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June 11, 2013

Mr. Kirk Rome, P.E.
Public Works Director
City of Parkville
8880 Clark Avenue
Parkville, MO 64152

Re: Multiway Stop Control Evaluation
NW Crooked Road and N. National Drive/River Hills Drive - Parkville, Missouri

Dear Mr. Rome:

In accordance with the City of Parkville's request, TranSystems has completed the following multiway stop control evaluation for the NW Crooked Road and N. National Drive/River Hills Drive intersection in Parkville, Missouri. The general procedures and analysis for this evaluation were based on criteria set forth in the current edition of the *Manual on Uniform Traffic Control Devices* (MUTCD), the Federal Highway Administration (FHWA) reference adopted as the standard governing the use of traffic control devices in the State of Missouri. Data collection for the study was conducted by the City of Parkville, and consisted of a 2-hour turning movement count during an afternoon peak period (4-6 p.m. on Tuesday, June 4th, 2013) along with information on the existing crash experience (one minor crash in the past seven years).

Multiway stop control can be useful as a safety measure at intersections where certain conditions exist, particularly where the volume of traffic on the intersecting roads is approximately equal. However, a multiway stop is the most restrictive form of intersection control since all vehicles at the intersection are required to stop, regardless of the situation, which has an adverse impact on efficiency and fuel consumption. The MUTCD states that 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. Five (5) or more reported crashes in a 12-month period that are susceptible to correction by a multiway 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 eight (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 eight (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 M.P.H., 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.

Based on the data collected, the intersection of NW Crooked Road and N. National Drive/River Hills Drive does <u>not</u> fully satisfy the requirements for any of the above criteria at this time. Criteria A, B and D do not apply to this location. In evaluating Criteria C, the average volumes for the 2-hour count period are roughly 190 units per hour for NW Crooked Road and 90 units per hour for N. National Drive/River Hills Drive, values that are well below the requirements of Criteria C.1 and C.2 even though the counts were conducted during what is typically the two highest hours of the day. These findings indicate that multiway stop control at the intersection is not warranted and should not be implemented at this time.

It is also important to note that the traffic volumes on NW Crooked Road are significantly higher than the volumes on N. National Drive/River Hills Drive (volume split is approximately 70% on NW Crooked Road and 30% on N. National Drive/River Hills Drive). Multiway stop control is typically most effective at locations where traffic volumes are relatively balanced on all approaches. Further, multiway stop control would require <u>all</u> drivers on NW Crooked Road to come to a complete stop at <u>all</u> times. This would be a significant change from the current condition and may be viewed by drivers as unreasonable, particularly during off-peak time

periods. Unnecessary traffic control devices can lead to driver frustration, an attitude of disrespect in motorists, and may lead to flagrant violations.

We have appreciated this opportunity to be of service to the City of Parkville. Should you have any questions, please advise.

Sincerely,

TranSystems

By: _____
James J. Stanek, Jr., PE, PTOE

JJS:js