Exhibit A
Scope of Work

Sign Design

The goal of this project is to have a Traffic Engineering Consultant pre-qualified in all 3 levels of sign design develop and provide signing training to State, city, county and consultant personnel along with course training materials for 3 classes. Training will be delivered in a classroom setting for 24-40 participants per class setting. After the initial training classes are offered, the course materials will be included in MnDOT contract for the Traffic Training Program.

Signing Training Classes:

1. General Signing Requirements and Signing Plan Design for Conventional Roads
2. Signing Plan Design for Expressways and Complex Intersections including I-beam and monotube sign structures

Contract is anticipated to run from August 2020 to June 2022.

Course Overview

The following are the signing training classes and content included in this contract.

Signing Plan Design for Conventional Roads

This is a two day course designed to enable the participants to obtain an understanding of the fundamental signing concepts and MnDOT standard practices related to the design of signing on conventional roads. Participants will develop a signing plan from the preliminary stage to letting point. Participants will receive a comprehensive “MnDOT Traffic Signing Design Manual for Conventional Roads” created and prepared by the contractor that outlines the process and will serve as a stand-alone signing design reference.

Signing Plan Design for Expressways and Complex Intersections

This is a one day course designed to enable the participants to obtain an understanding of the fundamental concepts and MnDOT standard practices related to the design of signing on expressways and complex intersections including I-beam and monotube sign structure design. Complex intersections include multi-lane roundabouts, Diverging Diamond Interchanges, and reduced conflict intersections. Participants will develop a signing plan from the preliminary stage to letting point. Participants will receive a comprehensive “MnDOT Traffic Signing Design Manual for Expressways and Complex Intersections” created and prepared by the contractor that outlines the process and will serve as a stand-alone signing design reference.

Signing Plan Design for Freeways

This is a one day course designed to enable the participants to obtain an understanding of the fundamental concepts and MnDOT standard practices related to the design of signing on freeways including overhead sign structure design. Participants will develop a signing plan from the preliminary stage to letting point. Participants
will receive a comprehensive “MnDOT Traffic Signing Design Manual for Freeways” created and prepared by the contractor that outlines the process and will serve as a stand-alone signing design reference.

Project Deliverables

Task 1.0 Gather and Compile Data

Contractor will assemble and review available data and information necessary and pertinent to creating the training course. Data to gather will include but is not limited to:

- Manuals (Mn MUTCD, MnDOT TEM, MnDOT Standard Signs and Marking Summary & Manual)
- Standard Plans and details
- MnDOT Signing Website
- Latest traffic engineering theory and strategies as applicable
- Information on latest software if applicable
- MnDOT’s Signing Sample Plan – new format
- Definition of 30%, 60%, 90% and 100% signing plans
- Signing plan design and review checklist

Task 2.0 Develop Course Manual

The course manual will be divided into subject modules that will follow the flow of the course instruction. The manual will be electronic and be ADA compliant.

Sign Design for Conventional Roads

1. General signing concepts.
   a. Where to find information: Mn MUTCD, MnDOT TEM, guidelines on MnDOT Signing Website, MnDOT Standard Sign and Marking Summary and Manual, etc.
   b. Type of signs: regulatory, warning, guide (Primary and Supplemental)
   c. Sign spacing
   d. Size of sign

2. Signing layout
   a. Reference TEM layouts
   b. Start at an intersection and determine signs required prior to and after. Also along side streets.
      i. Stop/thru
      ii. All way stop
      iii. Single lane roundabout
      iv. Mini roundabout
      v. Signalized intersection
      vi. Approaches to freeway interchanges
         1. Single lane
         2. Multi-lane
      vii. Urban
      viii. Rural
   c. Along road
3. **Warning signs**  
   1. Determine sight distance  
   2. Advance placement chart  
   ii. Lane designation changes (i.e. lane reductions, divided highway, etc.)  
   iii. Confirmatory signs (i.e. route markers, speed limits)  
   iv. Reference Location signs

