

GeoRadar Division

GPR High Frequency Investigation for Structural Application



Used Configuration: Aladdin System Description

ALADDIN

an advanced radar based sensor for Non-Destructive structural analysis

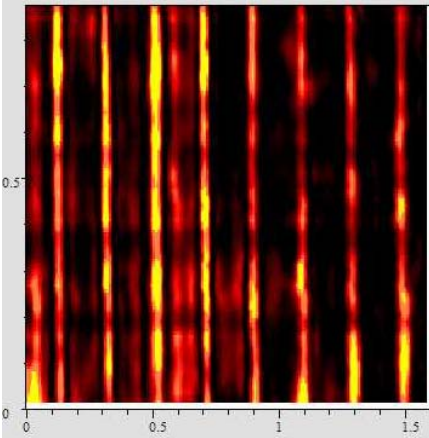


Civil engineering & Cultural heritage applications

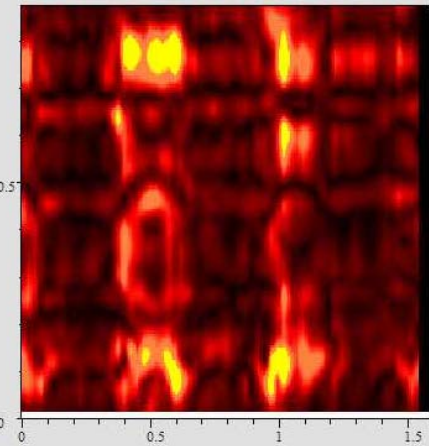
- 3D imaging of shallow and deep rebars in concrete;
- Inspection of concrete for location of voids;
- Inspection of concrete thickness, integrity;
- 3D imaging of pre-tension and post-tension cables;
- Inspection and analysis of old structures and monuments;
- Inspection of walls and floors for the location of pipes, objects, caches, etc..

Standard Products

Depth: 0.10m



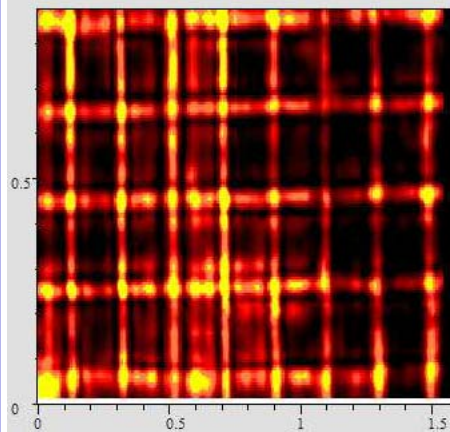
Depth: 0.40m



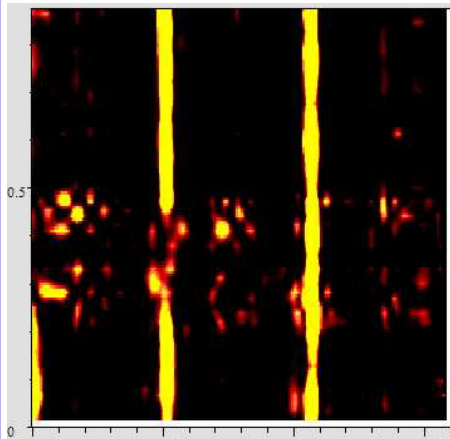
The standard antenna can read the shallow targets (rebars), but is not able to reveal the lower structures

ALADDIN

Depth: 0.10m

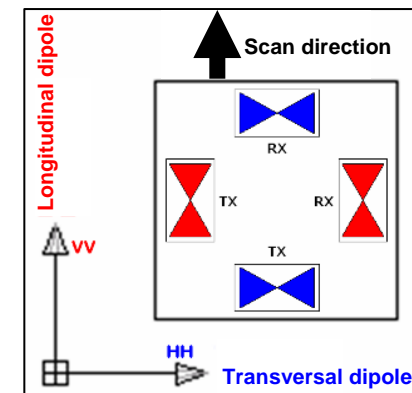


Depth: 0.40m



Instead, the FULL-POLAR antenna is able to identify both targets (shallow and deep) in just one scan.

