

EXHIBIT A

SCOPE OF SERVICES FOR SUBSURFACE UTILITY ENGINEERING (SUE) Area Class 5.08

The SUE CONSULTANT shall employ qualified, competent, and experienced personnel to provide the services set forth herein. Such services shall be commensurate with both the prevalent methodologies used by SUE CONSULTANTS practicing within subject area of work and with the magnitude and intricacy of the work under consideration. The SUE CONSULTANT shall perform engineering services which will result in accurately identifying the quality of subsurface utility information needed for highway plans, and for acquiring and managing that level of information during the development of a highway project. These services should conform to standards and guidelines as described in FHWA and ASCE Subsurface Utility Engineering publications. The final work shall be completed such that all known utilities are graphically depicted in both a digital and hard copy / plan sheet format. These services will be accomplished fully by the SUE CONSULTANT so that it will be unnecessary for the DEPARTMENT to supplement any of them with its own personnel, except as noted hereinafter. The DEPARTMENT may, however, review the work from time to time to verify accuracy and evaluate the performance of the firm. The following items are not intended to be comprehensive or exclusive; they are merely set forth as a general outline of the work that is expected.

1.1 General Provisions for Subsurface Utility Engineering (SUE)

For all work performed under this agreement, the SUE CONSULTANT shall -

1. Not begin work until the DEPARTMENT or Prime Consultant has issued a written Notice to Proceed (NTP) (via e-mail, mail or facsimile).
2. As soon as the project contract has been authorized, coordinate a SUE Kick-Off meeting with the State Subsurface Utility Engineer and Subsurface Utility Review Engineer(s), the District Utilities Engineer, the DEPARTMENT'S Project Manager, and the Prime Consultant, if applicable, to develop a detailed work plan, receive project information gathered by the DEPARTMENT, and finalize the delivery schedule.
3. Obtain all necessary permits from city, county, municipality, railroad or other entity to allow the SUE CONSULTANT to work on existing streets, roads, and private property for the purpose of marking, measuring, and recording the location of existing underground utilities.
4. Coordinate with utility companies and the appropriate governmental jurisdictions in researching the location(s) of existing utilities. Secure all "as built" plans, plats, and other necessary data as supplied by the utility companies. While obtaining the information from the utility companies or governmental jurisdictions; the SUE CONSULTANT shall ascertain the following information to include but not be limited to the age, the size, the material type, the general condition of the utility and the approximate cost to relocate.

5. Comply with any and all Utilities Protection Center (UPC) of Georgia and State Law requirements for notification prior to excavation.
6. Provide all traffic control to perform the work. All traffic control shall be performed in accordance with the current edition of the Manual on Uniform Traffic Control Devices (MUTCD) and any subsequent amendments thereto.

The SUE CONSULTANT shall notify the Area Engineer in writing a minimum of three (3) calendar days in advance of any traffic interruptions or lane closures prior to initiating any field surveys or test holes. If the work involves interstate traffic control, a written traffic control plan shall also be submitted a minimum of seven (7) calendar days in advance. At the discretion of the Area Engineer, a written traffic control plan may be required for work other than interstate traffic control.

The SUE CONSULTANT shall be responsible for furnishing, installing, maintaining, and removing necessary traffic signs, barricades, lights, signals, cones, pavement markings and other traffic control devices and shall include flagging and other means for guidance and protection of vehicular and pedestrian traffic through the Work Zone.

Due to the amount of traffic on certain highways, the SUE CONSULTANT shall not perform work that impedes traffic between the hours of 6:00 a.m. and 9:00 a.m. and from 4:00 p.m. to 7:00 p.m. without the permission of the Area Engineer. In addition, the SUE CONSULTANT shall not work on weekends, national holidays, state holidays, or the days preceding said holidays without the permission of the Area Engineer.

