

11/03/2011

Resolution

500-2011

A RESOLUTION AUTHORIZING AND DIRECTING THE DIVISION OF TRAFFIC ENGINEERING, PURSUANT TO CODE OF ORDINANCES SECTION 18-86, TO INSTALL MULTIWAY STOP CONTROLS AT THE INTERSECTION OF BELLEFONTE DRIVE AND EAST LOWRY LANE.

WHEREAS, pursuant to Code of Ordinances Section 18-86, the Division of Traffic Engineering is authorized and empowered to designate intersections where stop signs are necessary to regulate traffic; and

WHEREAS, the Urban County Council has determined that the intersection of Bellefonte Drive and East Lowry Lane should have multiway stop controls.

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT:

Section 1 – That the Division of Traffic Engineering shall install multiway stop signs at the intersection of Bellefonte Drive and East Lowry Lane.

Section 2 - That this Resolution shall become effective on the date of its passage.

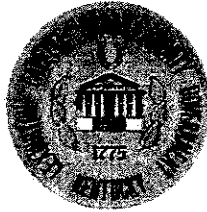
PASSED URBAN COUNTY COUNCIL: November 3, 2011

MAYOR



ATTEST:


CLERK OF URBAN COUNTY COUNCIL



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

Jim Gray
Mayor

Cheryl Taylor
Commissioner

MEMORANDUM

TO: Julian Beard, 4th District Councilmember

FROM: A. Bradley Frazier
A. Bradley Frazier, P.E.
Traffic Engineer Manager

DATE: October 11, 2011

SUBJECT: Multiway Stop Analysis at Intersection of Bellefonte Drive @ E. Lowry Lane

Based on a request from your office a warrant study has been completed at the intersection of Bellefonte Drive @ E. Lowry Lane to determine the feasibility of installing a multiway stop at this intersection. *Manual of Uniform Traffic Control Devices (MUTCD) – 2003 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 65 km/h or 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 C.3 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.

Speed data was collected on E. Lowry Lane. Data revealed that the 85th percentile speeds were 32.46 mph on eastbound E. Lowry Lane and 31.82 mph on westbound E. Lowry Lane. Based on this speed data, there would not be a reduction in the volume requirements as allowed in the *MUTCD* warrant criteria. The 8-hour traffic volume which was collected on the major approaches of E. Lowry Lane revealed 56 vehicles per hour or 18.5% of the volume required. The 8-hour traffic volume which was collected on the minor approach of Bellefonte Drive revealed a total of 265 vehicles per hour or 132.1% of the volume required. The major street approach volume fall short of the warrant criteria, but the minor street volume exceeds the warrant criteria.

A review of the collision history at this intersection revealed 0 collisions in the 3 years prior to this analysis. 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 at the intersection of Bellefonte Drive @ E. Lowry Lane.

The traffic analysis for the intersection revealed that Bellefonte Drive's peak hour, average daily traffic (ADT), and 8-hour warrant traffic volumes were approximately 5 times greater than E. Lowry Lane's volumes. The ADT for the intersection is 3983 vehicles per day with 83% of that volume being on Bellefonte Drive. Yet, the 2-way stopping configuration for the intersection is set for the higher volume street, Bellefonte Drive. The non-stopping condition of E. Lowry Lane has the majority of its traffic traveling eastbound, 83%, and turning either right or left onto Bellefonte Drive. The eastbound E. Lowry Lane through movement beyond the intersection currently dead ends at the Lansdowne Estates property.



Switching this configuration to have the heavier movement continuing unimpeded could potentially cause future problems within this area.

Based on the volume discrepancy noted in the report and that Bellefonte Drive is a collector roadway, the Division of Traffic Engineering does not object to a multiway stop at the intersection of Bellefonte Drive @ E. Lowry Lane.

If you have any questions, please contact me anytime.

ABF

xc: Cheryl Taylor, Commissioner of Environmental Quality & Public Works
 Ron Herrington, P.E., P.L.S.
 Jim Woods, P.E., P.L.S.
 Casey Kaucher, E.I.T.
 Kevin Wentz
 Officer Doug Smith