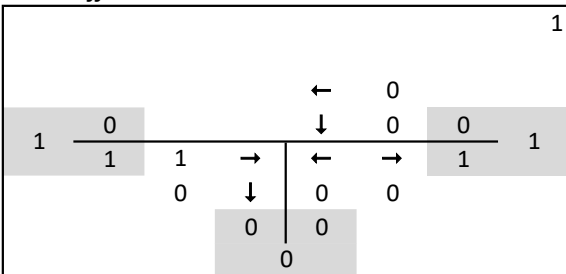


WR109 and First Line

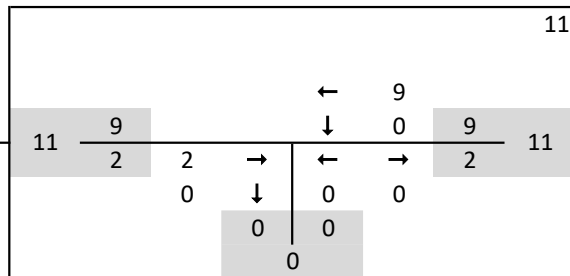
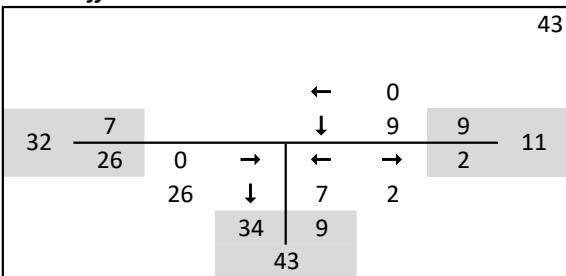
#### Future Background Traffic



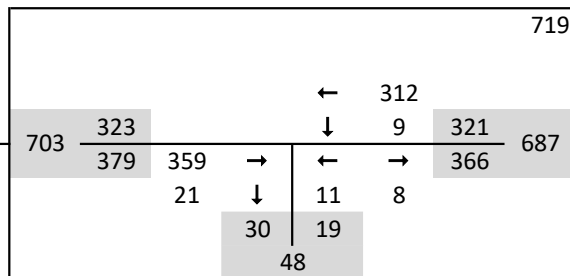
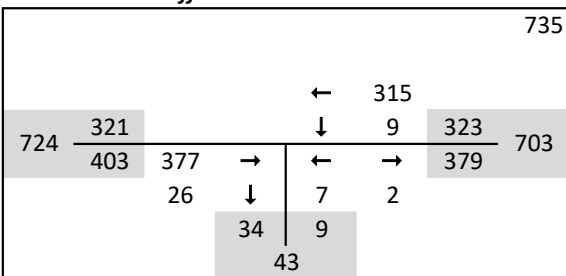
#### Site Traffic Trucks



#### Site Traffic Other



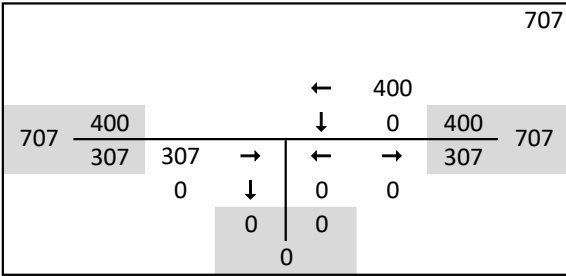
#### Future Total Traffic



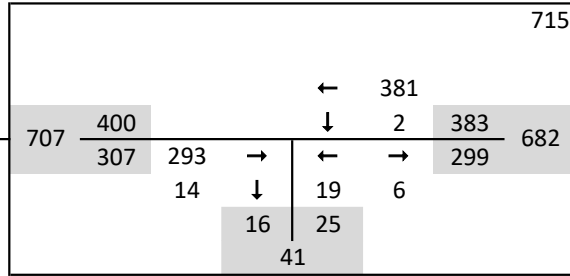
**PM Peak Hour**

**Existing Traffic**

Wed April 16, 2025, 4:30

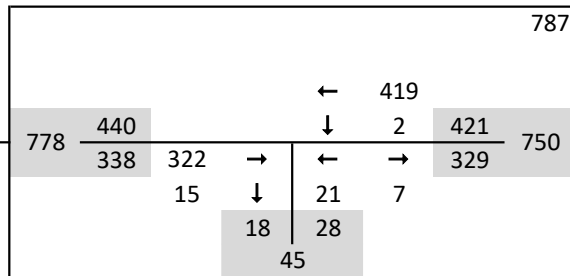
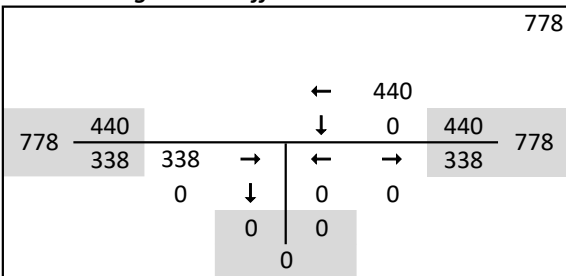


