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2:49 PM

to Nicholas, Francisca, Luke, Sue, me, Raymond, Patricia, P.E., P.E., PE,

Good afternoon,

Following up on our previous email, DLZ has found the following relevant guidance on HOV (high occupancy vehicles) lanes:

1. MDOT does not have any HOV guidance.
2. AASHTO Green Book doesn't have HOV guidance but refers to the AASHTO Guide for High Occupancy Vehicles and NCHRP Report 414 – HOV Systems Manual.
3. AASHTO Guide for High Occupancy Vehicles is mostly pulled from NCHRP Report 414.
4. AASHTO Guide for High Occupancy Vehicles relevant guidance:
 - a. This guide is only for freeways and arterials. East Medical Center Drive is neither, it has a lower classification of Major Collector. There doesn't appear to be any guidance for HOV lanes for roadway classifications less than an arterial.
 - b. Chapter 1 discusses developing a regional, corridor and facility HOV plan which includes an enforcement plan and an emergency use plan. As we understand it, the City does not currently have an HOV plan.
 - c. Section 1.2.4.1: "The goal of a HOV lane facility is to provide travel time savings and travel time reliability to eligible vehicles." In summary, on opening day the HOV lane will need to be shown to be used and to provide time savings for the public to accept it. Underused HOV lanes typically fail. HOV facilities should provide an overall travel time savings of at least 5 minutes to be effective and create a mode shift.
 - d. Section 4.6.1: "It should be noted that legal approval should be obtained for HOV arterial lanes to facilitate enforcement and detail the HOV facility operations (e.g., an SOV cannot enter the HOV beyond 90 m (300 ft) from the right turn)."
 - i. **Since the added HOV lane would also need to be the right turn lane for West Medical Center Drive, the first 300' (essentially the entire length of the new lane) would need to allow all single occupancy vehicles (SOV) in order to facilitate right turns making the HOV unenforceable.**
 - ii. The Michigan Vehicle Code 257.642 doesn't appear to have this 300' allowance nor does the Ann Arbor Code of Ordinances. Without this allowance a SOV is not allowed in a HOV period.
 - e. Section 5.2.2.2 Intersection: In summary, when you have a short HOV (guide talks about this as 3 or 4 blocks in length), it is not desirable to allow turning movements. This guidance is problematic for turns onto West Medical Center Drive.
 - f. Section 5.2.4.1 The total number of people using the general purpose lane should match the total number of people using the HOV lane. Depending on how HOV is defined (2+ or 3+ typically), the HOV lane may not be warranted.
 - i. Our vehicle counts didn't count number of passengers so we cannot analyze this at this time.
 - g. Section 5.2.4.2

i. “The length of concurrent flow lanes may vary from a few blocks to a several kilometers (miles).” The added lane for this project is only approximately 300’ long.

ii. “Ideally, any turning movement from general purpose lanes that interferes with the safe and efficient operation of concurrent flow HOV lanes should be prohibited.”

iii. “Where there is a right curb HOV lane, right turns by general traffic should be made from the reserved lane or from a special turn bay constructed to the right of the reserved lane. This means that general traffic must be allowed to utilize the lane for a sufficient distance in advance of the turn to allow for safe merging with HOV traffic.”

Additionally, the following guidelines pertain to a safe merging distance, in this case a dropped through lane section:

AASHTO, MDOT and MUTCD guidance for a safe merge distance “L”:

For an 11’ lane at 25 mph, the safe merging distance is 115 feet.

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