Draft Scope of Work

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ACCUMARK
Subsurface Utility Services
Proud • Professional • Precise

Scope of Work

For this project perform utility designating and test hole excavation in compliance with Quality Level B and A, respectively, as defined in CI/ASCE 38-02, *Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data,* hereinafter referred to as Standard 38-02. Known about non-locatable utilities shall be added to the designating mapping at Quality Level "C" or "D", as deemed appropriate.

Accumark will also perform 3-D Manhole Laser Scanning.

We will have a Utility Coordination meeting on site with all owners, Accumark should attend this meeting.

Standard Procedures – Designating

Accumark personnel will contact the client, facility and utility owning agencies, as deemed appropriate, in order to request and acquire records of the existing underground facilities. Utility record information will be used as an aid in the identification of the number, identity, size and material of utilities located in the field. Records will not be used as a substitute for actual geophysical location unless the system cannot be verified electronically using industry standard techniques for this level of investigation.

some of the communication duct banks are owned by Verizon, but have multiple users leasing conduits, will need to know all users in duct bank. Also many of these users enter and exit the duct banks at random locations, these will need to be identified/located.

Upon receiving notice to proceed, contact will be made with the client and/or their consultant, to acquire a digital copy of the base mapping for the project. Those drawings will be used in preparing designating field draft sheets and later for a base mapping background reference used in the QA/QC process.

Designators will draft field sheets that show the location, trend and configuration of utilities detected. Field sheets will show all scoped underground utility surface features and lines, and will be prepared with color to differentiate the utility systems. Utilities will be annotated with size and material where available. Project specific field notes will be shown as deemed appropriate.

The collection of designated utility markings (paint) will be collected by using conventional survey methods and equipment. If project requirements and site conditions allow, GPS equipment may be used at Accumark's discretion. Prior to Accumark survey personnel arriving onsite to locate the designated utility paint, the Client must provide survey control to the Accumark Project Manager for review and processing.

The density of the individual survey control points provided for Accumark's use should be dense enough that conventional surveying methods can be used without extra time and effort being spent to traverse between the existing control points. Should the distances between the existing survey control points provided by the Client or Client's survey consultant be too great, Accumark reserves the right to review and revise the fee for the utility paint locations.

Using the project's survey control, the utility paint will be surveyed, processed and plotted for internal review. If available, the Client should provide Accumark with a digital copy of the project's base mapping for use in the review process. A final field review will also be performed for this project. This quality assurance – quality control function (QA/ QC) involves a Senior Field Project Manager taking the cadded utility locations (review plots) to the project site. If project mapping has been made available, the review plots are prepared by plotting the designated utilities over the existing base mapping which has been faded for clarity. At the site (the final review) the Senior Field Project Manager will check the work of the designators, surveyors and cad personnel by comparing the plotted utilities against the record information, the field draft sheets and the utility paint as marked in the field.

Standard Procedures – Test Holes

Test holes will be performed by air vacuum excavation or other non-destructive techniques at locations yet to be determined. One call notification and excavation permits will be made prior to test hole excavation.

The test holes will be staked at the site by the client or client must provide a digital copy of project's base mapping; in-hand a minimum of 2 to 3 days before field operations are scheduled to begin so that swing ties can be pulled. The proposed test hole locations can be staked by Accumark personnel for an additional fee. . Test hole openings will be a minimum 8" x 8" and typically not larger than 12" x 12". Excavation will proceed to expose the utility in a careful manner with the utmost concern for the safety of personnel, the public and surrounding

property. A field test hole form will be completed for each excavation and will contain at a minimum parameters required by the Standard 38-02, which include: depth to the utility, outside diameter, duct systems such as electrical and telecommunication, top, bottom and width will be documented, height of conduits or encasement, utility material, pavement type/ thickness and general soil type.

A permanent marker will be placed over a reference point on the utility flush with grade. Typically this reference point is the centerline of pipes or the edge of concrete structures. A minimum of three (3) swing ties will be taken to the permanent marker. The depth to the reference point on the top of the utility will also be measured plumb to the permanent marker.

The excavation will be backfilled utilizing excavated materials. Pavement restoration will be made with a high epoxy content bituminous cold patch and will be guaranteed for a minimum of one (1) year. It is not anticipated that hot patch will be required for this work.

