



GPR study for subway tunnel construction in São Paulo city, Brazil

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The industrial development and the fast population growth in great cities cause various problems due to intense use of physical space on and below surface. The problems below surface in metropolitan areas are caused by subway line construction, passages of most utility networks, such as, electric and telephonic cables, water and gas pipes, galleries of pluvial water canalization, etc. Usually, the problems are related to the destruction of preexisting utilities in the subsoil, which may put people lives at risk. As geoscientists know, the use of GPR method, before beginning geotechnical excavations becomes important to detect previously installed utilities in the subsoil. Therefore, the use of GPR in urban civil engineering activity can help to avoid accidents and minimize the risks to society. With this purpose, in this paper some preliminary GPR results from Ipiranga Avenue and Roosevelt road complex tunnel, both located in downtown of São Paulo city, Brazil are showed. The objectives of this work were to detect and to locate interferences in the subsoil in order to orientate the progress of the line-4 subway tunnel construction. The GPR profiles permit to detect pipes, and galleries in the subsoil up to 2 m depth. In addition, they also provided details of the target shape in subsurface. The results emphasizing how the GPR method have the great potential to detect interferences buried in urban areas and its applicability in geotechnical studies, minimizing risk of dangerous accidents.