Work Type Definition and Submittal Requirements

Low Demand/Volume (<1500) Roundabouts
High Demand/Volume (>1500) Roundabouts

Work Type Definition: Low Demand/Volume (<1500) Roundabouts

I. Minimum Requirements: The work must be under the direct supervision of a Minnesota Professional Civil Engineer.

II. Description

Refer to FHWA's definition of "Roundabout"

Roundabout design includes but is not limited to: Intersection Control Evaluation (ICE), R/W, geometric design, drainage, curb and pavement design, pedestrian and bicycle considerations, lighting, signing, landscaping, and construction staging.
Roundabout training includes but is not limited to: providing educational presentations to Hennepin County employees and external customers; provide training for Hennepin County employees in the use of RODEL software and the process of designing roundabouts.

Low Demand/Volume Roundabout projects are categorized by level as follows:

A. Level 1 projects include the design of low volume roundabouts, including, but not limited to, the following:

1. ICE reports must be completed for any proposed roundabout intersection.
2. All layouts that include roundabouts are to be Level 1 layouts and subject to the approval of Hennepin County's Design Engineer.
3. RODEL software will be used for roundabout design.
4. Analyze specific system wide planning impacts related to the use of one or more roundabouts on the project corridor. This analysis should include issues related to access management, coordinated signal systems, freight movement, land use, and community character.

5. Design operational characteristics and provide alternative concept layouts [must use RODEL software and Hennepin County approved appropriate software programs to perform a corridor or system evaluation, intersection control analysis (traffic signal, roundabout, 4-way stop control), and crash analysis]. In addition, assemble or review supporting documentation of alternatives, dual lane entry, and bypass lane.

6. Design geometrics and provide improvement recommendations (i.e. the six geometric parameters defined in using the RODEL software; fastest speed paths and design speed, approach grades, site specific location of roundabout, number of entry lanes at each leg, dual lane entry, bypass lanes, right-of-way impacts, intersection sight distance, and entry curvature among other design criteria).

7. Design roundabout preliminary layout and/or plan preparation: preliminary construction limits, typical sections, plan and profile sheets, cross-sections, drainage, pavement marking, signing, lighting, traffic control, work zone and staging plans, bicycle and pedestrian accommodations, landscaping, and provide improvement recommendations where appropriate.

B. Level 2 Projects include providing low volume roundabout technical support and training, including but not limited to:

1. RODEL software will be used for roundabout evaluation.

2. Review and analyze specific system wide planning impacts related to the use of one or more roundabouts on the project corridor. This review should include issues related to access management, coordinated signal systems, freight movement, land use, and community character.

3. Review geometric design concepts and provide improvement recommendations (i.e. the six geometric parameters defined in using the RODEL software; fastest speed paths and design speed, approach grades, site specific location of roundabout, number of entry lanes at each leg, dual lane entry, bypass lanes, right-of-way impacts, intersection sight distance, and entry curvature among other design criteria).

4. Review operational characteristics and provide improvement recommendations [must use RODEL software and Hennepin County approved appropriate software programs to perform a corridor or system evaluation, intersection control analysis (traffic signal, roundabout, 4-way stop control), and crash analysis]. In addition, assemble or review supporting documentation of alternatives, dual lane entry, and bypass lane.

5. Review roundabout preliminary layout and/or plan preparation: preliminary construction limits, typical sections, plan and profile sheets, cross-sections, drainage, pavement markings, signing, lighting, traffic control, work zone and staging plans, bicycle and pedestrian accommodations, landscaping, and provide improvement recommendations where appropriate.

6. Provide educational presentations to Hennepin County employees and external customers.

7. Provide training to Hennepin County and external customers in use of RODEL software and designing roundabouts.

III. Standards and Specifications

Standards and specifications required for a project under this work type may include the following:

A. 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. 30%, 60%, 90%, and 100% reviews.

B. The layouts must meet the form and content requirements listed in the Highway Project Development Process (HPDP) Handbook.

C. The layout must consider the various inputs during the development process, and incorporate where appropriate, and must also include a history that documents the development process and the design influences and decisions.

D. Relevant design and traffic manuals, including but not limited to:

1. “Roundabouts: An Informational Guide”, published by the FHWA

2. MnDOT Road Design Manual

3. MnDOT Traffic Engineering Manual,

4. Other relevant MnDOT design and traffic manuals, (i.e. CADD Standards, Standard Plates, Standard Plans, MUTCD, etc.).

IV. Provided by Hennepin County

Information to be supplied by Hennepin County for a project under this work type may include the following:

Work Type Definition and Submittal Requirements

A. All project specific documents and studies including but not necessarily limited to:

1. Traffic data: ADT, AADT, existing turning-movement counts, percent heavy vehicles, future projections and DHV.

2. Base mapping: topography, right-of-way, property lines, as-let plans.

3. System consideration: planned and programmed improvement projects, etc.

V. Provided by Consultant

Deliverables to be supplied by the consultant for a project will be project specific and may include, but not be limited to, the following:

A. Preliminary Report - identifying issues concerning Right-of-Way (R/W), utilities, environmental mitigation, potential historical or archaeological impacts, pedestrian and bicycle requirements, potential impact to threatened and endangered species, drainage issues, geometric concerns, etc.;

B. Intersection Control Evaluation (ICE);

C. Concept Sketches;

D. Preliminary Geometric Layout including Preliminary Construction Limits;

E. Final Plans produced using Hennepin County's CADD Standards

F. Design documentation and calculations;

G. Recommendations for modifying final design plans of roundabouts;

H. Presentation materials and/or visualizations for public meetings; and

I. Training materials.

This remainder of this page is intentionally left blank.

