



## **GPR applications to the walls, structural elements and inside lanes of the Modernist Campus of the Technical Engineering School of Barcelona**

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The Campus of the Technical school of Barcelona is placed over the ancient location of an important factory, built during the period known in Catalonia as Modernism. Many of the school buildings were recovered and remodelled in order to use them as school: laboratories, classrooms, offices and shops. Other constructions were built over the remains and the underground shops of the factory. Several of the galleries of services and communication belonging to the factory were blocked up, but some of them remained under the actual school, although their exact location is not known in many cases. The roads crossing the precinct are now pedestrian streets. And the textile shops, underground constructions built using iron foundry columns, have now a large building over them.

The current necessities of the technical education have been the cause of a new remodelling of the spaces of the school, and the selection of an appropriate space to locate a mechanical shop, where heavy machinery must be placed. An accurate study was done because of the ignorance of the characteristic of the underground and the possible existence of galleries non-documented under the selected room. Possible voids could cause movements on the floor of the shop due that heavy machinery.

Also, the actual building of the school, built over the ancient textile shop, a basement plant, have concrete columns and structural walls under the walls of the new plants. In

the ancient textile shop, in those places, there were foundry columns. Because of the centennial of the school, it was thought to know the state of those columns: are still the ancient foundry columns into the actual concrete columns? If the foundry columns are included in the concrete ones, is it possible to recover the initial elements in order to perform a restoration of the building?

A research was developed in order to answer those questions and to know the possible problems in the future remodelling. The study was carried out in two paths: documental research and GPR survey. That survey was performed inside and outside the buildings to analyse the ground, and in the walls and concrete columns of the basement. It allows us to detect possible structural voids in the ground, non-documented, and also, to detect those elements which are presents in the vintage documents. The use of the GPR survey applied to archaeological sites and to the location of voids in the ground is widely documented, but in this case, the ancient use of the precincts as factory and the important evolution and changes carried out during a short period, became in a complicate problem.

Using also GPR prospecting, the study of the columns was carried out. It was possible known that the foundry columns are absorbed in the actual ones, with a masonry protection and, then it is possible to recover them in futures restorations.