5. Provide all necessary equipment and support personnel, including surveying capability, to secure the utility data.
6. All survey work will be the responsibility of the SUE CONSULTANT and, unless otherwise indicated in this document, shall be performed to the same accuracies and precision as is required for the topographic data included in the project's database.
7. Provide all items specified on the DEPARTMENT'S SUE Deliverables Checklist as provided by or as directed by the DEPARTMENT.
8. All completed services shall be certified by an official of the SUE CONSULTANT firm on the plans or as directed by the DEPARTMENT. The SUE CONSULTANT shall be responsible for the accuracy of all information presented to the DEPARTMENT.
9. Provide complete cleanup of work site with regards to any work performed by the SUE CONSULTANT.
10. Close out permits as required.
11. Translate utility data to the appropriate CADD format (See 1.8 Data Management) for direct incorporation of SUE CONSULTANT'S information into the DEPARTMENT'S or design engineer's CADD file. Utility information shall be clearly delineated as to its "Quality Level" via line codes/symbols and labeling as set forth in the DEPARTMENT's Electronic Utility File Guidelines and

Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data, published by the ASCE, current edition.

The DEPARTMENT shall –

1. Provide a Survey Control Pack, when available, for the purposes of tying the horizontal and vertical position of the designated utilities to the State Plane Coordinate System and the project limits, including side roads.
2. Provide topographic mapping files, when available, in Microstation DGN format.
3. Provide the location of the DEPARTMENT'S current Electronic Utility File Guidelines for the SUE CONSULTANT'S use in preparing files in a format compatible with the DEPARTMENT'S current CADD systems (Microstation and/or CAiCE [as applicable]) as the project requirements stipulate.
4. Provide the DEPARTMENT'S current SUE Deliverables Checklist with the appropriate items checked [as applicable].

1.2 Quality Assurance Program

1. Quality Reviews –

The SUE CONSULTANT shall conduct quality reviews to make certain the organization is in compliance with the requirements cited in the Scope of Services. Quality Reviews shall be conducted to evaluate the adequacy of materials, documentation, processes, procedures, training, guidance, and staffing included in the execution of this contract. Quality Reviews shall also be developed and performed to assure compliance with specific Quality Assurance provisions contained in this contract.

2. Quality Assurance (QA) Plan –

Within 30 days after the authorization of a PROJECT CONTRACT, the SUE CONSULTANT shall furnish a Quality Assurance Plan to the DEPARTMENT. The Quality Assurance Plan shall detail the procedures, evaluation criteria, and instruction to the organization to assure conformance with the contract. Unless specifically waived, no payment shall be made until the SUE CONSULTANT'S Quality Assurance Plan is approved by the DEPARTMENT.

Significant changes to work requirements may require the SUE CONSULTANT to revise the Quality Assurance Plan. It shall be the responsibility of the SUE CONSULTANT to keep the plan current with the work requirements. The Plan shall include, but not be limited to, the following areas:

- a. Organization – A description is required of the SUE CONSULTANT'S Quality Control Organization and its functional relationship to the part of the organization performing the work under the contract. The authority, autonomy and responsibilities of the QA organization shall be detailed as well as the names and qualifications of personnel in the quality control organization.

- b. Quality Reviews – The SUE CONSULTANT’S QA methods used to monitor and assure compliance of the organization with the contract requirements for services and products shall be detailed.
 - c. Quality Records – The types of records which will be generated and maintained by the SUE CONSULTANT during the execution of the QA program shall be outlined.
 - d. Control of Subcontractors and Vendors – The methods used by the SUE CONSULTANT to control the quality of the subcontractors and vendors shall be detailed.
 - e. Quality Assurance Certification – A Registered Professional of the SUE CONSULTANT firm will be required to sign and seal a certification that will accompany each submittal stating that the plans, reports have been prepared and checked in accordance with the specifications found in this Exhibit.
3. Quality Records –
- The SUE CONSULTANT shall maintain adequate records of the quality assurance actions performed by the organization, (including subcontractors and vendors), in providing services and products under this Contract. These records shall be available to the DEPARTMENT, upon request, during the contract term. All records are subject to audit review. The QA program should have a second level of review; a “peer review”. The peer review can be conducted by several methods.
- a. The review could be accomplished internally by the SUE CONSULTANT’S organization
- OR-
- b. At no additional expense to the DEPARTMENT, by the use of another CONSULTANT firm.

