

## Roundabout design

### Minimum requirements

Work must be completed under the direct supervision of a Minnesota licensed professional civil engineer.

### Description

This work type includes all work necessary to analyze and scope intersection control solutions, complete all tasks necessary to design a roundabout in accordance with the MnDOT Facility Design Guide Chapter 6E, Hennepin County Complete and Green Streets Policy, Hennepin County Streetscape Guidelines, and produce appropriate documentation sufficient to achieve a staff approved layout and construction documents.

### Standards and specifications

May include the following:

- All deliverables must include a documented Quality Assurance/Quality Control (QA/QC) plan with each review and submittal to address comments from previous reviews, i.e. conceptual layout, preliminary layout, 30%, 60%, 90%, and 100% reviews.
- Preliminary layouts must meet the form and content requirements listed in MnDOT's Highway Project Development Process (HPDP) Handbook.
- MnDOT Facility Design Guide, Chapter 6E
- MnDOT Traffic Engineering Manual
- A Policy on Geometric Design of Highways and Streets
- Minnesota Manual on Uniform Traffic Control Devices
- Hennepin County Streetscape Guidelines
- Hennepin County Complete and Green Streets Policy
- MnDOT Bentley CONNECT Edition CADD Data Standards (levels, line types, line weights, cells, etc.) with slight variations suited for Hennepin County (Sheet borders, north arrows, text favorites for automatic labeling, print styles, etc.)
- NCHRP Report 1043 "Guide for Roundabouts" (2023)
- Other relevant MnDOT design and traffic manuals, (i.e. Standard Plates, Standard Plans, etc.)

## Provided by Hennepin County

Information to be supplied by Hennepin County for a project may include:

- All project specific documents and studies including but not necessarily limited to:
  - Traffic data: Annual Average Daily Traffic (AADT), existing turning-movement counts, percent heavy vehicles, future projections, and Design Hour Volume (DHV).
  - Base mapping: topography, right-of-way, property lines, as-let plans.
  - System consideration: planned and programmed improvement projects.
- Hennepin County CADD standards will be shared via managed workspace within the Hennepin County ProjectWise data source.

## Typical services

Project deliverables may include the following:

- Develop an ICE report and/or Roundabout Justification Report that includes a roundabout as an intersection solution: analyze system wide planning impacts related to the use of one or more roundabouts on a project corridor, including issues related to access management, freight movement, multi-modal mobility, safety, and community character.
- Develop a Preliminary Report – identifying issues concerning Right-of-Way (R/W), utilities, environmental mitigation, potential historical or archeological impacts, pedestrian and bicycle requirements, potential impact to threatened and endangered species, drainage issues, geometric concerns, etc.
- Model vehicle operations for roundabout design with appropriate traffic modeling microsimulation software.
- Predict crash performance and select lane configurations that balance crashes and delay appropriate to the context, in accordance with the MnDOT Facility Design Guide, Chapter 6E and direction from county staff.
- Coordinate with county divisions and external partners as necessary to achieve a preferred alternative.
- Prepare concept sketches.
- Prepare a preliminary design layout, with preliminary construction limits, accounting for pedestrian and bicycle requirements, staging, etc., with approval by the Hennepin County Engineer.
- Prepare a Design Memorandum, including identification and documentation of all design exceptions and assumptions.
- Prepare any required environmental documents.
- Presentation materials and/or visualizations for public meetings.