3. **MnDOT Design Plan**  
   a. **Roadway**  
      i. Road orientation  
      ii. Checklist  
      iii. Place signs with correct symbols and sign number  
      iv. Notes  
   b. **Charts and associated notes**  
      i. Signs, Markers and Delineators  
      ii. Sign panels  
   c. **Panel layouts**  
      i. Panels  
      ii. Notes  
   d. **Standard plans & details**  
      i. Which to include  
      ii. How to read/understand them  
   e. **SEQ**  
   f. **Title sheet requirements (standalone and subset of larger of project)**  
   g. **Order of sheets**

4. **Special Provisions**  
   a. **Overview**  
   b. **Special items**

5. **Engineering judgement**

6. **Coordination with other units**  
   a. **Signals**  
      i. Signing in signal plan - overview  
   b. **Pavement markings**  
   c. **Work Zones**  
   d. **ADA considerations**  
   e. **Final Design**

**Sign Design for Expressway and Complex Intersections**

1. **Brief overview of general signing guidelines**
2. **Signing layout**  
   a. **Reference TEM layouts**  
   b. **Start at an intersection and determine signs required prior to and after. Also along side streets.**  
      i. **Un-signalized intersection**  
      ii. **Signalized intersection**  
      iii. **RCI**
iv. Multilane Roundabout
v. DDI
vi. Interchanges
vii. Approaches to interchanges
   1. Multi-lane
viii. Urban
ix. Rural
c. Along road
   i. Curves
   ii. Confirmatory signs

3. MnDOT Design Plan
   a. Roadway
      i. Road orientation
      ii. Checklist
      iii. Place signs with correct symbols and sign number
   iv. Notes
   b. Charts and associated notes
      i. Signs, Markers and Delineators
      ii. Sign panels
      iii. Extruded Panels and Overlays
      iv. Structural Steel Quantities
   c. Panel layouts
      i. Panels
      ii. Notes
   d. Structure Elevation
      i. I-beam
      ii. monotube
   e. Standard plans & details
      i. Which to include
      ii. How to read/understand them
   f. SEQ
   g. Title sheet requirements
   h. Order of sheets

   a. Overview
   b. Special Items

5. Engineering judgement

6. Coordination with other units
   a. Signals
      i. Signing in signal plan - overview
   b. Pavement markings
   c. Work Zones
   d. ADA considerations
   e. Final Design
f. Pre-Design

g. Bridge

h. Foundations

**Sign Design for Freeways**

1. Brief overview of general signing guidelines

2. Signing layout
   a. Reference TEM layouts
   b. Start at an interchange and determine signs required prior to and after. Also along the ramps.
      i. Interchanges
         1. One exit per interchange
         2. Multi exits per interchange
      ii. Arrow per lane signs
   c. Along road
      i. Curves
      ii. Confirmatory signs
   d. EZ-PASS
   e. DMS considerations

3. MnDOT Design Plan
   a. Roadway
      i. Road orientation
      ii. Checklist
      iii. Place signs with correct symbols and sign number
      iv. Notes
   b. Charts and associated notes
      i. Signs, Markers and Delineators
      ii. Sign panels
      iii. Extruded Panels and Overlays
      iv. Structural Steel Quantities
   c. Panel layouts
      i. Panels
      ii. Notes
   d. Structure Elevation
      i. OSS
   e. Standard plans & details
      i. Which to include
      ii. How to read/understand them
   f. SEQ
   g. Title sheet requirements
   h. Order of sheets

   a. Overview
   b. Special Items
5. Engineering judgement
6. Coordination with other units
   a. Pavement markings
   b. Work Zones
   c. ADA considerations
   d. Final Design
   e. Pre-Design
   f. RTMC
      i. DMS
      ii. MnPASS readers
   g. Bridge
   h. Foundations