MEMORANDUM

State of Alaska

Department of Transportation & Public Facilities
Design and Engineering Services – Central Region

TO: Distribution

DATE: June 2, 2022

FROM: Luke Bowland, P.E.
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SUBJECT: Central Region
Roundabout Review Policy

This memo revises and supersedes the Roundabout Review Policy from April 3, 2014.

Roundabouts are specialized intersections that do not have traditional standards or a lot of local application to guide us. Quality design reviews are important to the success of new roundabouts. Recognizing this, the Central Region Preconstruction Division has adopted a practice that all proposed roundabout intersections within the Department of Transportation and Public Facilities (DOT&PF) Right-of-Way shall be independently peer reviewed. This includes intersections being designed and constructed by other public or private parties within DOT&PF Right-of-Way.

Peer reviews shall be performed by a designer with the following qualifications:

- Licensed Professional Engineer (licensing in the State of Alaska is not required)
- Experience within the last ten years in the design of at least ten roundabouts
    - Roundabouts for roadway classifications lower than collector roads do not count
    - Mini roundabouts do not count

All project peer review designers are subject to approval by the DOT&PF's Project Manager.

If the principal designer of the roundabout has qualifications meeting the peer review designer qualifications above, then the peer review requirement may be waived by the DOT&PF's Project Manager or Regional Traffic Engineer.

Peer reviews shall consist of, at a minimum:

- HCS, RODEL and/or SIDRA modeling to check:
    - Capacity analysis including auxiliary and dedicated turn lane configurations
    - Traffic operations, including queue lengths
- Vertical design, including a review of:
    - Typical sections, grading, and drainage design
    - Sight distance for both motorized and non-motorized users points of view
- Geometric design parameters including a review of:
    - Design vehicle and turning paths
    - Design locations for non-motorized users
    - Deflection and flared entry geometry
    - View angle

    - Entry Angle
    - Fastest path speeds for the fastest vehicles that do not stay in lane
    - Natural path speeds for most vehicles that stay in lanes for multilane roundabouts
- General lighting concepts and layout
- Landscaping concepts marked as restricted areas by the engineer due to sight triangle needs
- Minimized but effective pavement markings (optional markings typically not provided)
- Minimized but effective signing plans (optional signs typically not provided, with the exception of pedestrian warning signs)
- SimTraffic or Vissim sensitivity modeling when needed for sites with complex adjacent impacts, at the direction of the Regional Traffic Engineer

Based on our experience and installations over the past decade, Central Region Preconstruction Division's roundabout design practice and peer review requires considering the following:

- Use of NCHRP Report 672 as a reference for roundabout lane selection and performance checks under Sections 6.7
- 140' minimum single lane outer inscribed diameters on arterials for up to 20,000 entering vehicles per day
- 165' minimum two lane outer inscribed diameters on arterials for up to 35,000 entering vehicles per day
- Low actual path speeds of 30 mph or less at marked crosswalks, desirably 25 mph or less
- Minimum inscribed diameters improve the likelihood of adequate sight distance, deflection, speed reduction, and decision times between entry points. Inscribed diameters less than the Region's practice must be accompanied by peer review guidance and examples demonstrating the resultant design meets the following criteria, calculated per the definitions contained in NCHRP Report 672 Section 6.7:
    - Maximum theoretical entry speed less than 25 mph for a single lane entry and less than 30 mph for a multi-lane entry
    - Maximum speed differential less than 15 mph between conflicting movements
    - Fastest and Natural path speed less than 35 mph at all crosswalks, and at or below 25 mph when feasible
    - Minimum 75 degree view angle to the left from a vehicle at the yield line to a conflicting vehicle 5 seconds upstream

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