Geophysical techniques are non-invasive technologies used to image subsurface conditions through measuring, analyzing, and interpreting physical properties.

Our skilled teams use advanced geophysics every day to assist clients with underground utilities. Cardno also possesses the tools and expertise to perform geophysical surveys looking for other subsurface anomalies and features. Whether it is behind walls, beneath floors, or buried in the earth, at Cardno, we are your leader in looking beneath the surface.

Our services support projects from land development, construction, and transportation to utility infrastructure, and structural foundational applications.

**Project applications include:**
- Environmental / Geotechnical
  - Archaeological/cultural
  - Bedrock/soil topography studies
  - Borehole geophysics
  - Fill/landfill delineations
- Infrastructure
  - Constructability explorations for buried foundations, utilities, rubble
  - Masonry wall investigations
  - Pavement evaluations for thickness/pavement section changes
  - Reinforcing steel/post-tensioned cable investigations for location and cover
  - Slab and wall thicknesses
  - Tunnel investigations
  - Voids and concrete flaws
- Infrastructure-specific
  - Impact-echo
  - Ultrasonic pulse velocity (UPV)
- Magnetometry
- Resistivity expertise
  - Electrical resistivity tomography (ERT)
  - Fall-of-potential
  - Schlumberger
  - Wenner
- Seismic expertise
  - Downhole/crosshole seismic
  - Multi-channel analysis of surface waves (MASW)
  - Parallel seismic
  - Refraction microtremor (ReMi)
  - Refraction (p- and s-wave)
  - Seismic reflection
  - Vibration monitoring

**Our services include:**
- Electromagnetic induction
  - Frequency domain
  - Time domain
- IBC seismic site classification and site-specific seismic assessments
- P- and s-wave measurements
- Plume mapping
- Rippability studies
- Underground storage tank (UST) investigations
- Vibration monitoring
- Voids/karts/weak zone studies
- Ground penetrating radar (GPR)
  - Air-launched horn antennas
  - High frequency antennas
  - Latest cutting-edge multi-channel GPR (MCGPR) technologies
- **Non-invasive techniques using advanced technology to provide subsurface information.**
**Assessment** - Choosing the best tool(s)
The proper selection and application of geophysical techniques can be complex. We can help determine whether geophysical techniques are right for your project along with the best method at any point along the project lifecycle to provide the optimal survey design to capture the right data.

- Pre-proposal
- Proposal
- Survey design

**Data Collection**
Our team of geophysicists have a deep understanding of the equipment and application of the methods, allowing for thorough, high quality data collection and processing.

- Pre-planning
- Complex site-and method-planning
- Integration with survey expertise

**Analysis** - Process, interpret & apply the data
Collected data must be processed to create the best outputs for analysis.

This can range from simple data maps to further post-processing to obtain 3D images. Our experts utilize a range of processing software and algorithms to ensure you get the right information from the data collected.

- Interpret data collected
- Concise and detailed reporting with visuals that clearly represent the data collected
- Collaborative review
- Provide actionable next steps and integrated services for successful outcome

**Additional Integrated Services**
Cardno offers a wide range of integrated environmental, infrastructure, scientific consulting, and field services at any stage of the project lifecycle. Our team is ready to provide the right expertise to resolve project challenges from more than 100 offices across the Americas.

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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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