It is frequently occurring problem that existing buildings are located at filled up one-time open pit mining area or at recultivated waste deposit sites. Many times the quality of refilling is not appropriate for bearing the load, moreover, the foundation also has not been built properly. Recent and present damages (subsidences, cracks of houses) call the attention for this problem and for the need of investigation of building foundations using some non-destructive geophysical methods.

Figure 1 shows the subsurface condition of a present built up urban area. Note that nursery also present at this site, the other buildings are multi-storied blocks of flats. The lines with numbers indicates the profiles of geophysical measurements. The underground conditions of this map was reconstructed on the basis of a one-time mining map. A refilled cellar also exists at this site.

Several types of geophysical measurements were carried out along the marked lines in order to get an image about the geology of the site and to qualify the load bearing capacity of the subsurface material. Geoelectrics, georadar and seismics were applied. Seismics proved to give the best results but only using special measuring and processing procedures.

One of these special methods is the diving wave tomography resulting a velocity-depth section shown like in Figure 2. The initial model is originated from the refraction if it was reached but from the diving waves if refractor did not exist or was not reached. On the basis of this section the geological model of the one-time mining area could be reconstructed. This is also shown in Figure 2 below.
Figure 1.
Subsurface condition under a present built up urban area reconstructed on the basis of a one-time mining map
 Velocity section of diving wave tomography indicating loose, refilled, compact and hard rock zones. Below the geological interpretation is shown.