



MEMO REPORT

TO: Juan Rojas
FROM: Joseph Kelly – Senior Engineering Tech, Technical Services
RE: Farmer's Road and Glamorgan Road Intersection
DATE: January 16, 2017

In response to a correspondence from Paul Ogborne addressed to Director Rojas and Councilor Stauble on December 7, 2016, staff was directed to investigate the T-intersection of Farmer's Road and Glamorgan Road. Mr. Ogborne has safety and liability concerns over a forced "short-cut" curve lane for traffic by-passing the intersection. A key map can be seen in Appendix A.

According to Mr. Ogborne, satisfactory solutions include the conveyance of land to the City, or the closure of the by-pass.

Background and 2011 Roads Needs Data

According to our latest available data (2011 Roads Need Study), Glamorgan Road is a two lane, low volume, rural local road with a hard top surface treatment. At the Farmer's Road intersection, it is estimated to experience an annual average daily traffic of 241 vehicles. It has a reported surface width of 6.5m north of Farmer's Road and 6m south of Farmers Rd. The platform width (road plus shoulder) is listed at 7.5m on both sides of the intersection.

Farmer's Road is a two lane, low volume, rural local road with a hard top surface treatment. At the Glamorgan Road intersection, it is estimated to experience an annual average daily traffic of 200 vehicles. It has a reported surface width of 6.3m and a platform width (road plus shoulder) of 9.2m.

It does not appear that the forced merge lane was inventoried as part of the Roads Needs Study.

Under the Roads Needs Study, Glamorgan Road north of Farmer's Road has a Surface Condition rating of 7 out of 10 and a Structural Adequacy Rating of 15 out of 20. South of Farmer's Road has a Surface Condition Rating of 8 and a Structural Adequacy Rating of 17. There are no identified needs for road improvements in either segment of Glamorgan Road.

Farmer's Road has a Surface Condition rating of 7 out of 10 and a Structural Adequacy Rating of 14 out of 20 which means there is an identified need for road improvement in the 6-10 year range.

Both roads are un-posted for speed. Due to the wording in the Highway Traffic Act (HTA) as it relates to amalgamation, all City of Kawartha Lakes un-posted roads have a limit of 50 km/h. A significant number of rural, un-posted roads, including these roads,

would have had a status of 80 km/h under the HTA prior to amalgamation in 2001. A reasonable driver would assume an un-posted limit of 80 km/h.

Collision History

Available motor vehicle accident reports (from January 30, 2000 to July 31, 2015) show that there were zero collisions occurring at the Farmer's/Glamorgan intersection during the 15 year period. It should be noted that in 2011 the OPP ceased providing actual collision reports and instead send electronic summaries with sometimes incomplete intersection information. Since 2011, records indicate there were two collisions occurring on Glamorgan Road with no intersecting road information.

Sign Inventory

Staff reviewed the sign inventory (with on-site confirmation) and found there is a stop control located on Farmer's Road at the T-intersection approach at Glamorgan Rd (the right angle of the island). There are also stop controls on both legs of the islands (where the legs meet the curved hypotenuse); one on Glamorgan Road north of the T-intersection, and a recently installed stop control on Farmer's Road west of the T-intersection. Both controls grant the right of way to vehicles traveling the curve through Mr. Ogborne's property (Figure 1).



Figure 1. Aerial Image showing stop sign placement granting right of way to traffic on curve.

There are sharp curve ahead warning signs for southbound traffic on Glamorgan Road and eastbound traffic on Farmer's Road.

The current sign placement indicate that the curve through the property is intended for use by both southbound traffic turning west, and westbound traffic turning north.

Site Investigation

The Roads Needs Study's width measurements are spot averages for whole road segments and the curve is not included in the study. Staff found it prudent to perform field measurements to include the curve and the specific legs of the island. On January 3, 2017 staff performed a site visit. Conditions were near freezing, rainy, with snow banks freshly plowed back to near or beyond the shoulder with ice build-up obstructing the view of surface to shoulder transitions.

It was found that although the Glamorgan leg is used by two way traffic, the surface width of 4.8 m is deficient (Figure 2). Vehicles must use the shoulder when passing as the platform width of 6m would accommodate two vehicles.

There is also a misalignment on Glamorgan Road for southbound traffic. Vehicles travelling south would not only have to be aware to northbound cross traffic intersecting their lane from the curve, they would also have to veer left into a narrowing choke point. Here, northbound vehicles travelling through the intersection on Glamorgan could be stopped at the stop control, or approaching it. It should be noted that 50% of the vehicles observed during the site visit ignored this stop sign.

The Farmer's Road leg is wider with a surface width of 6.3m and a platform width of 8.5m.

