

September 26, 2024

## **Traffic Control Study on County Rd 9 (Howard Ave) and Alma St. in Amherstburg– Internal Summary Report**

This report evaluates the intersection of County Road 9 (Howard Ave.) and Alma Street to determine whether a traffic signal or all-way stop control is warranted based on traffic counts, traffic patterns, and safety concerns. The intersection has been identified for review due to its collision history and the relatively even distribution of traffic between the major and minor streets.

### **• Study Area:**

County Road 9 (Howard Ave.) is a two-way one lane rural arterial with a posted speed limit of 80 km/h that runs north-south direction. Alma Street is also a two-way one lane arterial with a posted speed limit of 80 km/h that runs east-west direction.

The intersection of County Road 9 and Alma St. is a four-leg unsignalized intersection, with the eastbound and westbound approaches (Alma St.) being stop controlled. The subject intersection is shown in **Figure 1**:



**Figure 1: Aerial image of County Road 9 and Alma St. Intersection**

• **Traffic Operations:**

For the subject intersection, traffic data was collected on 11 September 2024. The peak hours at this intersection occur from 07:15 to 08:15 in the morning, and from 11:15 to 12:15 in the afternoon, and from 15:45 to 16:45 in the evening, with total entering volumes of 474, 333 and 585 respectively. No pedestrians were recorded at the intersection during the 8-hour count.

Operational performance of the intersection was reviewed using Synchro/Simtraffic software. The results are summarized in **Table 1**, indicated that all movements operate well with LOS B for eastbound and westbound approaches and LOS A for northbound and southbound approaches.

**Table 1: Intersection operations at County Road 9 and Alma St.**

		AM Peak Hour (07:15-08:15)			
Movement		Approach Delay (sec)	V/C	Queue (m)	LOS
EB	L/T/R	12.5	0.20	6	B
WB	L/T/R	11.9	0.15	4	B
NB	L/T/R	0.6	0.01	1.4	A
SB	L/T/R	1.4	0.01	0.6	A

		Mid-day Peak Hour (11:15-12:15)			
Movement		Approach Delay (sec)	V/C	Queue (m)	LOS
EB	L/T/R	11	0.13	3.6	B
WB	L/T/R	10.7	0.10	2.6	B
NB	L/T/R	0.6	0.00	0.1	A
SB	L/T/R	0.7	0.01	0.7	A

		PM Peak Hour (15:45-16:45)			
Movement		Approach Delay (sec)	V/C	Queue (m)	LOS
EB	L/T/R	13.8	0.25	13.8	B
WB	L/T/R	13.2	0.26	13.2	B
NB	L/T/R	0.7	0.01	0.7	A
SB	L/T/R	0.6	0.01	0.6	A

• **Traffic Control Warrants:**

All-way stops and signal control warrants were reviewed based on Ontario Traffic Manual (OTM) Book 5 – Regulatory Signs and Book 12 – Traffic Signals.

**All-Way Stop Minimum Volume Warrant for Rural Arterial Roads**

- The total vehicle volume on all intersection approaches exceeds 375 vehicles per hour for each of the highest 8 hours of the day;
- The combined vehicle and pedestrian volume on the minor street exceed 150 units per hour (all vehicles plus pedestrians wishing to enter the intersection) for each of the same eight hours as the total volume;
- The volume split does not exceed 70/30 (that is the minor street must not be less than 30% of the total volume entering the intersection).

The warrant analysis results (**Table 2**) indicate that all-way stop volumes are not met at this intersection. However, it is noted that traffic percentage on minor street (Alma St) during peak hours are almost same as on the major street (County Road 9).

**Table 2: All-way stop warrant results (rural arterial).**

Hour Ending	Total Volume	% met	Major Road Volume	Minor Road Volume	% met	Split	≤ 70/30
8:00 AM	456	100%	283	173	100%	62/38	yes
9:00 AM	365	97%	202	163	100%	55/45	yes
12:00 PM	327	87%	183	144	96%	56/44	yes
1:00 PM	296	79%	160	136	91%	54/46	yes
3:00 PM	407	100%	237	170	100%	58/42	yes
4:00 PM	506	100%	281	225	100%	56/44	yes
5:00 PM	550	100%	298	252	100%	54/46	yes
6:00 PM	514	100%	306	208	100%	60/40	yes

• **Signal Warrant Analysis**

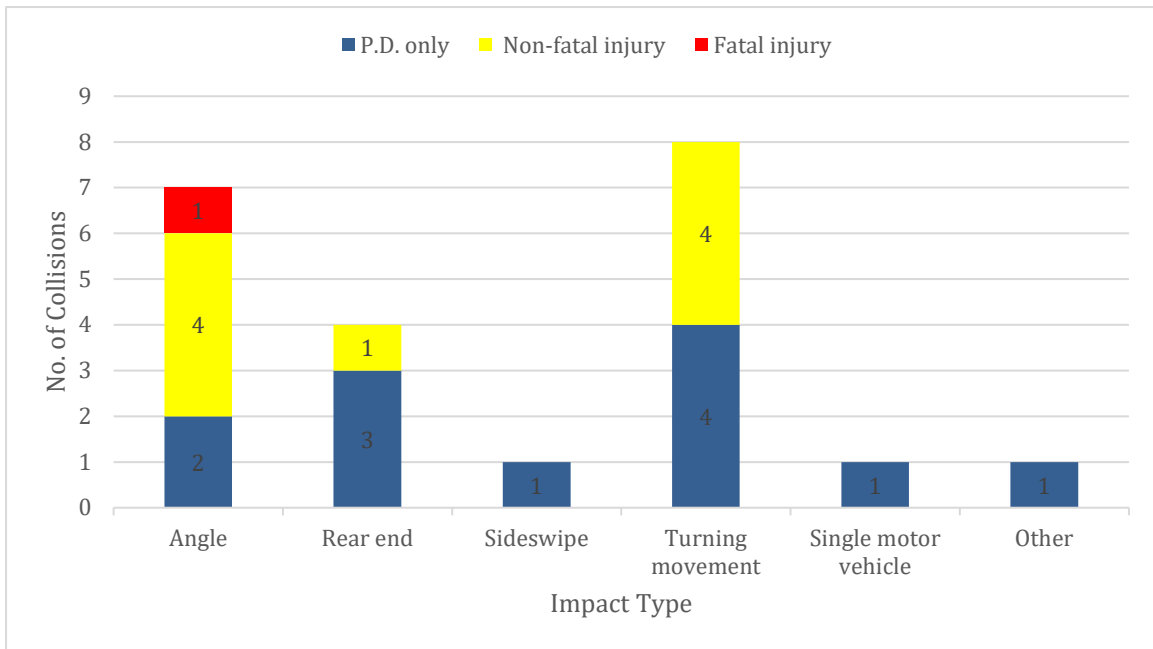
The traffic signal justification analysis was undertaken for this intersection with one lane and a free flow condition. The results (**Figure 2**) show that signal justifications based on traffic volumes are not satisfied and therefore, signals are not warranted at this intersection.

