

Technical visits

Laboratorio Central de Estructuras y Materiales Central Laboratory for Material and Structures

A group of about 40 participants spent three hours visiting Laboratorio Central de Estructuras y Materiales on July 21. The visit included a tour along the Mechanical Test and Auscultation Divisions of the Laboratory.

One of the important moments in the visit was the description by Mr Rafael Astudillo, Head of the Auscultation Division, of the Seismic Simulator Table, soon to be installed in the Laboratory. The Simulator, 3 by 3m, 10 tons capacity and 6 degrees of freedom, will be a fundamental device for future seismic research in Spain.

Centro de Estudios y Experimentación de Obras Públicas (CEDEX) Public Works Studies and Experimentation Center

In the evening of Tuesday, July 21, some 40 Conference participants visited the premises which belong to the Centro de Estudios y Experimentación de Obras Públicas near the Retiro Park. In the Geotechnical Laboratory they could see a fully automatized room where triaxial stress path controlled tests, direct shear tests, and consolidation tests are routinely being done.

The visitors also saw demonstration of a 1x1x1m shear box used to test rock-fill dam material under 100 tons horizontal and vertical hydraulic jacks.

Finally, in the Dynamic Section of the Laboratory, they attended a dynamic triaxial test run on clayed material, imposing to the sample tested the same irregular stress history as the one calculated in the core of the Canales earth dam, using a finite element program.

Instituto de Ciencias de la Construcción Eduardo Torroja (ICCET) Institute for Building Sciences Eduardo Torroja

Instituto de Ciencias de la Construcción Eduardo Torroja was visited on July 21 by a group of about 40 Conference participants. They were welcomed by the Institute Director, Dr. Rafael Blázquez and Deputy Director, Dr. Miguel Herráiz. After an introductory slide presentation which offered a brief insight into the history and range of activities of the ICCET, the visitors were taken for a tour of the facilities.

In the plant for mechanical testing of materials they could see equipment for static, dynamic and material fatigue testing. The guests were present during the dynamic test of the concrete multipurpose railway crossties (UIC and RENFE width).

The plant for "standardized sand" packaging was also visited. Siliceous sand of granulometry between 2mm and 74 μ is packed in plastic bags of 1,359g \pm 5g and sent to cement factories for daily quality control of their products.

During the visit to the Road Laboratory the guests could watch the realization of tests of compression, compacting and consistence of dry and porous highly resistant concretes. They could also observe the process of concrete setting through ultrasonic method in the climatic chamber.

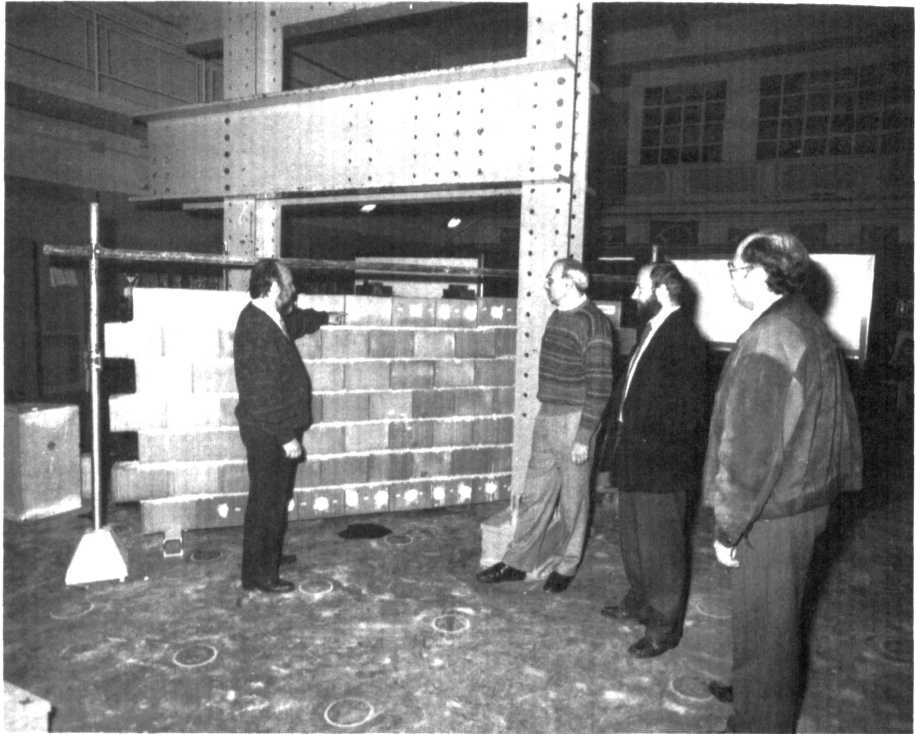
In the Chemical Laboratories Area, where general - mineralogical, chemical and structural - characterization of materials is performed the visitors could find out, among other things, about different types of testing required for meeting chemical standards in concrete, concrete additives, cement, rocks, raw materials and synthetic phases. The Laboratories are equipped to perform Differential Thermal Analysis (DTA - measuring of enthalpy produced by temperature: studying the reactions of water loss, CO₂ loss, polymorphic transformation etc.), Thermal Gravimetric Analysis (TGA - measuring of differences in weight produced by temperature changes), Infrared Spectroscopy for testing solid and liquid materials. There is also a wide range of microscopes, from conventional optical ones to optical electro microscopy and scanning electro microscopy.

