



Bay Rd Intersection Traffic Study – Kickerville Rd

10/11/2022

Vicinity Map



Bay Rd/Kickerville Rd Intersection Map



Background and Roadway Information

A request from Sgt. Kevin Moyes, Sheriff's Office Traffic Unit to revisit our past studies of this intersection, along with interest from the Whatcom County Council, County Executive and concerned citizens of Whatcom County are the basis for this study. This study will cover the intersection of Bay Rd (MP 2.24) and Kickerville Rd (MP 3.51).

Bay Road is classified as a Rural Major Collector from MP 1.26 (SR-548/Blaine Rd) to MP 5.00 (intersection with Vista Dr and Bruce Rd). The road is a major east-west connector that connects the City of Ferndale and Custer area to Birch Bay. The characteristics of Bay Rd within the study area are 11-foot BST (chipseal) lanes with 3-foot gravel shoulders.

Kickerville Rd is classified as a Rural Major Collector south of Bay Rd and a Rural Minor Collector north of Bay Rd. The road characteristics south of Bay Rd are 11-foot BST (chipseal) lanes with 5-foot gravel shoulders. The road characteristics north of Bay Rd are 10-foot BST (chipseal) lanes with 2 to 3-foot gravel shoulders.

Traffic Count Data

Traffic counts were conducted from June 17th to June 23rd, 2022 on all 4-legs of the intersection and are shown below. The counts consist of vehicle volumes, speeds, and percent of truck traffic.

Average Daily Volume (ADT):

768 ADT (North of intersection)
1040 ADT (South of intersection)
2927 ADT (West of intersection)
2790 ADT (East of intersection)

Speeds:

North of intersection	Average speed 41.0 MPH	85 th percentile 46.6 mph (Speed Limit 35 mph)
South of intersection	Average speed 42.9 MPH	85 th percentile 50.4 mph (Speed Limit 35 mph)
West of intersection	Average speed 47.0 MPH	85 th percentile 53.2 mph (Speed Limit 50 mph)
East of intersection	Average speed 50.4 MPH	85 th percentile 58.2 mph (Speed Limit 50 mph)

The 85th 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. The 85th percentile speeds on Bay Rd are high, but not surprising, given Bay Road is a major collector designed for a 50 MPH speed limits. The 85th percentile speeds on Kickerville Rd are more concerning, and could be a factor in failure to stop at stop collisions, as this road was not designed for these speeds which is reflected by its 35 MPH speed limit.

Truck Traffic:

North of intersection	12.3%
South of intersection	12.6%
West of intersection	8.0%
East of intersection	9.9%

Collision History

A review of collisions that have been received from the Washington State Patrol from August 2021 to September 2022 shows the following collisions:

1. 8/16/2021 3:56 PM EB61230 2 Vehicle collision, 1 minor injury. Northbound vehicle failed to stop at stop, collided with westbound vehicle in a "T-bone" collision.

2. 10/26/2021 7:43 PM EB82400 2 Vehicle collision, 1 possible injury. Southbound vehicle failed to stop at stop, collided with westbound vehicle in a “T-bone” collision.
3. 2/12/2022 1:35 PM EC20161 2 Vehicle collision, 1 possible injury. Northbound vehicle failed to yield after stopping and proceeded north through the intersection, collided with westbound vehicle in a “T-bone” collision.
4. 8/8/2022 2:20 PM EC72189 2 Vehicle, property damage only collision. Southbound vehicle failed to yield after stopping and proceeded south through the intersection, collided with westbound vehicle in a “T-bone” collision.
5. 8/22/22 12:07 PM EC76794 2 Vehicle collision, 2 minor injuries. Northbound vehicle failed to stop at stop, collided with westbound vehicle in a “T-bone” collision.
6. 9/21/22 5:46 AM EC86112 2 Vehicle collision, 1 minor injury and 1 possible injury. Southbound vehicle failed to stop at stop, collided with an eastbound vehicle in a “T-bone” collision.

