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Memorandum:

To: Dean Bloch, Town Planner
Town of Charlotte

From: Jason Charest, E.I.T.
CCMPO

Date: January 11, 2010

Subject: Ferry/Lake Road Multi-Way Stop Warrant

I have reviewed the relevant multi-way stop warrants for the Ferry and Lake Road intersection. At this time a multi-way stop is not warranted.

Section 2B.07 of the Manual on Uniform Traffic Control Devices[1] (MUTCD) outlines the requirements of which should be met to install multi-way stop control. The criteria that pertain to this intersection are as follows:

C. Minimum volumes:

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
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
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.

A 12-hour turning movement count conducted on June 17, 2009 was used to assess the minimum volume requirements. A nearby AADT count conducted in 2004 revealed 85th-percentile speeds higher than 40 mph and as a result the 70 percent condition was used. The speed data and warrant results can be seen in the succeeding tables.

Table 1: 2004 85th-Percentile Speeds – Ferry Road (just west of Whalley Road)

Year	Westbound 85th Percentile	Eastbound 85th Percentile
2004	56 mph	51 mph

[1] http://mutcd.fhwa.dot.gov/pdfs/2009/part2b.pdf

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Table 2: Multi-way Stop Warrant Analysis

	Ferry Road		Lake Road	
Hour	Major Approach Volumes	Major Street 70% Warrant Satisfied (>210 veh / hr)	Minor Approach Volumes	Minor Street 70% Warrant Satisfied (>140 veh / hr)
7:00 AM	87	No	23	No
8:00 AM	105	No	35	No
9:00 AM	100	No	54	No
10:00 AM	105	No	59	No
11:00 AM	138	No	40	No
12:00 PM	135	No	51	No
1:00 PM	127	No	48	No
2:00 PM	120	No	50	No
3:00 PM	123	No	63	No
4:00 PM	137	No	62	No
5:00 PM	170	No	61	No
6:00 PM	84	No	61	No

As shown in Table 2 the Ferry/Lake Road intersection is well below the minimum volume requirements for a multi-way stop control installation according to this summer's 12-hour count. With the recent closure of the Champlain Bridge, winter seasonal traffic has undoubtedly increased on Ferry Road. However, a doubling or more of Ferry Road traffic over eight hours of the day would not trigger the need for multi-way stop control in and of itself. Traffic on the Lake Road approaches would need to roughly triple at the same time. This is highly unlikely to have happened due to the circuitous nature of leaving the ferry and taking Converse Bay Road to eventually arrive at the Ferry/Lake Road intersection.

An additional criterion that could justify the need for all way stop control would be if the intersection experienced five or more reported crashes within a 12-month period that are susceptible to correction by a multi-way stop installation. A review of the crash data from VTrans revealed two crashes from 2002-2008.

There may be other treatments at the intersection or nearby which could improve safety, such as increasing sight distance for vehicles turning from Lake Rd onto Ferry Rd and/or reducing speeds through traffic calming. The posted 50 mph speed limit on Ferry Road may be too high for the current cross-section of the roadway. VTrans' standards[2] for a 50 mph rural minor arterial call for an 11 foot lane width with 4 foot shoulders. A radar feedback sign is one of the most cost effective ways to achieve speed limit compliance. Other traffic calming measures such as striping fog (edge) lines and narrowing lane widths could provide moderate speed reductions as well. Please let us know if the CCMPO can be of further assistance to the Town in additional review of these or other alternative measures.

[2] http://www.aot.state.vt.us/progdev/Standards/04minart.htm#Lane%20and%20Shoulder%20Widths%20on%20Rural%20Minor%20Arterials