1.3 Utility Records Research (Quality Level "D")

For the purpose of this agreement, utilities found via “records” or “records research” shall mean to indicate the presence and approximate horizontal location of existing utilities from information derived through existing records or oral recollections. This work shall also include an in-field visual site inspection to verify credibility of such records. Records research is typically applied when it is necessary for the designer to make broad decisions about route selection, purchasing right of way, or producing a higher level of data. This level of information is typically recommended to be requested during a project’s concept development. This work is considered Quality Level D.

For projects where Quality Level "D" information is deemed to be most appropriate, the following shall apply:

1. The SUE CONSULTANT shall conduct utility records research to assist in identifying utility owners that may have facilities on or be impacted by the project. Sources of information may include but are not limited to (project and scope dependent):
 - Utility section of the state DOT or other public agency
 - One-call notification center
 - Public Service Commission or similar organization
 - County Clerk’s office

- Land owner
 - Internet or computer database search
 - Visual site inspection
 - Utility owners
- 2 . The SUE CONSULTANT shall collect applicable utility owner records. Applicable records may include but are not limited to:
- Previous construction plans in area
 - Conduit maps
 - Direct-buried cable records
 - Distribution maps
 - Transmission maps
 - Service record cards
 - “As-builts” and Record Drawings
 - Field notes
 - County, City, Utility owner or other GIS databases
 - Circuit diagrams
 - Oral histories
- 3 . The SUE CONSULTANT shall Review records for:
- Indications of additional available records
 - Duplicate information and credibility of such duplicate information
 - Need for clarifications by utility owners
- 4 . The SUE CONSULTANT shall develop utility composite drawings or equivalent; make professional judgments regarding validity and location of topographic features on records versus current topographic features (when available) and conflicting references of utilities. The SUE CONSULTANT shall also indicate quality levels, utility type and/or ownership, date of depiction, accuracy of depicted appurtenances (Quality Level C versus Quality Level D), end points of any utility data, active/abandoned/out-of-service status, size, condition, number of jointly-buried cables, and encasement (including length of encasement if available).
- 5 . Quality Level "D" information shall be returned to the DEPARTMENT in a digital and reproducible certified plan sheet format (see 1.8 Data Management).

1.4 Utility Mapping (Quality Level "C")

For the purpose of this agreement, “map” or “mapping” means to indicate the presence and approximate horizontal location of underground utilities by surveying visible above-ground utility features, such as manholes, valve boxes, posts, etc., and by using professional judgment, correlating this information with existing utility records (Quality Level D). This work is considered Quality Level C.

For projects where Quality Level "C" information is deemed to be most appropriate, the following shall apply:

- 1 . The SUE CONSULTANT shall determine and provide the horizontal location of accessible surface features of utility facilities.
- 2 . The SUE CONSULTANT shall show the approximate horizontal position of the utilities between the surface features.
- 3 . The SUE CONSULTANT shall determine and provide vertical locations of the flow lines of all pipes within accessible structures.
- 4 . Mapping of existing Quality Level "C" information shall be returned to the DEPARTMENT in a digital and reproducible certified plan sheet format (see 1.8 Data Management).

1.5 Utility Designating (Quality Level “B”)

For the purpose of this agreement, “designate” means to indicate the presence and approximate horizontal location of underground utilities using geophysical prospecting techniques, including electromagnetic, magnetic, sonic, or other energy fields. The data obtained from these methods should be reproducible by surface geophysics at any point of their depiction. This work is considered quality level B.

The SUE CONSULTANT shall –

1. Designate, record, and mark the approximate horizontal location of existing underground utilities. All survey work required including the reestablishment and retracing of the survey centerline or baseline, will be the responsibility of the SUE CONSULTANT. Utility designating marks shall be surveyed to the same accuracies and precision as is required for the topographic data included in the project’s database. Utility designations shall be returned to the DEPARTMENT in digital and reproducible certified plan sheet format (see 1.8 Data Management).