Accumark does not recommend test holes on gravity sewers. Accumark recommends that in order to determine accurately a possible conflict with an existing gravity sewer line that an as-built survey be conducted of the upstream and downstream sanitary manholes for that particular pipe. From the data obtained from the as-built survey (rim elev., inverts, pipe size and pipe material), an accurate "flowline elevation" can be calculated for any potential crossing/conflict of that sewer pipe. A test hole would only give you a top of utility elevation, if that could even be determined due to obstructions found in the test hole.

MOT operations may be required depending on test hole locations.

Any test hole(s) requested on gravity sewers will be billed on an hourly basis.

Should the Client wish that the test holes be survey located, the test hole permanent markers will be field located using conventional survey equipment. If project requirements and site conditions allow, GPS equipment may be used at Accumark's discretion. Prior to Accumark survey personnel arriving onsite to locate the test holes, the Client must provide survey control to the Accumark Project Manager for review and processing. Using the project's survey control, the horizontal and vertical coordinates will be determined for each test location.

The density of the individual survey control points provided for Accumark's use should be dense enough that conventional surveying methods can be used without extra time and effort being spent to traverse between the existing control points. Should the distances between the

existing survey control points provided by the Client or Client's survey consultant be too great, Accumark reserves the right to review and revise the fee for the test hole locations.

CADD Procedures

Accumark will provide the client a digital copy of the utility mapping in AutoCAD, Version 2013. Accumark will use its own company utility cad standards, unless the cad standards of the client or their consultant are provided and accepted at the time of this proposal preparation. The utility mapping can also be provided in a Microstation V8i digital file should the project requirements dictate.

Project Limitations

This service will be provided with due diligence and in a manner consistent with standards of the subsurface utility mapping industry. Every reasonable effort will be made to locate all systems of interest whether indicated on records available to us or not. However, we do not guarantee that all existing utility systems can or will be detected. It may not be possible to detect utilities without prior knowledge, such as systems that are not depicted on records made available to us. Further, this service is not intended to detect non-utility structures such as, but not limited to: foundations, irrigation systems, septic systems, wells, tunnels, concrete or metal structures, or the true size and limits of subsurface utility vaults and manholes. Use of this service does not relieve interested parties from their responsibility to make required notifications prior to excavation.

The mapping services will reflect interpretation of electronic data collaborated with record and visual indications. Professional judgment will be used to reflect the underground utilities with the intended utmost accuracy and comprehensiveness. The results may be affected by numerous site conditions, including but not limited to utility materials, joint types, fittings, density of underground utilities, interference with above ground conductors and soil characteristics. There is no guarantee that all facilities can be found and shown.

Every reasonable attempt will be made to find, locate and map all active and abandoned underground utilities at Quality Level "B" of the Standard 38-02. All non-locatable utilities that are shown on record or learned about from verbal recollections or otherwise will be shown at Quality Levels "C" or "D" of the Standard 38-02. In addition, an effort will be made to learn the existence of non-locatable and non-recorded utilities that we may become aware of due to the presence of site features or otherwise. Those findings will be noted and provided to the client. The intent of the service is to map all underground utilities, included in the scope, active

or abandoned if possible. Our work does not relieve the users of our drawings from contacting the one call protection office and we are typically not responsible for the damage of utilities caused by others due to the responsibilities borne on utility owning agencies and the one call system.

Public works does not own any vaults in the project area. Accumark will need to coordinate with respective utility owner to have manholes and vaults pumped. storm drains, manholes and sanitary manholes will not need to be scanned.

3D Manhole Scanning

City of Lynchburg Public Works shall be responsible for having all manholes pumped and free of water prior to Accumark's arrival on site.

Accumark will perform a 3D scan of existing manholes, to include interior dimensions of structures and facilities inside. Accumark will identify all utilities present, and include tag numbers when visible. Photos will be taken from the outside to help identify tag numbers. A real XZY location of the vault will be provided by performing an exterior scan to pickup points set in the field to be surveyed.

Limitations: Accumark is unable to obtain data thru water. Accumark cannot produce color photos. This scanning unit is not waterproof, therefore it cannot be utilized in any rain. The scanning unit is limited to go to depths 20'-30'.

in the previous phase we encountered several basements that extended under the sidewalks. Would it be possible to use the scanner on these? what is minimum opening required to insert the scanner?
Do you have equipment that could potentially locate these underground voids?