Previous collision data from 2020 Traffic Study and 2021 update:

<i>Collision at Intersections 2015-2019</i>	
MP and Intersecting Road Name	MP 2.24 Kickerville Rd
Total Collisions	14
Injury Collisions	8
Property Damage Collisions	6
<i>Collision at Intersections 2020-2021</i>	
Total Collisions	6
Injury Collisions	4
Property Damage Collisions	2

Signs and Markings

Signs

Southbound Kickerville Rd:

W3-1A Stop Ahead Sign – 30”x30”

R1-1 Stop Sign – 30”x30” with W4-4P Cross Traffic Does Not Stop Warning Plaque 24”x18”

R2-1 Speed Limit Sign: 35 MPH – 24”x30”

Northbound Kickerville Rd:

W3-1A Stop Ahead Sign – 30”x30”

R1-1 Stop Sign – 30”x30” with W4-4P Cross Traffic Does Not Stop Warning Plaque 24”x18” and Street Name signs for Kickerville Rd 7300 Block and Bay Rd 4100 Block

R2-1 Speed Limit Sign: 35 MPH – 24”x30”

Westbound Bay Rd:

W2-1 Crossroad Warning Sign – 30”x30” with W16-8 Advance Street Name Plaque: Kickerville Rd – 36”x9”

R2-1 Speed Limit Sign: 50 MPH – 24”x30”

Eastbound Bay Rd:

W2-1 Crossroad Warning Sign – 30”x30” with W16-8 Advance Street Name Plaque: Kickerville Rd – 36”x9”

R2-1 Speed Limit Sign: 50 MPH – 24”x30”

Markings

No pass markings painted for a minimum of 500 feet on all legs of the intersection for entering traffic
Egdeline extensions painted through the intersection to allow north and southbound traffic to pull as far up as possible for better sight distance (added in 2020)

Sight Distance

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

Sight Distance Bay Rd/Kickerville Rd Intersection			
Date	10/11/2022	Technician:	JJA
Operational Intersection Sight Distance Measured 10 ft from the traveled way			
Eye Height	3.5 ft	Object Height	3.5 ft
Direction of Travel (Kickerville Rd)/ Direction Looking	Speed Limit (Bay Rd)	Measured Distance	Intersection Sight Distance
SB/East	WB 50 MPH	1110 ft +	555 ft
SB/West	EB 50 MPH	910 ft	555 ft
NB/East	WB 50 MPH	1110 ft +	555 ft
NB/West	EB 50 MPH	975 ft	555 ft

Operationally, there is sufficient sight distance for the road users at this location.

Warrant Analysis for Multi-Way Stop at Bay Road and Kickerville 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 review of collisions from the Washington State Patrol found 5 collisions from Oct 26th, 2021 through Sept 21st, 2022 that would be susceptible to correction by a multi-way stop installation, additional collision on Aug 16th, 2021 included by engineering judgement and would also be susceptible to correction by a multi-way stop application
 - 5 of 6 collisions within 12 months
 - No collisions involved DUI
 - 4 collisions occurred during daylight hours, 2 at night
 - 5 collisions occurred during clear or overcast condition, 1 raining
 - 5 collisions occurred on dry pavement, 1 on wet
 - 6 of 6 collisions were right-angle collisions that would be susceptible to correction by a multi-way stop application

Collision warrant met: YES

- C. Minimum Volume:
- 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
 - 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 85th-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%: YES**
 - ii. **Criteria C.1 met by 80%: NO**
 - iii. **Criteria C.2 met by 80%: NO**

80 Percent Warrant Met: N/A

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 (Bay 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 10/11/2022 by Whatcom County Public Works Traffic Section Staff and exceeded existing intersection sight distance requirements at 10 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.
Not applicable: Bay Road is a Rural Major Collector and Kickerville Road is a Rural Major Collector from Rainbow Road to Bay Road and a Rural Minor Collector from Bay Road to Loomis Trail Road. Neither is a residential neighborhood collector.

Conclusion

The collision warrant for multi-way stop application was met at this location. Whatcom County Public Works will install an All-Way Stop, as an interim measure, until such time as **Project R40 – corridor Intersection Alternatives Analysis** is completed and the preferred alternative from that study is implemented. This study is scheduled for 2024 in the Whatcom County Six Year Transportation Improvement Program (2023-2028).