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

Jim Gray
Mayor

David L. Holmes
Commissioner

DIVISION OF TRAFFIC ENGINEERING
MEMORANDUM

TO: Ms. Jennifer Scutchfield, 7th District Councilmember

FROM: Roger T. Mulvaney, P.E., Traffic Engineer

DATE: July 9, 2014

SUBJECT: Jouett Creek Drive Traffic Study

A traffic study including a speed limit analysis and a multiway stop study was completed for Jouett Creek Drive between Hays Boulevard and Sperling Drive. Traffic speed data was collected at three locations along Jouett Creek Drive. Collection points for both directions of travel on Jouett Creek Drive were located between Denali Pass and Bacopa Place, between Banyan Park and Sugarbrush Trail, and between Sperling Drive and Bower Lane. Additionally, traffic data was collected on all three approaches to the intersection of Jouett Creek Drive & Bower Lane for a multiway stop analysis at that location.

Speed Limit Analysis

The Federal Highway Administration's *Manual on Uniform Traffic Control Devices (MUTCD)* Section 2B.13 addresses speed limits by stating "When a speed limit is to be posted, it should be within 5 mph of the 85th percentile speed of free-flowing traffic. Other factors that may be considered when establishing speed limits are the following:

A. Road surface characteristics, shoulder conditions, grade, alignment, and sight distance;
B. The pace speed;
C. Roadside development and environment;
D. Parking practices and pedestrian activity; and
E. Reported crash experience for at least a 12-month period."

The findings of the speed analysis on Jouett Creek Drive between Hays Boulevard and Sperling Drive are as follows:

A. The posted speed limit on Jouett Creek Drive is 35 mph between Hays Boulevard and Sperling Drive. Jouett Creek Drive is classified as a residential collector street. The width of Jouett Creek Drive is 30 feet. Pavement markings are not provided along Jouett Creek Drive. Jouett Creek Drive has sidewalks and utility strips along its entire length on both sides of the street. Street lighting is also present on Jouett Creek Drive.

B. The following table is a summary of the data collected along Jouett Creek Drive:

Jouett Creek Drive Location	Direction of Travel*	Average Daily Traffic	Speed Range for ½ of the Vehicles	Posted Speed Limit	Average Speed	Percent Exceeding Posted Speed Limit	85th Percentile Speed
Jouett Creek Dr between Denali Pass & Bacopa Pl	NB	1,019	25 – 30 mph	35 mph	30 mph	4.46	35.36 mph
Jouett Creek Dr between Denali Pass & Bacopa Pl	SB	1,013	30 – 35 mph	35 mph	31 mph	4.95	35.77 mph
Jouett Creek Dr between Banyan Park & Sugarbrush Tr	NB	468	30 – 35 mph	35 mph	34 mph	22.78	43.13 mph
Jouett Creek Dr between Banyan Park & Sugarbrush Tr	SB	615	30 – 35 mph	35 mph	31 mph	5.21	35.70 mph
Jouett Creek Dr between Bower Ln & Sperling Dr	NB	257	25 – 30 mph	35 mph	27 mph	3.26	32.95 mph
Jouett Creek Dr between Bower Ln & Sperling Dr	SB	515	25 – 30 mph	35 mph	26 mph	2.83	32.40 mph

*NB is considered traffic traveling towards Hays Blvd., SB is traffic considered traffic traveling towards Sperling Dr.

The pace speed is the 10 mph range that contains the highest number of the observed speeds. The high end of that range is usually very close to the 85th percentile speed. Our equipment does not calculate the pace speed. The 85th percentile speeds along Jouett Creek Drive were found to be in the range of 32.40 mph in the southbound direction between Bower Lane and Sperling Drive to 43.13 mph in the northbound direction between Banyan Park and Sugarbrush Trail. The 85th percentile speed, or the speed at which 85% of the vehicles are traveling at or below, is based on the theory that a large majority of drivers are reasonable and prudent, do not want to have a crash, and want to reach their destination in the shortest amount of time possible. The average speeds were in the 26 to 34 mph range. In half of the sections studied on Jouett Creek Drive, most drivers drove in the 30-35 mph range and in the other half of the sections studied, most drivers drove in the 25-30 mph range.

C. Most of the properties along Jouett Creek Drive are zoned Single Family Residential. There is also an elementary school on Jouett Creek Drive near Hays Boulevard. The private residences that line Jouett Creek Drive typically have driveways accessing this road.

