

ABSTRACT

The objective of this tesina is the one of characterizing in detail the geotechnical properties of the underground in the area of the new Hospital de la Santa Creu i Sant Pau, taking advantage for it all the available information of studies of the land carried out in project phase and supplementing them with laboratory rehearsals on samples taken in situ in the phase of excavation of the basements. The work has been developed in the following stages:

1. Available previous information.

It includes the summary of information with respect to the land study object: on one hand the geotechnic report carried out for the construction of the new Escuela de Ingenieros de Caminos, Canales y Puertos de Barcelona, similar land to that of the study area and for other the geotechnic studies previous carried out in the area of the new Hospital. When being this inside the area of influence of the tunnel of the metropolitan railroad for which the Line 4 circulates, it gave origin to a detail study to which access has been had. They have also been gathered the obtained results of a campaign of geophysical prospecting, in which vibrations were measured in diverse points caused by the impulse created by the step of the trains. The information has also been picked up contributed by the rehearsal of badge of load carried out in the lot where the new hospital is located, concretely inside an existent gallery and in two gutters located in the same area.

2. Carried out rehearsals.

The laboratory rehearsals have been carried out using samples taken in situ in the phase of excavation of the basements. These samples have been conserved in the humid camera (with 90% of humidity) until the realization of the rehearsals. They have been carried out conventional identification rehearsals as grains, sedimentation, limits of Atterberg, and other less usual rehearsals in those that it has been used the triaxial and the triaxial of resonant column, apparatus this last that allows to measure the court module to small deformations (10-5 - 10-2%). The necessary theoretical base is exposed for the obtaining of the characteristic parameters starting from the rehearsals. It is also defined the process continued in each one of the carried out rehearsals.

3. Experimental results.

Starting from the rehearsals carried out in the laboratory and of the analysis of the gathered specific bibliography they have been obtained a series of results that they are analyzed detailedly so much graphically as with numeric values.

4. Interpretation of results and conclusions.

The results obtained starting from the laboratory rehearsals together with all the previous information that was gathered in the first phase of this work, have been related among them and a geotechnical characterization has been made in detail of the studied underground area. The conclusion is that the studied land belonging to the Quaternary is a lightly overconsolidated floor and capable for the construction. The values of the obtained parameters correspond to that waited in accordance with the results presented by similar analysis.