

Evaluating Re-Bar Spacing and Depth of Cover Using Ground Penetrating Radar

We offer a service to determine the location and spacing of reinforcing steel in structures using Ground Penetrating Radar (GPR). The system uses radio waves to provide the images. The benefits of this technology is that it is non-hazardous and provides results on-site. The instrument is moved along the surface of the structure in straight lines. An image is immediately produced on a video data logger connected to the instrument. A measuring wheel on the equipment provides a very accurate record of the distance traveled, enabling precise measurement of the location and spacing of any embedded steel. With proper calibration of the speed of travel of the radio waves through the structure the depth of cover and thickness of the structure can be determined. Depending on the configuration of the reinforcing steel it is usually possible to determine the location and presence of a second layer of steel. Many lines of data can be used to provide a 2 dimensional images of the structure at various depths.



GPR in use on masonry wall

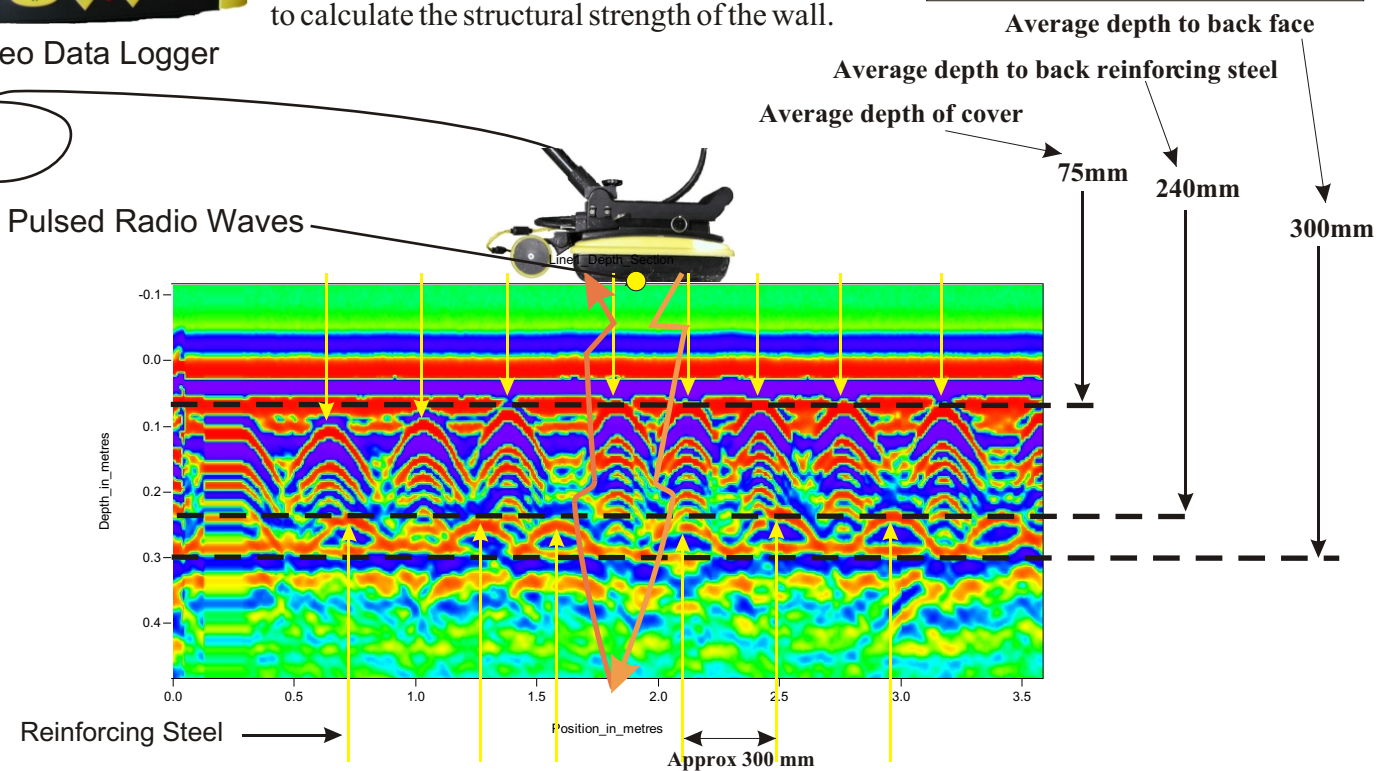


Video Data Logger

The illustration below shows a traverse across a parking garage wall where the steel configuration and depth of cover were required to calculate the structural strength of the wall.

Locates
Reinforcing Steel
Post-Tensioned Cables
Electrical Conduit

No Health Hazard
Service completed during normal hours



Scan through parking garage wall

Specialists in NDT and Computer Monitoring of Structures

For Further Information Contact

Company Profile

Tekron Services is a Canadian company providing specialized inspection and testing of construction materials. Incorporated in 1987, the company offers a wide range of inspection and non-destructive testing services to evaluate structures and construction materials. Since the formation of the company our goal has been to incorporate emerging technology into tools and techniques for the construction industry.

Data Sheets

To illustrate these technologies Tekron has produced a series of data information sheets and case studies. These data sheets are available on request and are posted on our web page from time to time.

Evaluation Techniques

Since 1987, our company has been involved in several notable investigations including earthquake damage, historical masonry and extensive water leakage, often requiring unusual field techniques to be used to evaluate the problems. Our methods often make use of advanced computerized systems including impact-echo technology which uses sound waves to evaluate defects deep within concrete structures, ground penetrating radar which uses electrical conductivity to detect dissimilarities and computer monitoring techniques using miniature data loggers or cellular connections to evaluate the dynamics acting upon a structure. A list of some of the techniques used and types of investigations completed are given below.

NDT Techniques

Impact-echo

- Thickness
- Delamination
- Honeycombing
- Voids

Ground Penetrating Radar

- Re-bar & post-tension cable detection
- Voids & honeycomb in concrete
- Voids below concrete
- Voids in masonry

Corrosion mapping

Boroscope

Moisture and humidity detection

Dynamic measurement of physical properties

- Linear displacement transducers
- Telltale
- Demeg gauge
- Vibrating wire strain gauge
- Vibrating wire water pressure transducers
- Vibrating wire tilt meters
- Miniature single and multiple channel data loggers including the following sensors:-
 - Temperature
 - Humidity
 - Light intensity
 - Voltage
 - Motor on/off vibration sensor
 - Motor on/offA/C sensor

Investigations

Concrete Structures

- Bridge decks
- Parking garages
- Reservoirs
- Dams
- Concrete pipes
- Tunnels and shafts
- Water retaining structures
- Pavements
- Foundations
- Historical structures
- Concrete protection
- Analysis of structural materials
- Monitoring of physical properties

Building Envelopes

- Roof inspection
- Anchor Safety Testing
- Masonry cladding
- Residential inspection
- Precast concrete
- Stone cladding
- Historical masonry

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