The **SPECIAL FULL-POLAR** high-frequency (2 GHz) antenna combined with the **patented Pad Survey Guide (PSG)** permit joint orthogonally polarized scans to be acquired in a single pass, detecting shallow and deep structures and halving acquisition time compared to standard methods.



GPR High Frequency investigation for structural application (1/4):

GPR investigation on the structures of the Sao Paulo (Brasil) Metro line to evaluate:

- The presence and the spacing of the rebars into a pillar
- The presence and the spacing of the rebars and/or tendons

Used Configuration: Aladdin System (2 GHz Bipolar antenna)



Sao Paulo (Brasil)

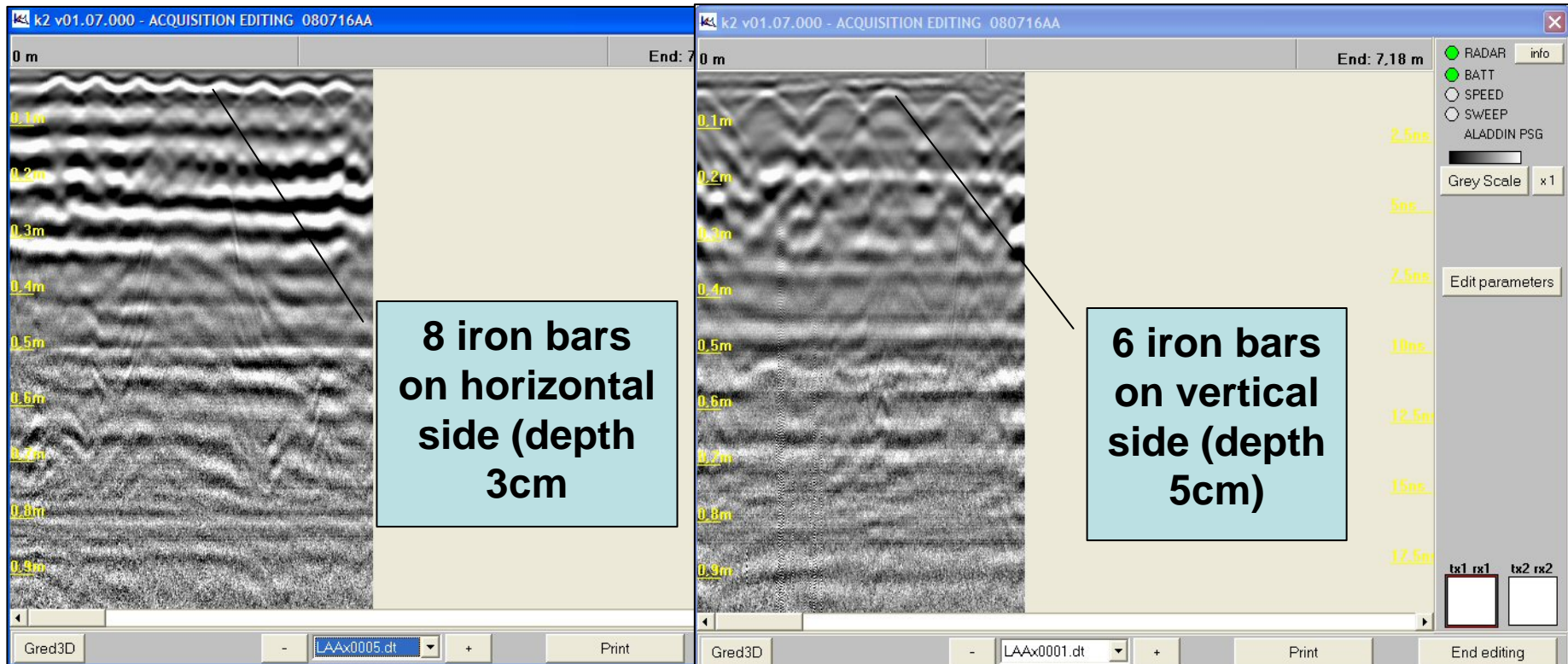
GPR High Frequency investigation for structural application (2/4):

