IS GPR LIKE X-RAY RADIOGRAPHY OR ULTRASOUND?

GPR is different from both of these imaging methods. X-ray is actually Radiography, which uses a radioactive source, and requires site evacuations and other risk factors. Ultrasound uses mechanical sound waves to image conductive materials in high detail. GPR uses radio waves, similar to a cordless phone to locate objects within various surfaces.

Radiography (x-ray) involves placing a radioactive source on one side of the subject and a film on the other. The film is exposed and developed and then the results are interpreted from the film.

Since the introduction of x-ray for the examination of materials, technology has progressed a long way, providing different alternatives for different materials including ultrasonic, infrared, and ground-penetrating radar.

Ground-Penetrating Radar (GPR) is an excellent method for evaluating concrete and locating structures within concrete. It has many benefits when compared with x-ray including the following features:

- With Ground Penetrating Radar there is no radiation involved, so there are no health hazards. Personnel are not required to be evacuated prior to inspection. With GPR, there is no chance of accidental exposure to gamma radiation, minimizing liability and health risks. Radiography on concrete is not actually "x-ray" technology, since a very strong radioactive gamma source is required, not just an electronic x-ray tube. This source requires special handling and containment to avoid serious exposure to workers and passers-by. Ground Penetrating Radar uses radio waves no more powerful or harmful than those picked up by household radios.
- With GPR, there is no need to worry about exposure of film, such as is found in dental or medical facilities, or other radioactive-sensitive equipment or materials.
- There is no parallax error with GPR. You are not casting a "shadow" on to a large film from a single, small radioactive source. GPR is real-time analysis directly above the structures in the concrete.
- There is no need to correlate the film back to the target area. Structures found with the GPR are marked immediately, and confirmed with a variety of different scanning methods.

- If the original area is not suitable for coring or cutting, it is very quick and simple to increase the area of the scan with GPR to find a nearby suitable location. With x-ray, this would involve another clearing of the work area of personnel, performing a film exposure, film development and correlation back to the concrete.
- Ground Penetrating Radar can provide information about the depths of features in the concrete. This is not possible with x-ray.
- Slab-on-grade evaluations cannot be performed with x-ray, since it is impossible to place the film on the underside. GPR doesn't have this limitation.
- Ground Penetrating Radar is quick and portable. It can be performed in an office, retail, hospital, or residential setting with virtually no disruption of regular activities.
- There are normally cost and scheduling benefits to using Ground Penetrating Radar rather than x-ray.

Ground-penetrating radar (GPR) uses a radio signal similar in strength and frequency to a cordless phone. The results are interpreted in real time or saved for further analysis. There are no radioactive hazards or parallax.

If there is a situation where Ground Penetrating Radar does not appear to be as effective as desired for any reason, and x-ray is deemed more applicable for the application, Maverick Inspection will inform you. Maverick has a good working relationship with x-ray providers, and understands the benefits and limitations of both technologies. There have even been job-sites in the past where neither technology alone could provide adequate information, and they have been used together to tackle complex inspection scenarios.

For more information contact Maverick Inspection Ltd. at 780-467-1606.

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