WR109 and Site Driveway

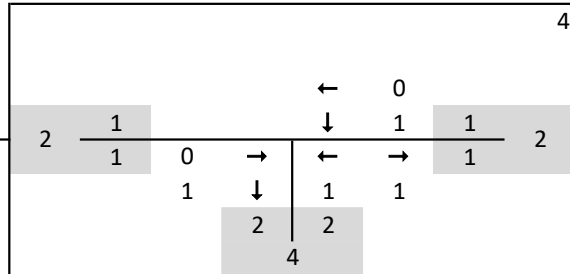
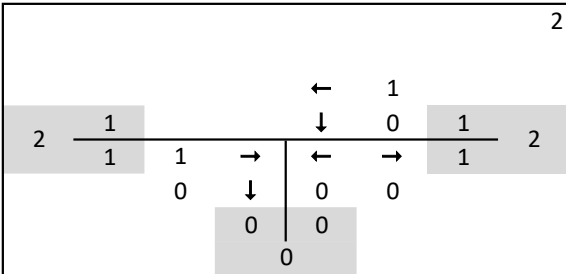


WR109 and First Line

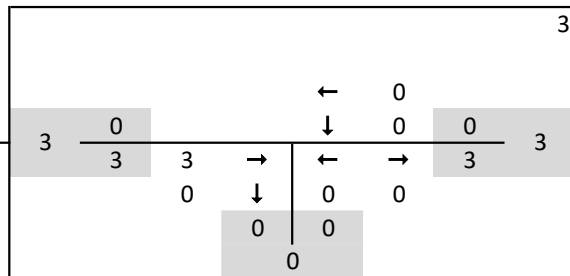
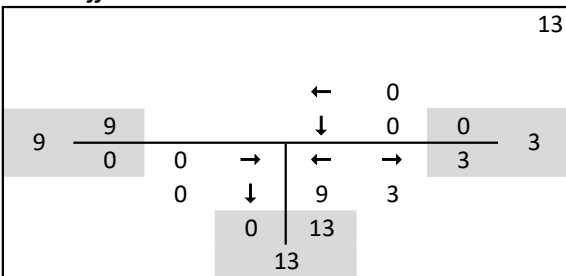
**Future Background Traffic**



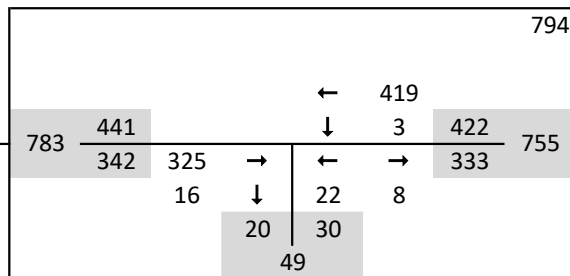
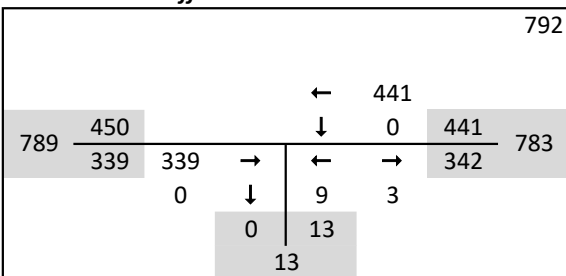
**Site Traffic Trucks**



**Site Traffic Other**



**Future Total Traffic**



# 7831 Sixth Line

## Morning Peak Diagram

### Specified Period

**From:** 7:00:00

**To:** 9:00:00

### One Hour Peak

**From:** 7:45:00

**To:** 8:45:00

**Municipality:** Elora  
**Site #:** 000000003  
**Intersection:** Sixth Line & Driveway to #7831  
**TFR File #:** 3  
**Count date:** 16-Apr-2025

**Weather conditions:**  
 Cloudy/Dry  
**Person(s) who counted:**  
 Pyramid Traffic Inc

**\*\* Non-Signalized Intersection \*\***

**Major Road:** Sixth Line runs W/E

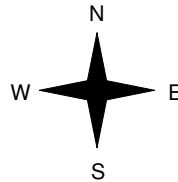
East Leg Total: 41  
 East Entering: 22  
 East Peds: 0  
 Peds Cross: ∞

