

Roadway, geometric layout, and highway design

Minimum requirements

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

Description

This work type includes preliminary design plan layouts for rural and urban roadways of all functional classifications. geometric layout preparation includes but is not limited to: development of a base map; design study reports; horizontal and vertical alignments; intersections and interchanges, including interchange modification requests and engineering and operational analysis report; noise walls, retaining walls, traffic barriers, and construction staging. Consideration must be given to pavements, culverts, ponding, storm and sanitary sewers, utilities, erosion control and earthwork.

Highway design plans for rural and urban roadways of all functional classifications. Highway design includes but is not limited to: horizontal and vertical alignments, super elevations, intersections, interchanges, pavements, culverts, ponding, storm and sanitary sewers, utilities, erosion control, noise walls, retaining walls, cross sections, traffic barriers, earthwork, and construction staging, as well as any other design features that are associated with the design areas identified.

Roadway, geometric layout and highway design are categorized by level and include the following project types:

Level 1:

- Major construction
 - Freeways, High Speed, and Multi-Lane Facilities
- Major reconstruction
 - Freeways, High Speed, and Multi-Lane Facilities
- Design exceptions (exception only)
- Major changes in freeway access

Level 2:

- Raised channelization
- Change in number of lanes
- Major intersection revisions
- Moderate changes in access:

Level 3:

- Minor geometric changes
- Minor intersection revisions
- Minor changes in access
- Guardrail work
- Culvert:
 - Extensions
 - Elimination
 - Replacements
- Road work:
 - Overlay only
 - Standard right turn lanes
 - Standard left turn lanes on divided highway
- Removal of obstructions from clear zone
- Overlays with widening or left turn lanes
- Minor changes standard geometrics
- Minor painted channelization
- Minor changes in access
- Minor intersection revisions

Standards and specifications

May include the following:

- All work completed must be in accordance with the current American Association of State Highway & Transportation Officials (AASHTO) Policy on Geometric Design of Highways and Streets (also known as The Green Book), current AASHTO Roadside Design Guide, current MnDOT Road Design Manual, current MnDOT Technical Memoranda, current Highway Capacity Manual, and Federal Highway Administration (FHWA) and MnDOT design policies, procedures, practices, and standards.
- The layouts must meet the form and content requirements listed in the Highway Project Development Process (HPDP) Handbook.
- The layout must document the various stakeholder inputs provided during the project development process. It must also include a brief history that documents the project development process and the design decisions that resulted in geometric modifications.
- All work completed must meet Hennepin County's CADD Standards, including the use of OPENROADS™

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:

- Hennepin County staff approved layout, FHWA approved layouts when required by the Stewardship Plan, subsequent municipal approved layout, and required reports including, for the Level 1 Layouts that require it, the Engineering and Operational Analysis Report. The Engineering and Operational Analysis is a report containing sufficient information to allow the FHWA to independently evaluate that all pertinent factors and alternatives have been appropriately considered.
- New or modified access to the Interstate system, regardless of funding source, will require Interstate access approval by FHWA. Approval of Interstate access requests is required by federal regulations at Non-regulatory Supplement (NS) 23 CFR 630C, item #3.
- Deliverables include a complete and accurate set(s) of highway design plans to construct a project that fulfills the department's intended purpose. Deliverables may include, but are not limited to some or all of the following:
 - Plans, produced using Hennepin County CADD Standards
 - Special provisions
 - Estimates
 - Reports
 - Feasibility and justification studies, including all related calculations.
- Deliverables must include a documented Quality Assurance/Quality Control (QA/QC) plan, and QA/QC reviews of each submittal, including addressing comments from previous reviews, i.e. 30%, 60%, 90%, and 100% reviews.