



## Woodland Rd/Harksell Rd Intersection Traffic Study

10/24/2022

*Vicinity Map*



*Woodland Rd/Harksell Rd Intersection Map*



## Background and Roadway Information

Two requests from the public that we examine this intersection are the basis for this study. This study will cover the intersection of Woodland Road (MP 2.02) and Harksell Road (MP 1.39).

Woodland Road is classified as a Rural Local Access for its entire length from Birch Bay Lynden Road to Harksell Road. The characteristics of Woodland Road within the study area are 10-foot BST (chipseal) lanes with 3-foot gravel shoulders.

Harksell Road is classified as an Urban Local Access from Delta Line Road to Enterprise Road. The road characteristics of Harksell Road are 9 to 12-foot BST (chipseal) lanes with 2 to 5-foot gravel shoulders.

## Traffic Count Data

Traffic counts were conducted from May 24<sup>th</sup> through May 30<sup>th</sup>, 2022 on all 3-legs of the intersection and are shown below. The counts consist of vehicle volumes, speeds, and percent of truck traffic.

### Average Daily Volume (ADT):

1029 ADT (North of intersection)

395 ADT (West of intersection)

1369 ADT (East of intersection)

### Traffic Direction and Volume:



### Speeds:

North of intersection	Average speed 38.7 MPH	85 <sup>th</sup> percentile 44.3 mph (Speed Limit 35 mph)
West of intersection	Average speed 34.4 MPH	85 <sup>th</sup> percentile 42.3 mph (Speed Limit 35 mph)
East of intersection	Average speed 27.7 MPH	85 <sup>th</sup> percentile 31.6 mph (Speed Limit 35 mph)

The 85<sup>th</sup> percentile speed is widely used by traffic engineers, along with other factors, to set speed limits. It quantifies the speed at which 85 percent of traffic is going at or below.

### Truck Traffic:

North of intersection	13.4%
West of intersection	13.7%
East of intersection	12.7%

## ***Collision History***

A review showed no collisions at this intersection have been received from the Washington State Patrol in the 5+ years from January 2017 to September 2022.

## ***Signs and Markings***

### Signs

Southbound Woodland Rd:

W3-1A Stop Ahead Sign – 30"x30"

R1-1 Stop Sign – 30"x30" with R1-4 All-Way Plaque 18"x6"

W1-7 Two Direction Large Arrow 48"x24"

Westbound Harksell Rd:

W3-1A Stop Ahead Sign – 30"x30"

R1-1 Stop Sign – 30"x30" with R1-4 All-Way Plaque 18"x6"

Eastbound Harksell Rd:

W3-1A Stop Ahead Sign – 30"x30"

R1-1 Stop Sign – 30"x30" with R1-4 All-Way Plaque 18"x6" and Street Name Signs for 1900 blk Harksell Rd 36"x9" and 7300 blk Woodland Rd 42"x9"

### Markings

No pass markings painted for a minimum of 500 feet on the southbound and westbound legs of the intersection for entering traffic. No pass markings painted for approximately 350 feet on the eastbound leg of the intersection will be extended to 500 feet during the next striping season in 2023.

## ***Sight Distance***

The table below summarizes the operational intersection sight distance measured 10 feet and 12 feet from the traveled way, from an eye height of 3.5 feet to an object height of 3.5 feet.

<b>Sight Distance Woodland Rd/Harksell Rd Intersection</b>			
Date	10/13/2022	Technician:	JJA
Operational Intersection Sight Distance Measured 10 ft and 12 ft from the traveled way			
Eye Height	3.5 ft	Object Height	3.5 ft
Direction of Travel (Woodland Rd)/ Direction Looking	Speed Limit (Harksell Rd)	Measured Distance	Intersection Sight Distance
SB/East @ 10'	WB 35 MPH	664 ft	390 ft
SB/West @ 10'	EB 35 MPH	1700 ft +	390 ft
SB/East @ 12'	WB 35 MPH	415 ft	390 ft
SB/West @ 12'	EB 35 MPH	1700 ft +	390 ft

Operationally, there is sufficient sight distance for the road users at this location, if east and west bound stop signs are removed.