Heavys	Trucks	Cars	Totals
0	0	18	18

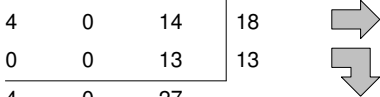


Sixth Line

Cars	Trucks	Heavys	Totals
14	0	0	14
7	1	0	8
21	1	0	



Heavys	Trucks	Cars	Totals
4	0	14	18
0	0	13	13
4	0	27	



Driveway to #7831

Sixth Line

Cars	Trucks	Heavys	Totals
15	0	4	19

Peds Cross: ∞  
 South Peds: 0  
 South Entering: 5  
 South Leg Total: 26

Peds Cross: ∞  
 West Peds: 0  
 West Entering: 31  
 West Leg Total: 49

Cars	20	Cars	4	1	5
Trucks	1	Trucks	0	0	0
Heavys	0	Heavys	0	0	0
Totals	21	Totals	4	1	

## Comments

# 7831 Sixth Line

## Afternoon Peak Diagram

### Specified Period

**From:** 16:00:00

**To:** 18:00:00

### One Hour Peak

**From:** 16:45:00

**To:** 17:45:00

**Municipality:** Elora  
**Site #:** 0000000003  
**Intersection:** Sixth Line & Driveway to #7831  
**TFR File #:** 3  
**Count date:** 16-Apr-2025

### Weather conditions:

Cloudy/Dry

### Person(s) who counted:

Pyramid Traffic Inc

**\*\* Non-Signalized Intersection \*\***

**Major Road:** Sixth Line runs W/E

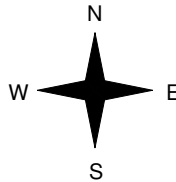
East Leg Total: 17  
 East Entering: 6  
 East Peds: 0  
 Peds Cross: ∞

Heavys	Trucks	Cars	Totals
2	0	11	13



Sixth Line

Cars	Trucks	Heavys	Totals
5	0	1	6
0	0	0	0
5	0	1	



Heavys	Trucks	Cars	Totals
1	0	8	9
1	0	0	1
2	0	8	



Driveway to #7831

Sixth Line

Cars	Trucks	Heavys	Totals
10	0	1	11



Peds Cross: ∞  
 West Peds: 0  
 West Entering: 10  
 West Leg Total: 23

Cars	Trucks	Heavys	Totals
0	0	1	1



Cars	Trucks	Heavys	Totals
6	0	1	7
2	0	0	2
8	0	1	

Peds Cross: ∞  
 South Peds: 0  
 South Entering: 9  
 South Leg Total: 10

## Comments

# 7831 Sixth Line

## Total Count Diagram

**Municipality:** Elora  
**Site #:** 000000003  
**Intersection:** Sixth Line & Driveway to #7831  
**TFR File #:** 3  
**Count date:** 16-Apr-2025

**Weather conditions:**  
 Cloudy/Dry  
**Person(s) who counted:**  
 Pyramid Traffic Inc

**\*\* Non-Signalized Intersection \*\***

**Major Road:** Sixth Line runs W/E

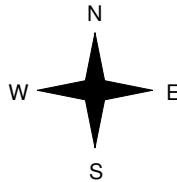
East Leg Total: 86  
 East Entering: 41  
 East Peds: 0  
 Peds Cross: X

Heavys	Trucks	Cars	Totals
2	0	47	49



Sixth Line

Cars	Trucks	Heavys	Totals
29	0	1	30
10	1	0	11
39	1	1	



Heavys	Trucks	Cars	Totals
8	0	33	41
1	0	20	21
9	0	53	



Sixth Line

Cars	Trucks	Heavys	Totals
37	0	8	45

Driveway to #7831



Peds Cross: X  
 West Peds: 0  
 West Entering: 62  
 West Leg Total: 111

Cars	30	Cars	18	4	22
Trucks	1	Trucks	0	0	0
Heavys	1	Heavys	1	0	1
Totals	32	Totals	19	4	

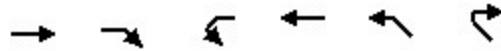
Peds Cross: X  
 South Peds: 0  
 South Entering: 23  
 South Leg Total: 55