1.6 Utility Locating (Quality Level “A”)

As the design progresses and when necessary, the SUE CONSULTANT may be required to locate utilities that have a high potential for conflicts with the proposed improvements. For the purpose of this agreement, “locate” means to obtain precise horizontal and vertical position of the utility line by excavating a test hole. The test holes shall be done using vacuum excavation or comparable nondestructive equipment in a manner as to cause no damage to the utility line. After excavating a test hole, the SUE CONSULTANT shall perform a field survey to determine the exact location and position of the utility line. This work is considered quality level A.

The SUE CONSULTANT shall –

1. Develop a test hole Location Plan based upon the guidelines set forth in the document: *Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data*, published by the ASCE, current edition, and obtain utility company records as required.
2. Neatly cut and remove existing pavement with the cut area not to exceed 144 square inches. Excavate using a method enabling vertical and horizontal exploration through this cut.

3. Excavate test holes in such a manner as to prevent any damage to wrappings, coatings, or other protective coverings, such as vacuum excavation or hand digging.
4. Be responsible for any damage to the utility during excavation as required by state laws.
5. Backfill with approved material around utility structure.
6. Furnish, install, and color code a permanent above ground marker (i.e. P.K. nail, peg, steel pin, or hub) directly above the centerline of the structure and record the elevation of the marker.
7. Provide a permanent restoration of the pavement within the limits of the original cut at the time of backfill. If the test hole is excavated in an area other than the roadway pavement, the area disturbed shall be restored to equal or better than the condition before excavation.
8. Utility locations shall be returned to the DEPARTMENT in digital and reproducible certified plan sheet format (see 1.8 Data Management). At a minimum, the SUE CONSULTANT shall provide the following test hole information to the DEPARTMENT:
 - Elevation of top and/or bottom of utility tied to datum of the furnished plan.
 - Elevation of existing grade over utility test hole.
 - Horizontal location referenced to project coordinate datum. The SUE CONSULTANT shall perform all required survey work.
 - Outside diameter of pipe or width of duct banks and configuration of non-encased multi-conduit systems.
 - Utility structure material compositions and condition.
 - Identification of benchmarks used to determine elevations.
 - Elevations shall have an accuracy of +/- 0.05-ft and certified accurate to the benchmarks used to determine elevations.
 - Horizontal data accurate to within +/- 0.2 ft or applicable survey standards, which ever is more precise.
9. Maintain the quality of the permanent pavement restoration for 1 year after installation.

1.7 Other Facilities

Aerial

1. Coordinate with utility companies and the appropriate governmental jurisdictions in researching the location(s) of existing aerial utilities. Secure all "as built" plans, plats, and other necessary data as supplied by the utility companies. While obtaining the information from the utility companies or governmental jurisdictions; the SUE CONSULTANT shall ascertain the following information to include but not be limited to the age, pole size, pole height, pole number, the material type, the general condition of the utility and the approximate cost to relocate.
2. The SUE CONSULTANT shall record the horizontal location of existing poles for aerial utility facilities. Horizontal surveying of existing poles for overhead utility facilities shall be surveyed to the same accuracies and precision as is required for the topographic data included in the project's database.

3. The SUE CONSULTANT shall determine the aerial utility owners and correctly show the horizontal position of the utilities between the poles, including major service drops (substations or industrial facilities).
4. Aerial utilities along with pole locations and appurtenances shall be returned to the DEPARTMENT in digital and reproducible certified plan sheet format as indicated by the DEPARTMENT'S Liaison Engineer (see 1.8 Data Management).

Gravity Flow Sanitary Sewer Mapping

For the purpose of this agreement, "Sanitary Sewer Mapping" means to indicate the presence and approximate horizontal and vertical location of underground utilities by surveying visible above-ground and accessible subsurface utility features, such as manholes, pipe inverts, etc. and by using professional judgment, correlating this information with existing utility records. This work is considered Quality Level C.

