

# Looking for something? We can help you find it.

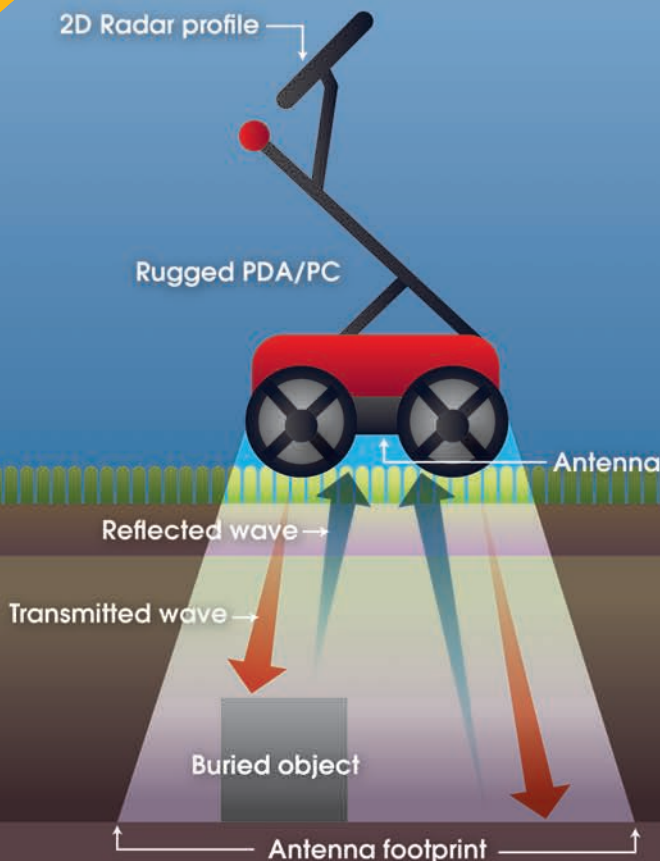
Ground Penetrating Radar (GPR)  
Infrastructure Management & Pavement Engineering





# What is GPR?

GPR operates similar in concept to aircraft radar but with the radar waves being directed into the ground or pavement structure to detect changes in subsurface materials. This technology can be used to identify material layer changes which can then be measured in terms of depth from the surface. Some examples of GPR applications we have performed include surveying the thickness of the asphalt and granular layers in a pavement structure, locating buried utilities and potential air voids in highway pavement structures and completing structural inspections for depth of rebar cover and voids. We have a variety of equipment including vehicle-mounted, cart-mounted, and hand-held GPR antenna units to suit your project's needs.



## How it works

A GPR antenna works by emitting pulses of microwave electromagnetic energy at a frequency determined by the type of antenna used (typically between 200 MHz to 2,000 MHz). The emitted pulses are reflected back to the antenna when there is a change in material dielectric permittivity below the surface. The reflections occur at the interface of various subsurface features which could include pipes, rocks, void spaces, and soil strata. The travel time of the pulses are measured and then imported into software which digitizes the reflections and allows the user to interpret the depth of the reflections (i.e. material interface).

*Configuration shown is cart-mounted/ground-coupled.*

# Applications

## Infrastructure & Utility Mapping

Create pavement profiles for parking lots, roads, and airport runways; detect utilities or subsurface voids.



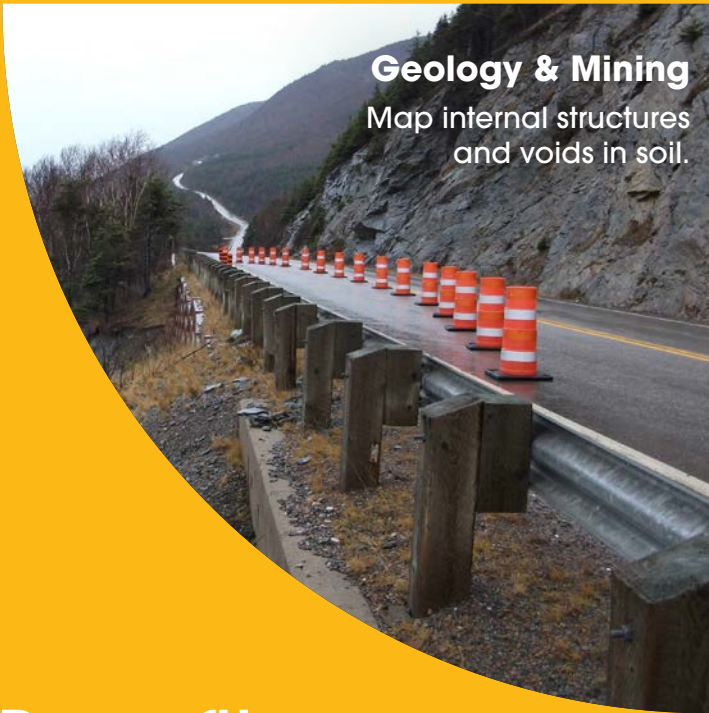
## Bridges

Perform condition assessments and concrete inspections on bridges and tunnels; determine depth of concrete covers and bridge decks; and detect voids and bridge deck delamination.



## Geology & Mining

Map internal structures and voids in soil.



## Archeology & Forensics

Map buried structures, foundations, burial sites, and chambers.



# Benefits



Safe



Non-destructive



Able to supplement traditional coring/boring methods



Cost-effective



Better identification of material variability and critical areas



More accurate pavement layer thicknesses for cost-effective recommendations

## Design with community in mind

We're active members of the communities we serve. That's why at Stantec, we always *design with community in mind*.

We collaborate across disciplines and industries to bring buildings, energy and resource, and infrastructure projects to life. Our work—professional consulting in planning, engineering, architecture, interior design, landscape architecture, surveying, environmental sciences, project management, and project economics—begins at the intersection of **community**, **creativity**, and **client relationships**.

Since 1954, our local strength, knowledge, and relationships, coupled with our world-class expertise, have allowed us to go anywhere to meet our clients' needs in more creative and personalized ways. With a long-term commitment to the people and places we serve, Stantec has the unique ability to connect to projects on a personal level and **advance the quality of life in communities** across the globe. Stantec trades on the TSX and the NYSE under the symbol STN.

