

Lexington-Fayette Urban County Government
DEPARTMENT OF ENVIRONMENTAL QUALITY & PUBLIC WORKS

Jim Gray
Mayor

David L. Holmes
Commissioner

**DIVISION OF TRAFFIC ENGINEERING
MEMORANDUM**

TO: Jennifer Scutchfield, 7th District Councilmember
FROM: Bryan Radabaugh, Traffic Engineer Manager
DATE: July 14th, 2014
SUBJECT: Rio Dosa Drive and N Locust Hill Drive Multi Way Stop Study

Based on an observation by Traffic Engineering personnel, a warrant study was completed at the intersection of Rio Dosa Drive and N Locust Hill Drive to determine the feasibility of installing a multiway stop at this intersection. *Manual on Uniform Traffic Control Devices (MUTCD) – 2009 Edition* criteria were used in the analysis of the intersection to determine if a multi-way stop was warranted at this location. The following is the warrant criteria used in the analysis:

Guidance:

The decision to install multiway stop control should be based on an engineering study.

The following criteria should be considered in the engineering study for a multiway STOP sign installation:

- A. Where traffic control signals are justified, the multiway 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.
- B. A crash problem, as indicated by 5 or more reported crashes in a 12-month period that are susceptible to correction by a multiway stop installation. Such crashes include right- and left-turn collisions as well as right-angle collisions.
- 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 above values.
- 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 C3 is excluded from this condition.

Option:

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

- A. The need to control left-turn conflicts.
- B. The need to control vehicle/pedestrian conflicts near locations that generate high pedestrian volumes.
- C. Locations where a road user, after stopping, cannot see conflicting traffic and is not able to reasonably safely negotiate the intersection unless conflicting cross traffic is also required to stop: and
- D. An intersection of two residential neighborhood collector (through) streets of similar design and operating characteristics where multiway stop control would improve traffic operational characteristics of the intersection.

Multiway stop signs comprise a form of intersectional control that may enhance or diminish traffic safety. The *Manual on Uniform Traffic Control Devices (MUTCD)* defines warrant criteria to determine whether multiway stop signs would have a greater potential for a positive or a negative impact on traffic conditions. The *MUTCD's* warrants for multiway stop controls focus on two areas of concern: (1) traffic volumes and congestion and (2) a collision history that would be susceptible to correction with the installment of multiway stop signs.

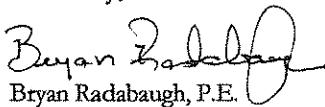
The average 8-hour traffic volume which was collected on the major approaches of Rio Dosa Drive revealed 437 vehicles per hour or 146% of the volume required. The average 8-hour traffic volume which was collected on the minor approach of N Locust Hill Drive revealed a total of 328 vehicles per hour or 164% of the volume required. **Both the major and minor street approach meet volume criteria.**

A review of the collision history at this intersection revealed one (1) collision in the 3 years prior to this analysis, with no more than one (1) in any 12-month period. Based on the warrant criteria, that is, a collision history of five (5) or more collisions in a 12-month period that are susceptible to correction by installation of a multiway stop, **the collision warrant is not met.**

As part of this study, the Division of Traffic Engineering conducted a field and geometric review of the intersection. Rio Dosa Drive and N Locust Hill Drive are both 40' wide and both have centerline pavement markings. During the field investigation an observation was made that vehicles turning from westbound Rio Dosa Drive onto N Locust Hill Drive are able to do so at a relatively high rate of speed. This is in part due to the fact that the current striping layout was configured prior to Rio Dosa continuing through the intersection. It was also noted that it can be somewhat problematic to turn left from N Locust Hill Drive onto Rio Dosa Drive.

Conclusion: Based on the volume requirements for the major and minor streets, the Division of Traffic Engineering recommends the installation of a Multi Way Stop at the intersection of Rio Dosa Drive and N Locust Hill Drive. Based on the turning distribution and volume distribution, traffic engineering is recommending that westbound Rio Dosa Drive be marked for a thru and left turn lane and N Locust Hill Drive be marked for a right and left turn lane. This configuration should provide for a relatively equal level of service on all three legs of the intersection and minimizing any queue lengths. This should also provide some channelization and calming through the intersection and further resolve the concerns noted above.

Sincerely,



Bryan Radabaugh, P.E.
Division of Traffic Engineering

cc: Jennifer Scutchfield, 7th District Councilmember
David L. Holmes, Esq., Commissioner of Environmental Quality & Public Works
Dowell Hoskins-Squier, PE, Director of Traffic Engineering
Jim Woods, PE, PLS, Assistant Director of Traffic Engineering
Steve Cummins, PE, Traffic Engineer Manager