

State of the Art: The Value of Processed GPR Data in Concrete Inspection

Reuben Barnes¹

William Ward¹ and Alexandre Novo²

¹ PCTE

² Screening Eagle

It is one of life's true mysteries that as we develop ever more complex and powerful electronic devices, we rarely use them to their full potential. The number of iPhone users that use their phones for voice calls, email and photos without scratching the surface of the amazing features and tools available to them is astounding.

Unsurprisingly, engineers and technicians suffer the same shortcomings when using their instruments on-site to investigate concrete structures. One such instrument is the Ground Penetrating Radar (GPR). This increasingly popular device is rarely used as more than a simple locating device. Scans are collected and viewed with a minimalist mindset, and the results are scrawled in chalk on the structure.

We can do so much better.

This paper will investigate the emerging software processes available to GPR users. Using case studies, we will explore such advances as. As-built steel reinforcing CAD drawings generated purely from GPR data. Cover surveys that provide macro images of the holistic cover distribution at one glance and concrete corrosion investigations that provide entirely non-destructive data to the user quickly and with little preparation. Along with case studies, we will provide commentary on how artificial intelligence, machine learning, augmented reality, and geomatics make these processes possible.