High Demand/Volume (>1500) Roundabouts

Work Type Definition

I. Description

Refer to FHWA's definition of "Roundabout"
Roundabout design includes but is not limited to: Intersection Control Evaluation (ICE), R/W, geometric design, drainage, curb and pavement design, pedestrian and bicycle considerations, lighting, signing, landscaping, and construction staging. Roundabout

training includes but is not limited to: providing educational presentations to Hennepin County employees and external customers; provide training for Hennepin County employees in the use of RODEL software and the process of designing roundabouts.

High Demand/Volume Roundabout projects are categorized by level as follows:

A. Level 1 projects include the design of low volume roundabouts, including, but not limited to, the following:
   1. ICE reports must be completed for any proposed roundabout intersection.
   2. All layouts that include roundabouts are to be Level 1 layouts and subject to the approval of Hennepin County's Design Engineer.
   3. RODEL software will be used for roundabout design.
   4. Analyze specific system wide planning impacts related to the use of one or more roundabouts on the project corridor. This analysis should include issues related to access management, coordinated signal systems, freight movement, land use, and community character.
   5. Design operational characteristics and provide alternative concept layouts [must use RODEL software and Hennepin County approved appropriate software programs to perform a corridor or system evaluation, intersection control analysis (traffic signal, roundabout, 4-way stop control), and crash analysis]. In addition, assemble or review supporting documentation of alternatives, dual lane entry, and bypass lane.
   6. Design geometrics and provide improvement recommendations (i.e. the six geometric parameters defined in using the RODEL software; fastest speed paths and design speed, approach grades, site specific location of roundabout, number of entry lanes at each leg, dual lane entry, bypass lanes, right-of-way impacts, intersection sight distance, and entry curvature among other design criteria).
   7. Design roundabout preliminary layout and/or plan preparation: preliminary construction limits, typical sections, plan and profile sheets, cross-sections, drainage, pavement marking, signing, lighting, traffic control, work zone and staging plans, bicycle and pedestrian accommodations, landscaping, and provide improvement recommendations where appropriate.

B. Level 2 Projects include providing low volume roundabout technical support and training, including but not limited to:
   1. RODEL software will be used for roundabout evaluation.
   2. Review and analyze specific system wide planning impacts related to the use of one or more roundabouts on the project corridor. This review should include issues related to access management, coordinated signal systems, freight movement, land use, and community character.
   3. Review geometric design concepts and provide improvement recommendations (i.e. the six geometric parameters defined in using the RODEL software; fastest speed paths and design speed, approach grades, site

specific location of roundabout, number of entry lanes at each leg, dual lane entry, bypass lanes,
right-of-way impacts, intersection sight distance, and entry curvature among other design criteria).

4. Review operational characteristics and provide improvement recommendations [must use RODEL software and Hennepin County approved appropriate software programs to perform a corridor or system evaluation, intersection control analysis (traffic signal, roundabout, 4-way stop control), and crash analysis]. In addition, assemble or review supporting documentation of alternatives, dual lane entry, and bypass lane.
5. Review roundabout preliminary layout and/or plan preparation: preliminary construction limits, typical sections, plan and profile sheets, cross-sections, drainage, pavement markings, signing, lighting, traffic control, work zone and staging plans, bicycle and pedestrian accommodations, landscaping, and provide improvement recommendations where appropriate.
6. Provide educational presentations to Hennepin County employees and external customers.
7. Provide training to Hennepin County and external customers in use of RODEL software and designing roundabouts.

II. Standards and Specifications for a project under this work type may include:

A. 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. 30%, 60%, 90%, and 100% reviews.

B. The layouts must meet the form and content requirements listed in the Highway Project Development Process (HPDP) Handbook.

C. The layout must consider the various inputs during the development process, and incorporate where appropriate, and must also include a history that documents the development process and the design influences and decisions.

D. Relevant design and traffic manuals, including but not limited to:
   1. "Roundabouts: An Informational Guide", published by the FHWA
   2. MnDOT Road Design Manual
   3. MnDOT Traffic Engineering Manual,
   4. Other relevant MnDOT design and traffic manuals, (i.e. CADD Standards, Standard Plates, Standard Plans, MUTCD, etc.).

III. Provided by Hennepin County

Information to be supplied by Hennepin County for a project under this work type may include the following:

A. All project specific documents and studies including but not necessarily limited to:
   1. Traffic data: ADT, AADT, existing turning-movement counts, percent heavy vehicles, future projections and DHV.
   2. Base mapping: topography, right-of-way, property lines, as-let plans.
   3. System consideration: planned and programmed improvement projects, etc.

Work Type Definition and Submittal Requirements

IV. Provided by Consultant

Deliverables to be supplied by the consultant for a project will be project specific and may include, but not be limited to, the following:

A. Preliminary Report - identifying issues concerning Right-of-Way (R/W), utilities, environmental mitigation, potential historical or archaeological impacts, pedestrian and bicycle requirements, potential impact to threatened and endangered species, drainage issues, geometric concerns, etc.;
B. Intersection Control Evaluation (ICE);
C. Concept Sketches;
D. Preliminary Geometric Layout including Preliminary Construction Limits;
E. Final Plans produced using Hennepin County's CADD Standards
F. (http://www.dot.state.mn.us/caes/cadd), (e.g. 30%, 60%, 90%, and 100%);
G. Design documentation and calculations;
H. Recommendations for modifying final design plans of roundabouts;
I. Presentation materials and/or visualizations for public meetings;
J. Training materials; and
K. Review/Provide Recommendations for updating Hennepin County Roundabout Guidelines