1. The SUE CONSULTANT shall determine and provide the horizontal and vertical location of accessible surface features of gravity flow sanitary utility facilities.
2. The SUE CONSULTANT shall determine and provide vertical locations of the flow lines of all pipes within accessible structures. When possible, the SUE CONSULTANT shall determine the material of the pipes located in these structures. This data will be surveyed to the same accuracies and precision as is required for the topographic data included in the project's database.
3. The SUE CONSULTANT shall show the approximate horizontal position of the utilities between the surface features.
4. Mapping of existing gravity flow sanitary sewers shall be returned to the DEPARTMENT in digital and reproducible certified plan sheet format (see 1.8 Data Management).

1.8 Data Management

Data management involves assembling and presenting information gathered in a format compatible with the DEPARTMENT'S current CADD systems (Microstation and CAiCE) for use by the DEPARTMENT'S staff or the DEPARTMENT'S designated SUE CONSULTANT. This information will include but not be limited to designating, locating, aerial utilities, gravity flow sanitary utilities, or other facilities where horizontal location is determined.

Microstation and CAiCE files shall be developed in accordance with the DEPARTMENT'S Electronic Utility File Guidelines (unless otherwise indicated by the DEPARTMENT'S Liaison Engineer. Location of these guidelines can be obtained from the DEPARTMENT'S Liaison Engineer.

The SUE CONSULTANT shall submit completed electronic files and reproducible certified plan sheets to the appropriate District Utilities Engineer and State Subsurface Utility Engineer for review and comments. The SUE CONSULTANT will make changes or adjustments to the data as necessary. Work for subsurface utility engineering and location of aerial facilities will not be considered complete until the SUE CONSULTANT has

responded to the comments from this review to the satisfaction of the District Utilities Engineer and State Subsurface Utilities Engineer.

1.9 Utility Impact Analysis (UIA), Design Analysis and Recommendations

When requested, after the SUE CONSULTANT has performed all necessary utility designating, locating, and data management services, the SUE CONSULTANT shall determine to what extent the proposed roadway improvements will impact the existing utilities. The SUE CONSULTANT shall prepare a report outlining avoidance alternates, required adjustments / relocations, and cost estimates to perform those relocations. In some instances, the SUE CONSULTANT may be required to prepare utility relocation design plans for inclusion in the DEPARTMENT'S construction plans.

2.0 Relocation Design

When requested, the SUE CONSULTANT shall prepare utility relocation design plans for inclusion in the DEPARTMENT'S construction plans. The SUE CONSULTANT shall design the required utility relocations / adjustments for water and/or sanitary sewer within the designated project limits. This work shall be coordinated with the roadway design, utility owners, and other SUE CONSULTANTS / owners who are designing the relocations / adjustments for other utilities. Design deliverables will typically be:

- Reproducible Plans
- CADD files with existing, proposed, and temporary utilities
- Summary of Quantity sheets showing water and sewer quantities
- Special Provisions and construction details
- Utility relocation cost estimates

2.1 Training

The SUE CONSULTANT shall participate in and conduct portions of training sessions for DEPARTMENT utility personnel. The sessions will be at a location provided by the DEPARTMENT. The topics of the training session will typically be:

- SUE invoicing and billing
- SUE data management
- SUE best uses and practices
- SUE equipment demonstrations

When requested by the DEPARTMENT, the SUE CONSULTANT shall conduct training on water and sanitary sewer construction inspection for DEPARTMENT construction personnel.

2.2 Certification

For the purpose of this agreement, "Certification" or "certified" means to professionally seal the completed work product. All completed services shall be certified by a responsible registered professional in the State of Georgia, in the full employ of the SUE CONSULTANT firm on the plans or as directed by the DEPARTMENT. The SUE CONSULTANT shall be responsible for the accuracy of all information presented to the DEPARTMENT.