The curve had a surface width measurement of 6m and a platform width of 7.6 m. Appendix B shows a map listing the width measurements.

All measurements could be conservative due to snow and ice build-up.

TAC recommends a road width minimum of 6m and a shoulder width of 1m on local, rural roads with a design speed of 80 km/h.

Departure sight distances were measured from the stop location on Farmer's Road at the T-intersection. TAC recommends a departure sight distance of 250m on roads with a design speed of 80 km/h. Due to a vertical curve north of the intersection, the measured sight distance is 180m. South of the intersection is straight and flat with a sight distance greater than 250m.

Pictures from the site visit can be seen in Appendix C.



Figure 2. Measurements showing narrow Glamorgan leg.

Conveyance Option

There is potential for vehicle conflict should the intersection be left as-is. Vehicles turning northbound onto Glamorgan Road from Farmer's Road via the curve must cross the travelled lane of vehicles travelling southbound on Glamorgan Road which intend to continue through the intersection. Southbound vehicles on Glamorgan Road must veer left into a narrow section that is not aligned while contending with oncoming intersecting traffic from the curve. A key map can be seen in Appendix D.

Conflict potential can be removed by restricting the curve to southbound traffic only. Vehicles on Farmer's Road wishing to turn north on Glamorgan Road could do so at the T-intersection.

To alleviate the departure sight distance deficiency the intersection could become an all-way stop. In doing so, the stop control north of the intersection could be removed. (Figure 3)

This solution could slightly increase the volume on the Glamorgan Road leg increasing the potential of two way traffic on the narrow portion of road. Signage could be used to warn drivers of the hazard or the road could be widened and better aligned with the northern approach on Glamorgan Road. Approaching speeds will be lower with the new proposed all-way stop, assuming normal compliance rates.

It is recommended that a bi-directional traffic count be performed to determine the average volume of directional traffic on the Glamorgan Road leg should the signage option be chosen over the road widening. During the site visit of approximately 90 minutes, zero vehicles travelled south through the intersection.

The approximate cost to widen the Glamorgan Road leg is \$15 000. A 10% increase would be expected for the small size of the job should this fall outside CKL's rural resurfacing program.



Figure 3. Showing restricted access for curve, widened east leg, and all-way stop.

Closure Option

The curve could be closed. This would require the same recommended steps as the conveyance option but completely restrict access to the curve and remove both stop controls on the legs to accommodate the all-way stop (Figure 4).

By closing the curve, cross lane conflict potential is eliminated, however, like partial restriction the misalignment and narrow road remains. Unlike the partial restriction option, all eastbound turning and southbound vehicles on Glamorgan Road will now be forced to travel through the narrow leg to the intersection, greatly increasing the two way traffic potential conflict on the narrow section. Although approaching speeds will be reduced due to the proposed all-way stop, warning signs of the hazard may be insufficient. In this scenario, the widening of the leg would be sensible.

Decommissioning the curve would require scarifying or pulverizing the curve, extending the ditches to the intersection, new edge line painting, and the installation of do not enter warning signs.

The cost of this option is estimated to be \$20 000. Ditching and scarifying could be performed in-house with significant cost savings.

A key map can be seen in Appendix E.



Figure 4. Showing curve closure, leg widening and all-way stop.

Sincerely,

Joseph Kelly
Senior Engineering Tech
Engineering – Technical Services
City of Kawartha Lakes

Appendix A

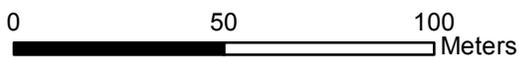
Farmer's Rd/ Glamorgan Rd



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The foregoing information is given for convenience only and it should be clearly understood that you must satisfy yourself as to whether the premises and the existing or proposed use thereof are, or would be, in conformity with all applicable by-laws and regulations of the municipality.

All distances and locations are approximate and are not of survey quality. This map is illustrative only. Do not rely on it as being a precise indicator of privately or publicly owned land, routes, locations or features, nor as a guide to navigate.