## **Warrant Analysis for Multi-Way Stop at Woodland Road and Harksell Road**

- A. Where traffic control signals are justified, the multi-way stop is an interim measure that can be installed quickly to control traffic while arrangements are being made for the installation of the traffic control signal.

**Traffic control signal justified: NO**

- B. Five or more reported crashed in a 12-month period that are susceptible to correction by a multi-way stop installation. Such crashes include right-turn and left-turn collisions as well as right-angle collisions.
- a. A review of collisions from the Washington State Patrol found no collisions at this location in the last 5 plus years. In addition, during the site review it was observed that most vehicles making a turn from westbound to northbound did not stop for the stop sign and many vehicles headed through the intersection eastbound rolled through the stop sign.

**Collision warrant met: NO**

- C. Minimum Volume:

1. The vehicular volume entering the intersection from the major street approaches (total of both approaches) averages at least 300 vehicles per hour for any 8 hours of an average day; and

**Criterion met: NO**

2. The combined vehicular, pedestrian, and bicycle volume entering the intersection from the minor street approaches (total of both approaches) averages at least 200 units per hour for the same 8 hours, with an average delay to minor-street vehicular traffic of at least 30 seconds per vehicle during the highest hour; but

**Criterion met: NO**

3. If the 85<sup>th</sup>-percentile approach speed of the major-street traffic exceeds 40 mph, the minimum vehicular volume warrants are 70 percent of the values provided in Items 1 and 2.

**Criterion met: NO**

**Minimum Volume Warrant Met: NO**

- D. Where no single criterion is satisfied, but where Criteria B, C.1 and C.2 are all satisfied to 80 percent of the minimum values. Criterion C.3 is excluded from this condition.

i. **Criteria B met by 80%: NO**

ii. **Criteria C.1 met by 80%: NO**

iii. **Criteria C.2 met by 80%: NO**

**80 Percent Warrant Met: NO**

Option:

Other criteria that may be considered in an engineering study include:

- A. The need to control left-turn conflicts

**No collisions involved left-turning vehicles from the major road (Harksell Road)**

- B. The need to control vehicle/pedestrian conflicts near locations that generate high pedestrian volumes

**No conflicts between vehicles and pedestrians at this location**

- C. Locations where a road user, after stopping, cannot see conflicting traffic and is not able to negotiate the intersection unless conflicting cross traffic is also required to stop

***Sight distance checks were performed on 10/13/2022 by Whatcom County Public Works Traffic Section Staff and exceeded existing intersection sight distance requirements at both 10 feet and 12 feet from the traveled way.***

- D. An intersection of two residential neighborhood collector (through) streets of similar design and operation characteristics where multi-way stop control would improve traffic operational characteristics of the intersection.

***Harksell Road is an Urban Local Access Road from Delta Line Road to Enterprise Road and Woodland Road is a Rural Local Access Road its entire length, however Woodland Road is not a through road at this intersection. Therefore, traffic operations will actually be improved by the removal of the east and west bound stop signs.***

### **Conclusion**

This location would not currently meet any MUTCD warrant for multi-way stop application and additionally MUTCD Section 2A.03 *Standardization of Application* gives the following guidance “Signs should be used only where justified by engineering judgement or studies...”. The current stop signs are not justified by engineering study and the removal of the east and west bound stop signs will improve traffic operations and generally conform to the application of stops at T-intersections throughout Whatcom County. Public Works will put forth an ordinance to the Whatcom County Council to remove the All-Way Stop at this location. When the ordinance is approved, the following will be added and maintained for a minimum of 6 months upon removal of the All-Way Stop:

1. New Traffic Pattern Ahead Signs with flags on each leg of the intersection
2. A Cross Traffic Does Not Stop Plaque will be added beneath the southbound Stop Sign