Using the latest technology and industry-leading techniques, the professionals at Cardno and T2ue, our subsidiary in Canada, investigate and map underground utility network locations, helping our clients to better manage projects and reduce associated risk.

Advantages of SUE

- Accuracy of information during planning phase
- Clearly define conflicts and plan for relocation- no surprises
- Reduce redesign costs
- Reduce project delays
- Improve safety
- Reduce risk

SUE Services

- Multi-channel Ground Penetrating Radar (MCGPR)
- Geophysical investigations
- 3D utility models (BIM)
- Concrete imaging
- CCTV sewer inspections
- Vacuum excavation

Utility Investigation = Information

SUE is an investigation of both below and above ground utilities resulting in a depiction of utilities’ locations and existence with varying levels of certainty.

The degree of certainty is categorized in four quality levels as defined in ASCE 38. A typical SUE investigation uses a variety of methods, including a review of existing records, survey, geophysics, direct observation, and when needed, utility exposure.

Cardno’s experienced team identifies the level of investigative effort based on the complexity of the site, the client’s tolerance for risk, and public safety. Our Utility Engineers optimize the return on investment for each SUE investigation.

Cardno’s typical deliverable is a combination of graphics and a Utility Report that identifies the utility quality levels achieved from the investigation.

Expertise Adds Value

Now a specialized discipline under Civil Engineering, guidelines for Subsurface Utility Engineering investigations have been developed by the American Society of Civil Engineers (ASCE).

Cardno professionals were involved in writing the original ASCE 38 Standards in 2002 and are part of the committee currently updating the standards to reflect new technology and best practices. Our years of experience means your project will receive the attention to detail that can make a difference.
Cardno is a global provider of integrated professional services which enrich the physical and social environment for the communities in which we live and work. Our team of multidisciplinary specialists around the world has more than 70 years’ experience in designing, developing and delivering sustainable projects and community advancement programs. Cardno is listed on the Australian Securities Exchange (ASX: CDD).

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**Subsurface Utility Engineering Quality Levels**

**Quality Level D** – Records Research-information where only records were able to be used.

**Quality Level C** – Visual utility or surface features to indicate subsurface alignment. This data is put in context with available records.

**Quality Level B** – Where surface geophysical methods successfully identify and depict the approximate position of subsurface utilities.

**Quality Level A** – Physically locating utilities using minimally intrusive excavating equipment to determine the accurate and precise horizontal and vertical position, type, size, condition, and other characteristics.

**Leading with technology**

A wide range of equipment is necessary to detect the variety of subsurface utilities that may be present. We use the most appropriate technology for the project to increase the accuracy of the data, including:

- Multi-channel GPR solutions solutions dedicated to utility locating and mapping.
- LiDAR, or Light Detection and Ranging, to generate precise three-dimensional information about underground utility chambers and structures.
- Geographic Information System (GIS), allows us to capture, manage and analyze utility data.
- BIM Utility Models allow us to show utilities in 3 dimensions.

**Safety**

We are committed to continually improving our safety processes and to providing for the safety of the project site, staff, and the public.

**Technologies include:**

- Pipe and cable locators
- CCTV
- Laser Scanning (LiDAR)
- Ground Penetrating Radar (GPR)
- Multichannel GPR (MCGPR)
- Magnetometers
- Elastic wave devices

**Technology used:**

- Vacuum excavation