Projection: Transverse Mercator
Coordinate System: NAD83, Zone 17

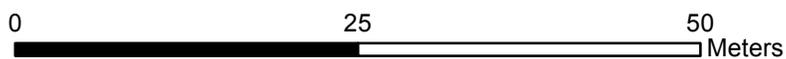
Appendix B Field Measurements



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Appendix C - Site Pictures



Farmer's Rd facing Glamorgan Rd



At Farmer's Rd approach T-stop control checking north sight lines



At Farmer's Rd approach T-stop control checking south sight lines



Glamorgan Rd approaching Farmer's Rd facing north



Glamorgan Rd approaching Farmer's Rd facing south

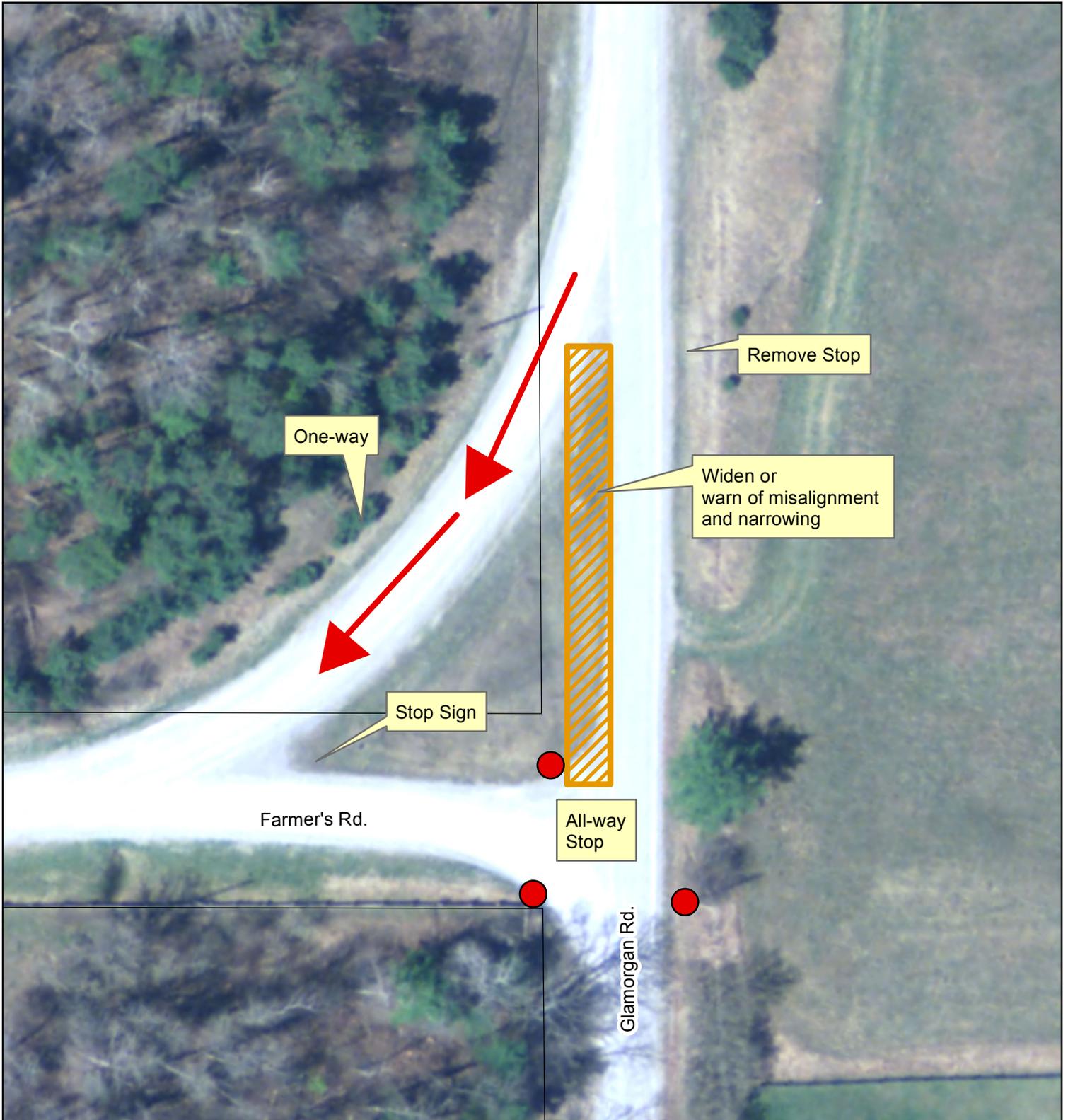


Glamorgan Rd 180m north of intersection facing south



On Glamorgan Rd facing west (showing south leg of island)

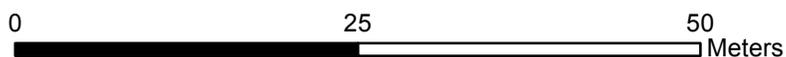
Appendix D Conveyance Option



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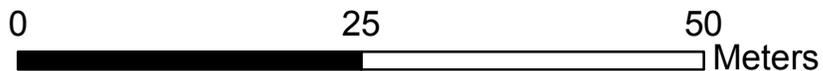
Appendix E Closure Option



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