Preliminary Roundabout Discussion for Rapp Road at Costco Northerly Driveway
May 13, 2022

1. Guidance: Roundabouts support long queue lengths and high intersection delays
    - Support: Sometimes space constraints or topography make it impossible to build a roundabout. Geometric design details vary from one site to another and must take into account traffic volumes, land use, topography and other factors. Roundabouts often require more space in the immediate vicinity of the intersection than comparable traditional intersections. However, because roundabouts can reduce delays and queue lengths, they require less space on the approaching roads than comparable intersections controlled by stop signs or traffic signals.
    - Source: https://www.iihs.org/topics/roundabouts
        - ✓ ***Project Conclusion: The Rapp Road/Northerly Driveway intersection does not result in increased queue or delay, therefore a roundabout is not required to alleviate these types of impacts.***

2. Guidance: Roundabouts are not appropriate for unbalanced traffic volumes or within a traffic signal corridor.
    - Support: An intersection with highly unbalanced traffic flows (that is, a very high traffic volume on the main street and very light traffic on the side street) may not be an ideal candidate for a roundabout. The same is true for isolated intersections in a network of traffic signals.
    - Source: https://www.iihs.org/topics/roundabouts
    - Support: Roundabouts can negatively impact a downstream signalized intersection.
    - Source: https://nacto.org/wp-content/uploads/2010/08/Roundabout-An-Informational-Guide.pdf
        - ✓ ***Project Conclusion: The Rapp Road northbound and southbound volumes account for 80% of the total volumes at the Rapp Road/Northerly Driveway intersection. The intersection is also located between signalized intersections that are approximately 1200' apart. A Roundabout may not be appropriate at this location.***

3. Guidance: A roundabout should be considered as an alternative to a signalized intersection.
    - Support: Ultimate manifestation of roundabouts in a system context is to use them in lieu of signalized intersections.
    - Source: https://nacto.org/wp-content/uploads/2010/08/Roundabout-An-Informational-Guide.pdf
        - ✓ ***Project Conclusion: A signalized intersection has not been considered, nor is warranted for this location.***

4. Guidance: Various types of roundabouts have recommended daily service volumes (AADT)
    - Support: Table 1:

Design Element	Mini-Roundabout	Urban Compact	Urban Single-Lane	Urban Double-Lane	Rural Single-Lane	Rural Double-Lane
Recommended maximum entry design speed	25 km/h (15 mph)	25 km/h (15 mph)	35 km/h (20 mph)	40 km/h (25 mph)	40 km/h (25 mph)	50 km/h (30 mph)
Maximum number of entering lanes per approach	1	1	1	2	1	2
Typical inscribed circle diameter[1]	13 m to 25 m (45 ft to 80 ft)	25 to 30 m (80 to 100 ft)	30 to 40 m (100 to 130 ft)	45 to 55 m (150 to 180 ft)	35 to 40 m (115 to 130 ft)	55 to 60 m (180 to 200 ft)
Splitter island treatment	Raised if possible, crosswalk cut if raised	Raised, with crosswalk cut	Raised, with crosswalk cut	Raised, with crosswalk cut	Raised and extended, with crosswalk cut	Raised and extended, with crosswalk cut
Typical daily service volumes on 4-leg roundabout (veh/day)	10,000	15,000	20,000	Refer to Chapter 4 procedures	20,000	Refer to Chapter 4 procedures

1. Assumes 90-degree entries and no more than four legs.

    - Source: https://nacto.org/wp-content/uploads/2010/08/Roundabout-An-Informational-Guide.pdf
        - ✓ ***Project Conclusion: The Rapp Road AADT is 8,2000 and does not even meet the volume recommendations for the smallest roundabout***

5. Guidance: A roundabout should be considered based on the following table.
   - Support: Table 2:

Roundabout Consideration for:		Project Site Meets?
Location	Hight accident location with left turn/right angle	No
	Capacity/Delay Problems	No
	Traffic Signal requested but not warranted	No
	4-way stops	No
Traffic Volume	Heavy Delay on side street	No
	Flow distribution with heavy left turn movements	No
	DHV of 7000 or less	No
Right of Way	Generally take no more ROW than a signal would	No
Appropriate Site	Heavy delay on minor road	No
	Traffic signal results in greater delay	N/A
	Heavy left turning traffic	No
	More than 4 legs/unusual geometry	No
	Rural intersection with accidents involving crossing traffic	No
	Major road intersects at “Y” or “T”	No
	Traffic growth high or unexpected future patterns	No
	U-turns are desirable	No
	Freeway interchange ramps	No
	HAL with right angle	No
Inappropriate Site	Satisfactory geometric design cannot be provided	No
	Signal interconnect system provide better LOS	N/A
	Desirable to maintain traffic via signal timings	N/A
	Peak period reversible lanes may be employed	N/A
	Roundabout close to existing signals with queueing	Possible

   - Source: Checklist provided by Maryland DOT. This type of checklist does not existing in NYS and is regularly utilized by our traffic department in Maryland: https://www.yumpu.com/en/document/read/27282934/roundabout-design-guidelines-institute-of-transportation-
     - ✓ ***Project Conclusion: A roundabout does not meet any of the recommendations based on location, traffic volumes, or site conditions.***