Work Type Definition and Submittal Requirements
Work Type: Subsurface Utility Engineering (SUE)

MUST be qualified under Minnesota Department of Transportation Prequalification Program - Work Type 15.1 Subsurface Utility Engineering

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

II. Description

Subsurface Utility Engineering (SUE) is the engineering process that accurately and comprehensively identifies, characterizes, and maps underground utility facilities needed for highway plans. Its major activities include designating, locating, and data management. These activities, when combined with traditional record research, coordination with utility owners, and site surveys, provide high quality utility information for use during project development and design.

A. Project coordination:

1. Work closely with Hennepin County to facilitate the orderly progress and timely completion of the project;
2. Attend an initial meeting and an onsite inspection to ensure familiarity with existing conditions and project requirements;
3. Develop a work plan that includes a description of the tasks to be performed and a proposed schedule of activities;
4. Meet with Hennepin County periodically to coordinate the work effort, discuss progress, and resolve problems;
5. Provide Hennepin County with copies of diaries and correspondence that document work-related communications between the consultant, utility owners, outside agencies, and/or private landowners;
6. Obtain all necessary permits and rights of entry from Hennepin County local jurisdictions, and/or private landowners;
7. Provide all maintenance and traffic control to perform the work. Traffic control devices are furnished and installed according to the current Field Manual for Temporary Traffic Control Zone Layouts (MN MUTCD);
8. Provide all necessary equipment, supplies, and support personnel, including surveying capability; and
9. Advise Hennepin County of utility risks and recommend an appropriate quality level of utility data for a given project area at the appropriate time within the appropriate project planning and design process. Hennepin County will then specify the desired quality level of utility data to the Consultant.

B. Designating:

1. Designate, record, and mark the appropriate horizontal location of existing underground utilities and their major laterals to existing buildings (quality level B described in the publication *ASCE Standard CI/ASCE 38-02*);
2. Separately submit all quality level B utility designating data to Hennepin County in digital format compatible with Hennepin County's CADD system; and

C. Locating:

1. Review plans and recommend areas to Hennepin County that require locating test hole sites within the project limits;
2. Recommend changes to Hennepin County's location plan based on SUE best practices and obtain utility company records as required;
3. Obtain all necessary permits and rights of entry from Hennepin County, local jurisdictions, and/or private landowners;
4. Neatly cut and remove the existing pavement or surface, with a maximum cut area of 225 square inches unless unusual circumstances exist;
5. Excavate test holes to expose the utility in a manner that insures the safety of excavation and prevents any damage to the utility;
6. Comply with all applicable utility damage prevention laws and coordinate with the utility inspectors as required;
7. Investigate, evaluate, measure, and record all utility data ascertainable from each test hole site;
8. Be responsible for any damage to the utility during excavation;
9. Stop work and notify appropriate agencies in the event of utility damage;
10. Backfill the excavation with the appropriate material around the utility structure and compact, in lifts, with appropriate devices;
11. Permanently restore the pavement or any other area within the limits of the original cut at the time of backfill to equal or better condition than it was before excavation;
12. Furnish, install and color code a permanent above-the-ground marker directly above the centerline of the structure and record the elevation of the marker;
13. Completely clean up the work site to equal or better condition than it was before excavation;
14. Tie all vertical elevations to a minimum of two checked benchmarks;
15. Return utility "locating" information (quality level A described in the publication *ASCE Standard CI/ASCE 38-02*) to Hennepin County in a digital format compatible with Hennepin County's CADD system that includes the following information:
    a. Elevation of the top and/or bottom of the utility tied to datum of
        i. the furnished plan;
    b. Elevation of the existing grade over the utility at the test hole;
    c. Horizontal location referenced to the project coordinate datum after performing all required survey work;

d. Outside diameter of the pipe or width of the duct banks and configuration on the non-encased multi-conduit systems;
e. Utility structure material compositions and conditions;
f. Pavement thickness and type, where applicable;
g. Identification of benchmarks used to determine elevations;
h. Elevation with an accuracy of +/- 0.05 feet; and

D. Data Management:

1. Assemble and present designating and locating information in a format compatible with Hennepin County's CADD standards;
2. Obtain and record field information in field books and draft onto plan sheets in electronic format using the current MicroStation and INROADS™ that Hennepin County uses under the supervision of a Minnesota Licensed Professional Engineer.

E. Levels of Work

The SUE provider must be able to complete the following levels of subsurface utility engineering based on the ASCE Standard CI/ASCE 38-02:

1. **Level B** involves the use of surface geophysical techniques to determine the existence and horizontal position of underground utilities;

2. **Level A** involves the use of nondestructive digging equipment at critical points to determine the precise horizontal and vertical position of underground utilities, as well as the type, size, condition, material, and other characteristics.

III. Standards and Specifications

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

A. *ASCE Standard CI/ASCE 38-02.*

IV. Provided By Hennepin County

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

A. Highway information showing the project limits, alignment, profile, benchmark data, drainage, coordinate data, CADD files, and any other applicable information;
B. A preliminary list of utilities or agency contact persons within the project limits;
C. Any quality level D and C information that others have previously acquired;
D. Input and approval of all test hole locations; and
E. A letter of introduction.

V. Provided by Consultant

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

A. Complete and accurate set(s) of electronic location information plans for all utilities within the specified area. Outputs may include some or all of the following:
   1. Utility location plans, produced using Hennepin County's CADD standards
   2. Electronic reports and location (database) information; and
   3. Test hole information on a certification form.

B. The Deliverables must meet the form and content requirements listed for SUE based on ASCE Standard CI/ASCE 38-02