D. Parking is permitted along both sides of Jouett Creek Drive. Parking can have a calming effect on traffic. Parked cars narrow the travel lane and therefore affect the driver's perception causing her or him to slow down.

E. Between the intersections of Jouett Creek Drive & Hays Boulevard and Jouett Creek Drive & Sperling Drive, there were five recorded collisions reported on Jouett Creek Drive since July 1, 2011. Here are the details the crash analysis:

- Of the total number of reported crashes, two crashes took place involved a parked vehicle being struck by another vehicle backing out of a driveway on Jouett Creek Drive.
- Of the total number of reported crashes, two crashes involved a vehicle driving off of the road and striking a fixed object along Jouett Creek Drive.
- Of the total number of reported crashes, one crash was a rear-end type of crash near the Jouett Creek Drive intersection with Hays Boulevard.
- Of the total number of crashes, one crash occurred during wet road conditions.
- Of the total number of crashes, zero crashes involved an injury or fatal collision.

Multiway Stop Analysis

In addition to the speed limit study aspect of this report, a warrant analysis is also included for the intersection of Jouett Creek Drive & Bower Lane to determine the feasibility of installing a multi-way stop at that intersection. The *Manual on Uniform Traffic Control Devices (MUTCD) – 2009 Edition* criteria is used in the analysis of the intersection to determine if a multi-way stop is warranted at this location. The following is the warrant criteria used in the analysis:

Guidance:

The decision to install multi-way stop control should be based on an engineering study.

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

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.*

B. *Five or more reported crashes 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.*

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.*

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 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 multi-way stop control would improve traffic operational characteristics of the intersection.

Multi-way 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 multi-way stop signs would have a greater potential for a positive or a negative impact on traffic conditions. The *MUTCD's* warrants for multi-way 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 multi-way stop signs.

Speed data was collected on Jouett Creek Drive in the immediate vicinity of the intersection with Bower Lane. Data revealed that the 85th percentile speeds were 28.97 mph on northbound Jouett Creek Drive and 27.94 mph on southbound Jouett Creek Drive. Based on this speed data, there will not be a reduction in the volume requirements as allowed in the MUTCD warrant criteria. The average 8-hour traffic volume which was collected on the major approaches of Jouett Creek Drive revealed 134 vehicles per hour or 45% of the volume required. The average 8-hour traffic volume which was collected on the minor approach of Bower Lane revealed a total of 59 vehicles per hour or 29% of the volume required. **The major and minor street approach volumes do not meet the warrant criteria. Therefore, the volume warrants are not met at this time.**

A review of the collision history revealed zero (0) collisions directly related to this intersection 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 Jouett Creek Drive & Bower Lane**.

As part of this study, the Division of Traffic Engineering conducted a field and geometric review of the intersection of Jouett Creek Drive & Bower Lane. Jouett Creek Drive is 30 feet wide from curb to curb and does not have any pavement markings in the area of this intersection. Bower Lane is 20 feet wide from curb to curb and without pavement markings. Jouett Creek Drive is a residential collector street with a speed limit of 35 mph. Bower Lane is a residential local street with a 25 mph speed limit per LFUCG ordinance. Street lighting is provided on both Jouett Creek Drive and Bower Lane. Parking is permitted on both sides of Jouett Creek Drive but on Bower Lane parking is prohibiting on the even numbered side of the street where the fire hydrants are also located.

Aerial of Jouett Creek Drive Vicinity

Conclusion: Based on the speed data collected, crash analysis, and field review of Jouett Creek Drive, the Division of Traffic Engineering recommends reducing the speed limit from 35 mph to 30 mph. Upon approval from the Urban County Council, Traffic Engineering will install 30 mph speed limit signs where appropriate along Jouett Creek Drive. Traffic Engineering also recommends the installation of curve warning signs prior to and at the curve in the vicinity of the intersection of Jouett Creek Drive & Bower Lane.

Traffic Engineering finds no basis for recommending multiway stop controls at the intersection of Jouett Creek Drive & Bower Lane because warrant criteria for a multiway stop were not met at this time.

If you have any questions, please contact me at anytime. My email is rmulvaney@lexingtonky.gov and the number for the Division of Traffic Engineering is (859) 258-3830.

RTM

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