Justification		Compliance		Signal Justified?	
				YES	NO
1. Minimum Vehicular Volume	A Total Volume	86	%	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	B Crossing Volume	100	%	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Delay to Cross Traffic	A Main Road	51	%	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	B Crossing Road	100	%	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Combination	A Justificaton 1	86	%	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	B Justification 2	51	%	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. 4-Hr Volume		30	%	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Collision Experience		33	%	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. Pedestrians	A Volume	Justification not met		<input type="checkbox"/>	<input checked="" type="checkbox"/>
	B Delay	Justification not met		<input type="checkbox"/>	<input checked="" type="checkbox"/>

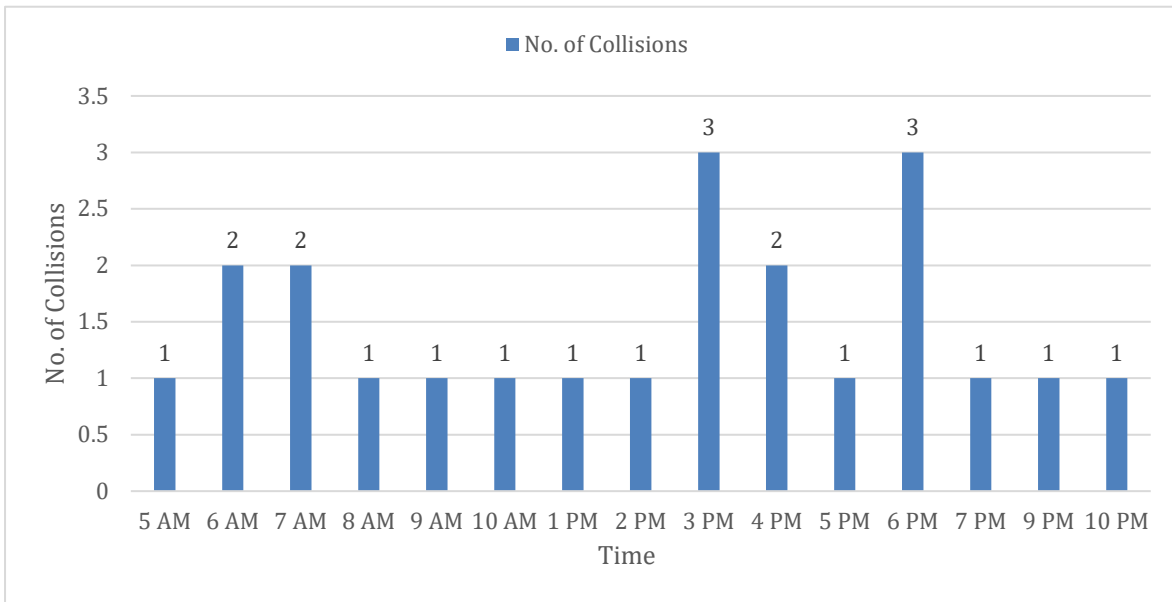
**Figure 2: Justification 1 Minimum vehicle volumes**

• **Collisions Review**

The historical (2014-2023) collision data shows overall, 22 collisions had occurred on County Road 9 and Alma Street intersection. **Figure 3** summarizes collisions by severity and impact type at the subject intersection. There was one fatal collision at this intersection in 2017. **Figure 4** shows collisions occurred by time of day, almost 41% of collisions occurred between 3:00 and 7:00 PM.



**Figure 3: Collisions by impact type and severity**



**Figure 4: Collisions by time of day**

• **Recommendations:**

Despite not meeting the numerical thresholds for either a traffic signal or an all-way stop based on traffic volumes alone, the following recommendation

is made given the high priority of this intersection on the County's list for potential improvements;

- **Temporary Traffic Signals:** Implement temporary traffic signals at the intersection to manage traffic flow and enhance safety until a comprehensive evaluation can be performed.
- **Geometric Improvements Investigation:** In addition to evaluating the current conditions, we recommend exploring geometric improvements, including the potential for a roundabout. A roundabout could provide an effective solution for managing traffic at this intersection by improving flow, reducing delays, and enhancing safety for all road users.

## • Conclusion

In conclusion, while the intersection of County Road 9 and Alma Street does not meet the traditional warrants for a traffic signal or an all-way stop based purely on traffic counts, the safety implications due to collision history and the equal distribution of traffic justify the recommendation for temporary signals with the aims to improve traffic conditions and safety, while further investigations will help inform potential long-term solutions.