MINI-ROUNDABOUT GUIDELINES

Mini-roundabouts are a form of traditional roundabouts. As their name suggests they are smaller than standard single lane roundabouts and they differ in that the central island is traversable, allowing larger vehicles to make a left turn over top of them. Mini-roundabouts generally have a narrower range of applications than other types of roundabouts. Because of their design characteristics, mini-roundabouts are most effective in lower speed and volume environments and can typically be considered if:

- The desired location is within a residential area
- Operating speed (85th percentile) on approach is less than 55 km/h
- Daily traffic volumes are less than 15,000

From a residential development perspective, benefits associated with the implementation of mini-roundabouts include:

- Traffic calmed environment
- Reduced vehicle operating speeds while minimizing delay
- Improved mobility for all roadway users

When comparing them to the alternative all way stop control the mini roundabout, although more expensive to install, harmonizes mobility to a greater degree, removes unnecessary delay and provides a safer environment.

Traditional single lane roundabouts could be considered in similar situations but the advantage of the Mini is it has lower implementation costs and a smaller footprint and property requirements. It can be easily included in the original design of a subdivision's road network or retrofitted into and existing road network.

Screening Criteria

Mini roundabouts are best suited and most effective when they meet the following conditions;

- Located at minor collector road intersecting a minor collector road or a local residential road
- ADT lesser than 15,000 (estimated ADT in case of new development area)
- At least 10% of the total traffic has generated from minor road (estimated in case of new development area)
- Operating speed <55km/hr or posted speed ≤ 50km/hr in a new development area
- A right of way wide enough to accommodate a 13 m to 27 m Inscribed Circle Diameter roundabout and adjacent sidewalks
- Situated on a non truck route or roads without heavy truck movements
- Intersections with no more than four legs

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Design Criteria

Where locations meet the screening criteria it is recommended that NCHRP 672 *(TRB's National Cooperative Highway Research Program (NCHRP) Report 672: Roundabouts: An Informational Guide – Second Edition, Mar 2016)* be referred as a design guideline to implement a mini roundabout. When designing mini roundabouts some of the key considerations that should be followed are:

- Mini roundabout should be as large as possible within the intersection constraints. However, the Inscribed Circle Diameter (ICD) should not exceed 30 m
- The location and size of a mini roundabout's central island (and the corresponding width of the circulatory roadway) is dictated by a typical passenger car swept path
- Configuration of the central island, splitter islands, outside curbing and approach and departure angles should be set so that vehicle path deflection achieves desired travel speed through the roundabout. For residential areas fastest path speeds should be in the 25 to 30 km/h range
- Centre island and splitter islands are mountable / fully traversable with appropriate control at low speeds and should be designed in a similar manner to truck aprons on a typical single lane roundabout i.e. cross slope of 1% to 2% with outer edge height of 2-3 inch (5-7.5 cm). Mountable curb shall be designed as per City of Ottawa's spec SC-1.5
- Maintain at least 6 m from circular lane to edge of pedestrian crossing on all exit lanes

Additional design parameters that need to be considered while implementing a mini roundabout are as follows:

- Design vehicle – if a proposed location is a bus route or a school bus route, the design vehicle should be considered as Standard Single Unit Bus (B12). If it is a non-bus route or a bus route with low frequency (<5/day) , the Medium Single Unit Truck (MSU) can be considered as a design vehicle
- Travel lane width - Will need to accommodate snow maintenance vehicles where the width of the snow plow blade is approximately 4.2 m wide
- As the splitter islands are generally < 2.5m at mini roundabouts, design the pedestrian crossings as one stage crossings
- Implement single stage Type D Pedestrian Crossovers (PXOs) on each leg as per Ontario Traffic Manual (OTM) Book 15 to provide right of way to pedestrians at the crossings
- Curb and sidewalk depressions at the crossings need to be meet Accessibility for Ontarians with Disabilities Act (AODA) requirement
- Colored concrete should be applied to islands to distinguish roundabout raised features
- The concrete median cap shall be as per the City of Ottawa Spec SC-10
- Lighting levels as per Transportation Association of Canada (TAC) lighting guidelines for PXOs