Structural Application on the Sao Paulo (Brasil) Metro Line - Acquisition phase



GPR High Frequency investigation for structural application (3/4):

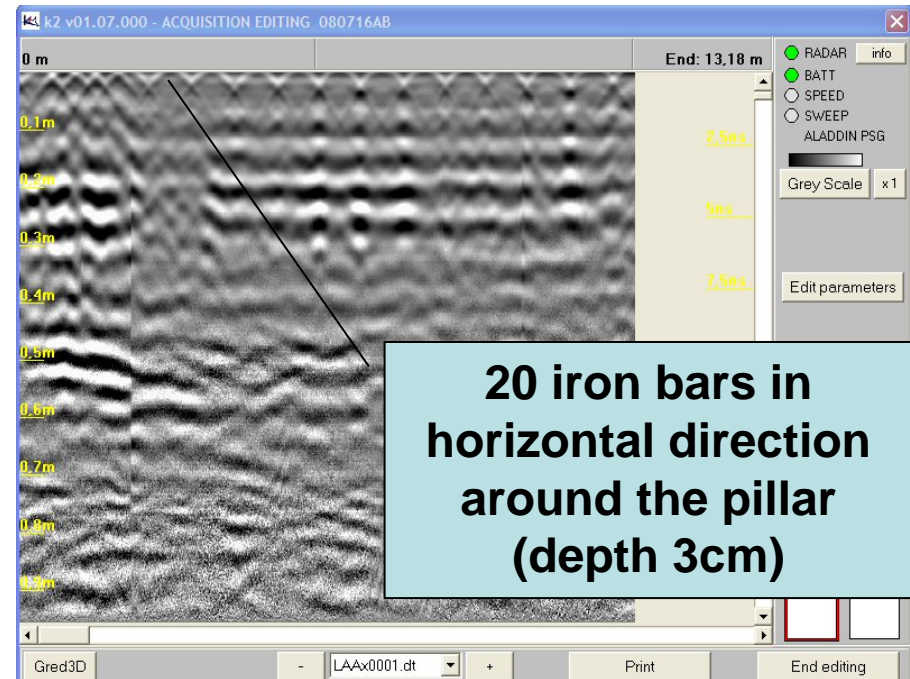
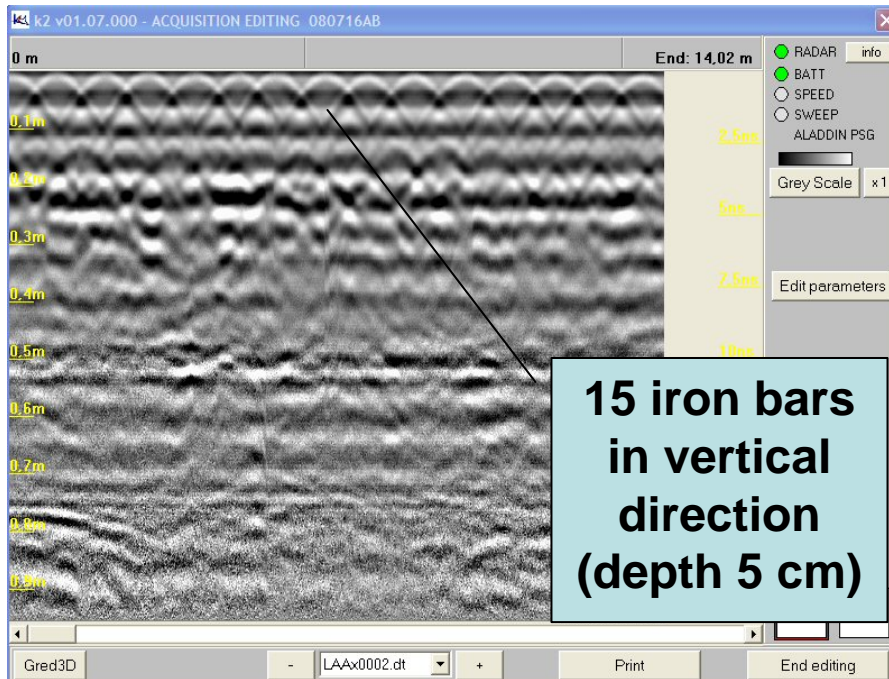
Presence and spacing of the rebars