### Comments

# HCM Unsignalized Intersection Capacity Analysis

## 6: First Line & WR109

06/24/2025

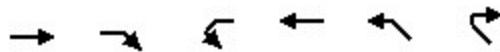


Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations	↑	↗		↖	↗	↖
Traffic Volume (veh/h)	324	18	7	276	10	7
Future Volume (Veh/h)	324	18	7	276	10	7
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	352	20	8	300	11	8
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			372		668	352
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			372		668	352
tC, single (s)			4.2		6.6	6.3
tC, 2 stage (s)						
tF (s)			2.3		3.7	3.4
p0 queue free %			99		97	99
cM capacity (veh/h)			1123		394	665
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>EB 2</b>	<b>WB 1</b>	<b>NW 1</b>		
Volume Total	352	20	308	19		
Volume Left	0	0	8	11		
Volume Right	0	20	0	8		
cSH	1700	1700	1123	476		
Volume to Capacity	0.21	0.01	0.01	0.04		
Queue Length 95th (m)	0.0	0.0	0.2	0.9		
Control Delay (s/veh)	0.0	0.0	0.3	12.9		
Lane LOS			A	B		
Approach Delay (s/veh)	0.0		0.3	12.9		
Approach LOS				B		
<b>Intersection Summary</b>						
Average Delay			0.5			
Intersection Capacity Utilization			30.2%	ICU Level of Service	A	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 6: First Line & WR109

06/24/2025

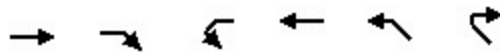


Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations	↑	↗		↖	↗	↖
Traffic Volume (veh/h)	356	20	8	304	11	8
Future Volume (Veh/h)	356	20	8	304	11	8
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	387	22	9	330	12	9
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			409		735	387
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			409		735	387
tC, single (s)			4.2		6.6	6.3
tC, 2 stage (s)						
tF (s)			2.3		3.7	3.4
p0 queue free %			99		97	99
cM capacity (veh/h)			1088		359	635
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>EB 2</b>	<b>WB 1</b>	<b>NW 1</b>		
Volume Total	387	22	339	21		
Volume Left	0	0	9	12		
Volume Right	0	22	0	9		
cSH	1700	1700	1088	441		
Volume to Capacity	0.23	0.01	0.01	0.05		
Queue Length 95th (m)	0.0	0.0	0.2	1.1		
Control Delay (s/veh)	0.0	0.0	0.3	13.6		
Lane LOS			A	B		
Approach Delay (s/veh)	0.0		0.3	13.6		
Approach LOS				B		
<b>Intersection Summary</b>						
Average Delay			0.5			
Intersection Capacity Utilization			32.4%	ICU Level of Service	A	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 6: First Line & WR109

06/24/2025



Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations	↑	↗		↑	↘	
Traffic Volume (veh/h)	359	21	9	312	11	8
Future Volume (Veh/h)	359	21	9	312	11	8
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	390	23	10	339	12	9
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			413		749	390
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			413		749	390
tC, single (s)			4.2		6.6	6.3
tC, 2 stage (s)						
tF (s)			2.3		3.7	3.4
p0 queue free %			99		97	99
cM capacity (veh/h)			1084		351	633
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>EB 2</b>	<b>WB 1</b>	<b>NW 1</b>		
Volume Total	390	23	349	21		
Volume Left	0	0	10	12		
Volume Right	0	23	0	9		
cSH	1700	1700	1084	434		
Volume to Capacity	0.23	0.01	0.01	0.05		
Queue Length 95th (m)	0.0	0.0	0.2	1.2		
Control Delay (s/veh)	0.0	0.0	0.3	13.7		
Lane LOS			A	B		
Approach Delay (s/veh)	0.0		0.3	13.7		
Approach LOS				B		
<b>Intersection Summary</b>						
Average Delay			0.5			
Intersection Capacity Utilization			33.7%	ICU Level of Service	A	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 3: Site & WR109

06/24/2025

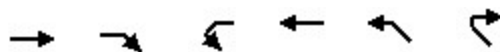


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	377	26	9	315	7	2
Future Volume (Veh/h)	377	26	9	315	7	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	410	28	10	342	8	2
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			438		786	424
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			438		786	424
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		98	100
cM capacity (veh/h)			1122		358	630
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>			
Volume Total	438	352	10			
Volume Left	0	10	8			
Volume Right	28	0	2			
cSH	1700	1122	392			
Volume to Capacity	0.26	0.01	0.03			
Queue Length 95th (m)	0.0	0.2	0.6			
Control Delay (s/veh)	0.0	0.3	14.4			
Lane LOS		A	B			
Approach Delay (s/veh)	0.0	0.3	14.4			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay			0.3			
Intersection Capacity Utilization			33.8%	ICU Level of Service	A	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 6: First Line & WR109

