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DATE: July 28, 2016

TO: Board of Mayor and Aldermen

FROM: Eric Stuckey, City Administrator
Paul Holzen, City Engineer
Jonathan Marston, Assistant Director of Engineering

SUBJECT:

Discussion of Traffic Study Results for East McEwen Drive Between Cool Springs Boulevard/Oxford Glen Drive and Wilson Pike (07/28/16 CIC)

Purpose

The purpose of this memorandum is to provide information to the Franklin Board of Mayor and Aldermen (BOMA) concerning the traffic study results for East McEwen Drive between Cool Springs Boulevard/Oxford Glen Drive and Wilson Pike.

Background

Due to citizen concerns, the BOMA directed staff to study the segment of East McEwen Drive between Cool Springs Boulevard/Oxford Glen Drive and Wilson Pike. This memorandum and the accompanying exhibits contain the results of that study. Please note that this report does not contain information about the roundabout at Cool Springs Boulevard/Oxford Glen Drive or the intersection at Wilson Pike.

The Engineering Department worked with a transportation data collection service to perform tube counts at four (4) locations along East McEwen Drive. The locations of the tube counters are shown on Exhibit 1A. The tube counters were able to collect volume, speed, and vehicle classification data for each location. This data was collected for three (3) consecutive days in March 2016 (03/29/16 thru 03/31/2016.) A high-level summary of the results is as follows:

- Traffic Volume of 12,757 Vehicles per Day

- 85th Percentile Speed of 39 Miles per Hour (MPH)
- Vehicle Classification of:
 - 91.5% Passenger Carriers (i.e. Motorcycles, Cars, Pickups, Vans & Busses)
 - 4.1% Commodities Carriers (e.g. Trucks)
 - 4.4% Unclassified (e.g. Device unable to determine type of vehicle)

A complete summary of the data collected can be seen in Exhibit 1B. A breakdown of the 13 vehicle classifications, as defined by the Federal Highway Administration (FHWA), is available as exhibit 1C.

Based on the data, it is clear that many drivers are exceeding the posted speed limit of 30 MPH. Staff recommends that the posted speed limit remain at 30 MPH with increased speed enforcement. However, staff also recognizes that 30 MPH is not an appropriate speed for the S-curve areas of East McEwen Drive. Based on horizontal curvature alone, the advised speed for these curves would be approximately 20 MPH. Taking into account the steep grade of the roadway in this area, an advisory speed of no more than 15 MPH should be posted for both directions of the S-curve areas.

Staff also collected crash report information for this street segment from the Tennessee Integrated Traffic Analysis Network (TITAN.) Between January 2013 and December 2015, 40 crash reports were reported. Of the 40 total reported crashes, 10 (25%) resulted in injuries. There were no fatalities reported in this timeframe. Exhibit 2A is a location map of these crashes. A complete summary of crash data is available as Exhibit 2B.

During this process, there have also been requests for additional guardrail along East McEwen Drive. One of the initial factors in determining the need for guardrail is the presence of unavoidable and unmovable objects within the clear zone (e.g. directly adjacent) of the roadway. The most common objects encountered along this segment of East McEwen Drive are trees. Trees greater than four (4) caliper inches, or diameter, are considered hazards. One (1) solution is to simply eliminate the obstacles. However, in the case of trees, this would result in the loss of privacy and reduced aesthetics. Another factor in determining the need for guardrail is the slope adjacent to the roadway. Staff utilized the elevation information in the City's GIS database to analyze the existing slopes along East McEwen Drive. With regard to slope, guardrail is often required along 3:1 or steeper slopes. Staff also studied the area crash history to determine if guardrail could provide additional safety to motorists. The main area of concern from this analysis was the S-curve just east of Players Mill Road and Road of the Roundtable. The full slope analysis and existing & proposed guardrail locations can be seen in Exhibit 3.

As a part of this study, staff also determined some cost effective safety enhancements for this particular segment of McEwen Drive. These safety enhancements, which are shown in Exhibits 4A, 4B, and 4C, include: new & larger warning signs, illuminated signs, driver feedback signs, flashing beacons, transverse rumble strips, centerline rumble strips, and raised pavement markers (e.g. reflectors.)

Because of the high number of roadway departure crashes, the repaving of the S-curve area with an Open Graded Friction Course (OGFC) asphalt surface should also be considered. An OGFC surface provides more friction and contains more void spaces than traditional asphalt. These additional voids allow water to pass, which helps reduce standing water. This reduction in standing water results in greater traction during wet weather conditions (e.g. less hydroplaning.)

Ultimately the options listed above can be broken down into four (4) categories:

- Roadway Enhancements
- Upgraded Signage
- Guardrail
- Paving

Any one (1) of these options can be performed alone or in combination with the other options. With any option(s) selected, increased speed enforcement is recommended for this entire segment of East McEwen Drive.

Financial Impact

Due to the extent and expense of these options, it recommended that any upgrades of East McEwen Drive be considered a capital project or a part of McEwen Phase 4 currently under consideration in the 2017-26 Capital Investment Program. Once the final option(s) are selected, the Engineering Department will work closely with the Finance Department to determine the most appropriate and available source of funding. The preliminary estimated costs of the four (4) major categories are:

- Roadway Enhancements - \$39,000
- Upgraded Signage - \$63,000
- Guardrail - \$142,000
- Paving - \$157,000

The costs for some overlapping items (i.e. final design, layout, clearing and grubbing, etc.) can be reduced by combining options.

Recommendation

Staff recommends the implementation of roadway enhancements, upgraded signage and added guardrail for a total estimated cost of \$234,000.