

Work Type Definition and Submittal Requirements

14.1 Traffic Signal Design

Work Type Definition

Page 1-2 details the work type definition. In order to become *pre-qualified* for this work type, please see the “Work Type Submittal Requirements” on pages 3-4.

I. Description

Traffic Signal Design includes developing signal justification reports, project memoranda, appropriate forms and letters, supporting documentation, traffic signal plans, special provisions, engineer’s cost estimate, and providing technical support and construction inspection for traffic signals construction projects. This includes all required data collection, field site investigation and surveys, coordination with power companies, traffic analysis and modeling, pole and footing structure analysis, civil and electrical engineering design, plan preparation, special provision preparation, cost estimation, any calculations and analysis required to produce the deliverables, and answering questions that arise during bidding and construction concerning the design. Traffic signals may be temporary systems used during construction projects or permanent installations.

II. Standards and Specifications

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

- A. Plans will be delivered at pencil sketch, 90 percent complete, and final stages, or as dictated by an associated road design project deliverables schedule.
- B. The Plans, Special Provisions, and Engineer’s Estimate will be in accordance with the standards listed above.
- C. The deliverables will use the proper formats, symbols, abbreviations, etc.
- D. The design will be adequate for the need while at the same time not over-designed.
- E. Plan sheets must be provided in hard copy and Microstation electronic files with proper level assignments. See CADD Standards at: (<http://www.dot.state.mn.us/caes/cadd>)
- F. Text documents must be provided in Microsoft Word format.
- G. Spreadsheets must be provided in Microsoft Excel format.

III. Provided By MnDOT

Information to be supplied by MnDOT for a project may include the following:

- A. Minnesota Statutes 169
- B. MN Manual on Uniform Traffic Control Devices (MUTCD)
- C. National Electrical Code
- D. MnDOT Traffic Engineering Manual
- E. MnDOT Standard Plates Manual
- F. MnDOT Standard Specifications for Construction
- G. American Association of State Highway & Transportation Officials (AASHTO) Green Book
- H. AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals (2001)
- I. MnDOT Traffic Signal Design Manual
- J. MnDOT Signal Optimization and Timing Manual
- K. MnDOT Computer Aided Design & Drafting (CADD) Traffic Signal Cell Library

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- L. MnDOT Sample Signal Plans
- M. MnDOT Sample Signal Special Provisions
- N. Project meetings and coordination
- O. State furnished items, if available, including: base mapping, traffic counts, crash data, documentation of existing signal system, and house moving route information.
- P. Design standards of City or County if not a MnDOT-operated traffic signal.

IV. Provided by Consultant

Deliverables to be supplied by the consultant for a project may include the following:

- A. A Traffic Signal Design plan set may be for a stand-alone signal system project or for signals that are part of a larger grading/surfacing project, and includes the following:
 - a. Title Sheet, Estimated Quantities Sheet, Detail Sheets, Intersection Layout Sheets, Field Wiring Diagrams, Interconnect Layout Sheets, Mast Arm Signing and Pavement Markings Sheets, “For Information Only” Sheets of Existing Signals, and Utilities Sheets, and — when construction is complete —”as-built” plans. The MnDOT Traffic Signal Design Manual provides a detailed description of the requirements for the plans.
- B. Output includes Special Provisions defining special requirements for the construction or changes from the Standard Specifications for Construction.
- C. Output also includes an Engineer’s Estimate, including “quantities tabulation” and an engineer’s estimate for construction cost.
- D. Signal justification reports are described in the MnDOT Traffic Engineering Manual.
- E. Forms and letters include Source of Power letter, Field Walk Checklist, Plan Review Checklist, etc.
- F. Supporting documentation includes meeting minutes, correspondence, applicable calculations, etc.

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Work Type Submittal Requirements

A consultant firm becomes pre-qualified based on the qualifications of the personnel that are employed by the firm and by meeting the demonstrated equipment or CADD requirements.

Key Personnel Requirements	
Minimum Number of Staff:	<ul style="list-style-type: none"> • At least one Civil Engineer having experience in the activities normally associated with this work, OR at least one Registered Electrical Engineer having experience in the activities normally associated with this work. • Sufficient number of available qualified technical staff to perform all data collection, analysis, and design, coordinate with power companies, and produce a plan, special provisions, and engineer’s cost estimate within the project schedule. An example schedule may be a single intersection traffic signal project designed within twelve weeks from start of work.
Professional Certification/Licensure:	<ul style="list-style-type: none"> • The individual identified under the Minimum Number of Staff requirements has to be a Minnesota Licensed Civil Engineer with the Minnesota State Board of Architecture, Engineering, Land Surveying, Landscape Architecture, Geoscience and Interior Design (AELSLAGID) OR • At least one engineer must be a licensed Electrical Engineer with the Minnesota State Board of AELSLAGID.
Work Type Submittal Requirements*	
<p>I. Resume and Relevant Project Experience Form (Form PQ1)</p> <p style="text-align: center;"><i>Submit in Word format</i></p>	<p>A. Complete Parts 1, 1A, 2 and 3 of Form PQ1</p> <p><u>Part 1:</u> Fill out general information and names of personnel</p> <p><u>Part 1A:</u> For each person submitted for pre-qualification, satisfactory experience must be demonstrated on at least three projects (maximum of five) in the last five years in the activities required.</p> <p><u>Part 2:</u> Project Examples listed must correlate to those described below in “Project Example Requirements.”</p> <p><u>Part 3:</u> Describe experience of each key personnel submitted with Microstation CADD software and traffic signal design software.</p>
<p>II. Project Example Requirements</p> <p style="text-align: center;"><i>Submit in PDF format</i></p>	<p>A. Submit at least one example within the last five years of a signal design plan done by submitted key personnel. The example must include a description and period of performance of the project(s) with emphasis on plan and actual project delivery performance.</p>

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<p>III. Proof of Professional Certification/Licensure</p> <p><i>Submit in PDF format</i></p>	<p>A. Provide a current copy of the applicable Professional Certification/ Licensure.</p>
<p>IV. CADD Requirements</p> <p><i>Submit in PDF format</i></p>	<p>A. A signed form indicating the firm is capable of using MnDOT’s Level 1 CADD Standards which can be found at: http://www.dot.state.mn.us/consult/prequal/overview.html</p> <p>Once at website, click link for Affidavit for MnDOT’s Level 1 CADD Standards.</p>
<p align="center">*Work Type Submittal Instructions:</p> <p>Create a CD or flash drive that includes the following individual files or folders in this order:</p> <p>I. Resume and Relevant Project Experience Form (Form PQ1) II. Project Example Requirements (this should be a folder that includes individual files clearly named according to Part 2 of the PQ1) III. Proof of Professional Certification/Licensure IV. CADD Requirements</p> <p align="center">Each file should be saved in the format identified above. Submit 5 copies of the CD or flash drive.</p>	

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