06/24/2025

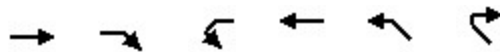


Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations	↑	↗		↑	↘	
Traffic Volume (veh/h)	293	14	2	381	19	6
Future Volume (Veh/h)	293	14	2	381	19	6
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	318	15	2	414	21	7
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			333		736	318
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			333		736	318
tC, single (s)			4.2		6.6	6.3
tC, 2 stage (s)						
tF (s)			2.3		3.7	3.4
p0 queue free %			100		94	99
cM capacity (veh/h)			1162		360	696
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>EB 2</b>	<b>WB 1</b>	<b>NW 1</b>		
Volume Total	318	15	416	28		
Volume Left	0	0	2	21		
Volume Right	0	15	0	7		
cSH	1700	1700	1162	410		
Volume to Capacity	0.19	0.01	0.00	0.07		
Queue Length 95th (m)	0.0	0.0	0.0	1.7		
Control Delay (s/veh)	0.0	0.0	0.1	14.4		
Lane LOS			A	B		
Approach Delay (s/veh)	0.0		0.1	14.4		
Approach LOS				B		
<b>Intersection Summary</b>						
Average Delay			0.6			
Intersection Capacity Utilization			31.6%	ICU Level of Service	A	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 6: First Line & WR109

06/24/2025

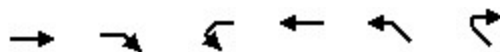


Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations	↑	↗		↑	↖	
Traffic Volume (veh/h)	322	15	2	419	21	7
Future Volume (Veh/h)	322	15	2	419	21	7
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	350	16	2	455	23	8
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			366		809	350
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			366		809	350
tC, single (s)			4.2		6.6	6.3
tC, 2 stage (s)						
tF (s)			2.3		3.7	3.4
p0 queue free %			100		93	99
cM capacity (veh/h)			1129		326	667
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>EB 2</b>	<b>WB 1</b>	<b>NW 1</b>		
Volume Total	350	16	457	31		
Volume Left	0	0	2	23		
Volume Right	0	16	0	8		
cSH	1700	1700	1129	375		
Volume to Capacity	0.21	0.01	0.00	0.08		
Queue Length 95th (m)	0.0	0.0	0.0	2.0		
Control Delay (s/veh)	0.0	0.0	0.1	15.5		
Lane LOS			A	C		
Approach Delay (s/veh)	0.0		0.1	15.5		
Approach LOS				C		
<b>Intersection Summary</b>						
Average Delay			0.6			
Intersection Capacity Utilization			33.6%	ICU Level of Service	A	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 6: First Line & WR109

06/24/2025



Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations	↑	↗		↑	↖	
Traffic Volume (veh/h)	325	16	3	419	22	8
Future Volume (Veh/h)	325	16	3	419	22	8
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	353	17	3	455	24	9
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			370		814	353
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			370		814	353
tC, single (s)			4.2		6.6	6.3
tC, 2 stage (s)						
tF (s)			2.3		3.7	3.4
p0 queue free %			100		93	99
cM capacity (veh/h)			1125		323	664
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>EB 2</b>	<b>WB 1</b>	<b>NW 1</b>		
Volume Total	353	17	458	33		
Volume Left	0	0	3	24		
Volume Right	0	17	0	9		
cSH	1700	1700	1125	376		
Volume to Capacity	0.21	0.01	0.00	0.09		
Queue Length 95th (m)	0.0	0.0	0.1	2.2		
Control Delay (s/veh)	0.0	0.0	0.1	15.5		
Lane LOS			A	C		
Approach Delay (s/veh)	0.0		0.1	15.5		
Approach LOS				C		
<b>Intersection Summary</b>						
Average Delay			0.6			
Intersection Capacity Utilization			34.4%	ICU Level of Service	A	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 3: Site & WR109

06/24/2025



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	↘
Traffic Volume (veh/h)	339	0	0	441	9	3
Future Volume (Veh/h)	339	0	0	441	9	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	368	0	0	479	10	3
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			368		847	368
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			368		847	368
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		97	100
cM capacity (veh/h)			1191		332	677
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>			
Volume Total	368	479	13			
Volume Left	0	0	10			
Volume Right	0	0	3			
cSH	1700	1191	376			
Volume to Capacity	0.22	0.00	0.03			
Queue Length 95th (m)	0.0	0.0	0.8			
Control Delay (s/veh)	0.0	0.0	14.9			
Lane LOS			B			
Approach Delay (s/veh)	0.0	0.0	14.9			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay			0.2			
Intersection Capacity Utilization			33.2%	ICU Level of Service	A	
Analysis Period (min)			15			