Horizontal spacing between each rebar: 20-25cm

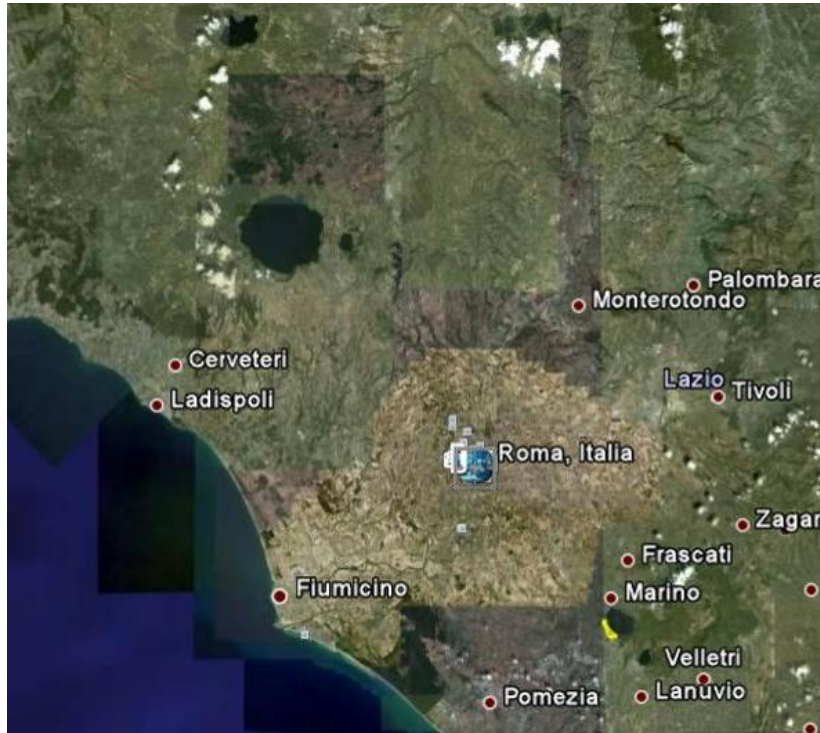
GPR High Frequency investigation for structural application (4/4):

Presence and spacing of the rebar into the pillar



Double line of rebars. Horizontal spacing between each rebar: 10-20cm

GPR High Frequency investigation for structural application (1/3):



Rome, Italy

GPR investigation, on the test site of the Roma Metro line to evaluate:

- The presence of the cavity behind the concrete layer

Used Configuration: 900MHz and 2GHz antenna

GPR High Frequency investigation for structural application (2/3):

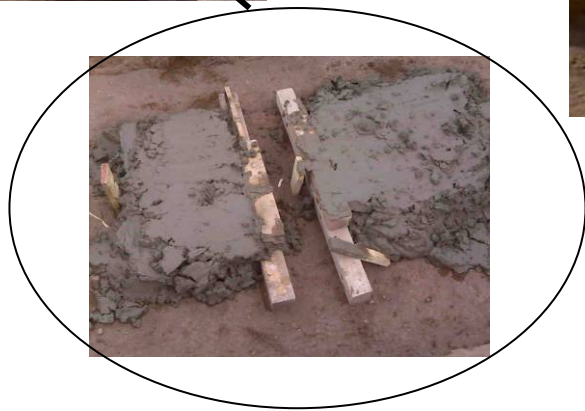
The test site on Rome Metro line - Acquisition phase



Concrete layer



Artificial cavity



GPR High Frequency investigation for structural application (3/3):

Results