

Figure 1: Cross section through a concrete slab showing a post-tension (PT) cable.

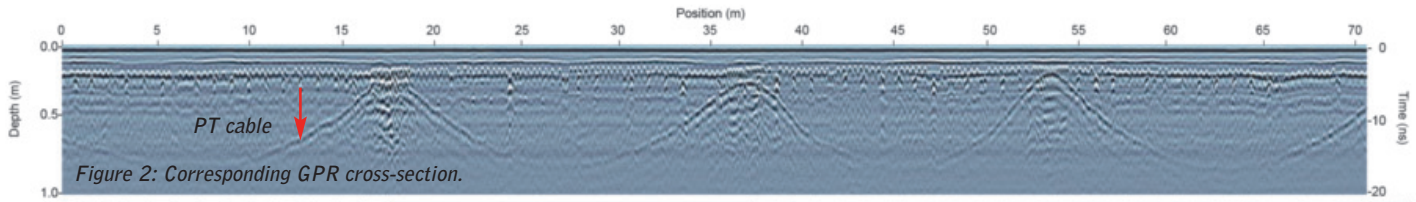


Figure 2: Corresponding GPR cross-section.

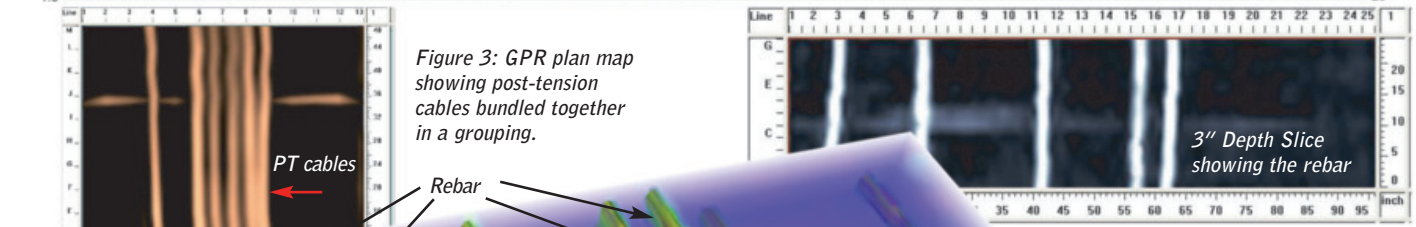


Figure 3: GPR plan map showing post-tension cables bundled together in a grouping.

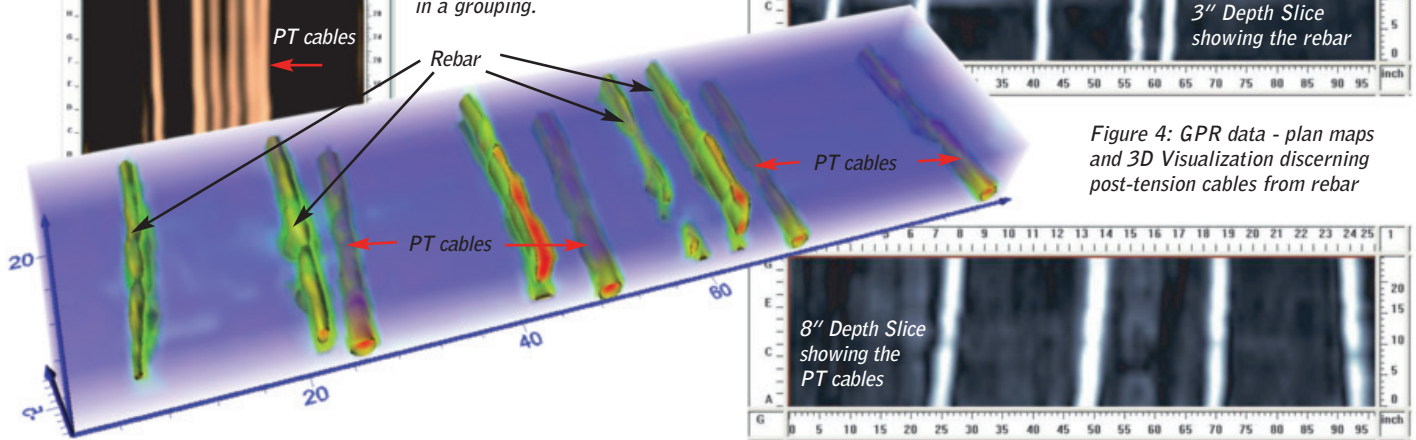


Figure 4: GPR data - plan maps and 3D Visualization discerning post-tension cables from rebar

Post-Tension Cables

Post-tension (PT) cables are used in concrete construction to allow thinner slabs and greater span lengths between support columns. These cables, composed of steel wires inserted into a plastic sheath, are subsequently "tensioned" and grouted after the concrete is poured.

Contractors normally want to avoid hitting PT cables when drilling or cutting for rehabilitation or renovation. Due to the tremendous tension in the cable, cutting one can be very dangerous for the operator as the cable may rip out through the concrete.

To locate post-tension cables the design layout in a slab should be understood (Figure 1). Two features can be helpful in identifying post-tensioning cables:

- ◆ They drop lower in the slab in between support columns, where the slab deflection is greatest (Figures 1 and 2).
- ◆ These cables are sometimes bundled together in a grouping (Figure 3).

The data in Figure 4 were obtained when a building owner needed to locate post-tension cables to have them re-grouted. As-builts showed the approximate location, but this still required chipping away an unnecessarily large area to locate these cables.

Using the Conquest system, they were able to pinpoint their location. Knowing the direction they were running, a 2'x 8' grid scan captured several cables in one grid. The plan maps show the rebar at 3" depth, and the post-tension cables at 8" depth.

Discerning a post-tension cable from rebar generally requires scanning a larger area to properly understand the layout of structural elements in a slab.

When in doubt, mark it out and avoid it!