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Response to Questions on Traffic, Walkability/Mobility, Parking Master Plan Informative Session

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Q. Do low speed crash rates go down over time at roundabouts? Does familiarity lead to better drivers?

A. The trend in southeast Michigan, as well as nationally, is an initial learning curve. The length of time of that curve depends on multiple factors such as the number of lanes in the roundabout and the familiarity of drivers with the route. When comparing single-lane vs. multi-lane roundabouts, the number of crashes tends to be higher in multi-lane roundabouts but still less severity than a signalized intersection.

A recent study illustrates this concept and is summarized by the Insurance Institute for Highway Safety (IIHS) here: https://www.iihs.org/news/detail/safety-at-two-lane-roundabouts-improves-over-time-new-study-shows and https://www.iihs.org/topics/bibliography/ref/2180. Multiple state DOTs have looked at this phenomenon as well. Last fall PennDOT published their findings that study roundabouts built over a 17-year span. They found that within 3 years of converting to a roundabout, there was a decrease in accidents by 34% (https://cumberlink.com/news/local/data-confirms-roundabouts-in-pennsylvania-have-improved-safety-penndot-says/article_71c149fa-2d12-56ea-80d8-ece74fc324b3.html).

Q. I would like to see pedestrian fatality rates for standard intersections vs roundabouts. Is that data available?

A. In 2019, IIHS published a summary of data from the National Highway Traffic Safety Administration (NHTSA) dating back to 1975 compiled regarding the variables that played a role in pedestrian fatalities that can be viewed here: https://www.iihs.org/topics/fatality-statistics/detail/pedestrians. Though the study provides statistics such as location, time of day, gender, and weather, it doesn't compare intersection types specifically for pedestrian fatalities. As of this writing, we are aware of only one pedestrian fatality in the United States that has occurred at a modern roundabout. Modern roundabouts number over 7,000 since they were introduced in the US in the late 1990s. The fatality occurred in Minnesota in 2017; none have been reported at Michigan roundabouts.

The severity of a crash involving pedestrians is largely linked to the speed of a vehicle. This has been studied by multiple agencies. A report commissioned by AAA can be downloaded here: https://aaafoundation.org/impact-speed-pedestrians-risk-severe-injury-death/ It has been determined that the average risk of severe injury or death increases as the speed in an intersection increases. Roundabout geometry is designed to reduce speeds at the approaches and within the circle to approximately 15 to 25 mph. This is significantly less than speeds that can be achieved at a signalized intersection, where traffic can traverse the intersection unimpeded.

Creating an understanding between a driver and a pedestrian at roundabouts improves the safety for both users and often involves the implementation of several research proven countermeasures. The key for creating this understanding is developing conspicuity of the pedestrian and a context where the driver should expect a pedestrian interaction. Separating the crossing (with a median) into two-stages, i.e. crossing one-direction at a time, allows for a greater opportunity to develop the understanding between driver and pedestrian. Also, shortening crossing distances reduces the time a pedestrian is exposed. Additional features such as raised crosswalks, pedestrian hybrid beacons or Rectangular Rapid Flashing Beacons (RRFBs) are also proven to increase safety. There are multiple educational materials, including videos (https://www.youtube.com/watch?v=kSK2XZ4V0Pk) and pamphlets (https://safety.fhwa.dot.gov/zerodeaths/docs/Revised_STEP_Poster_Jan2020_revised_508compliant.pdf), to instruct the motoring public and pedestrians alike on how to safely navigate a roundabout.

Q. I would like to establish a data set on how many people cross this [7 and Sheldon] intersection on foot or bike and when during the day. Is that possible to collect? Are we cutting off south of 7 from entering the city?

A. It is possible to establish pedestrian/cyclist usage at this intersection via a traffic collection effort that includes pedestrian and bike counts. These have not been collected as of yet and would be recommended prior to detailed engineering design. However, COVID-19 has presented an unusual snapshot in time, whereas we are seeing an increase in non-motorized recreation, such as cyclists and walkers, and a shift in traffic patterns due to the changes in working habits and school closures. Some agencies are delaying traffic data collection for the time being until a more normalized pattern is foreseen.

As far as the connectivity between Hines Park and the downtown area of Northville, this can be achieved with a properly designed intersection, whether it be signalized or a roundabout.

Q. Do we have any estimates of "new normal" traffic reduction in the post-COVID world with trend towards working from home?

A. No one has the crystal ball for the near or long-time future regarding traffic patterns and everything is still different. Rush hour peaks have flattened, average daily traffic volumes have decreased. Data from traffic monitoring equipment can be used to understand the volume difference between 2019 and 2020. The largest differential occurred in early April with a 70% drop in traffic seen region wide. At the intersection of Haggerty and 8 Mile, the counts are still showing a decrease in volume of 25%. Traffic counts are typically during the middle of the week when school is in session; this fall is the earliest recommended time to resume traffic counts for design purposes.