Instituto Geografico Nacional National Geographical Institute

Some 40 Conference attendees participated in the visit to the Data Reception Center of the Spanish National Seismic Network at the Instituto Geográfico Nacional. Experts of this Institute provided the visitors with a complete description of the Network characteristics and its service to the national and international communities on the detection of earthquakes and nuclear test occurrences.

The Network is composed of 28 vertical-component stations in mainland Spain whose data are telemetered, through dedicated telephone lines, to the Reception Center in Madrid; 8 similar stations in the Canary Islands, which send their data to a Recording Center in Tenerife; a Seismic array near Toledo with short-period and long-period seismometers and several stations equipped with broad-band seismometers and direct digital recording. The information from these stations is received, digitalized and treated at the Recording Centers, which are also in charge of archiving and disseminating the data obtained related with earthquake parameters.

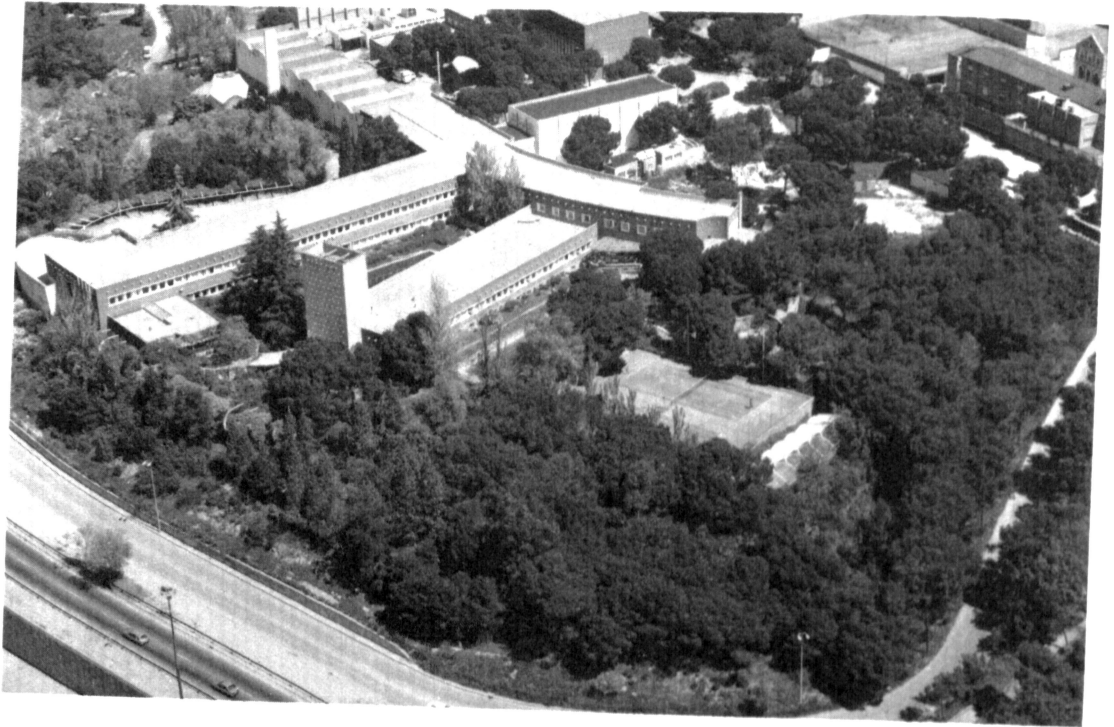
The Instituto Geográfico Nacional carries out research work related with these data and provides the Administration with official maps of Seismic Hazard within Spain to be included in the Seismic Regulations. The visitors had the opportunity to see the latest products of this work.



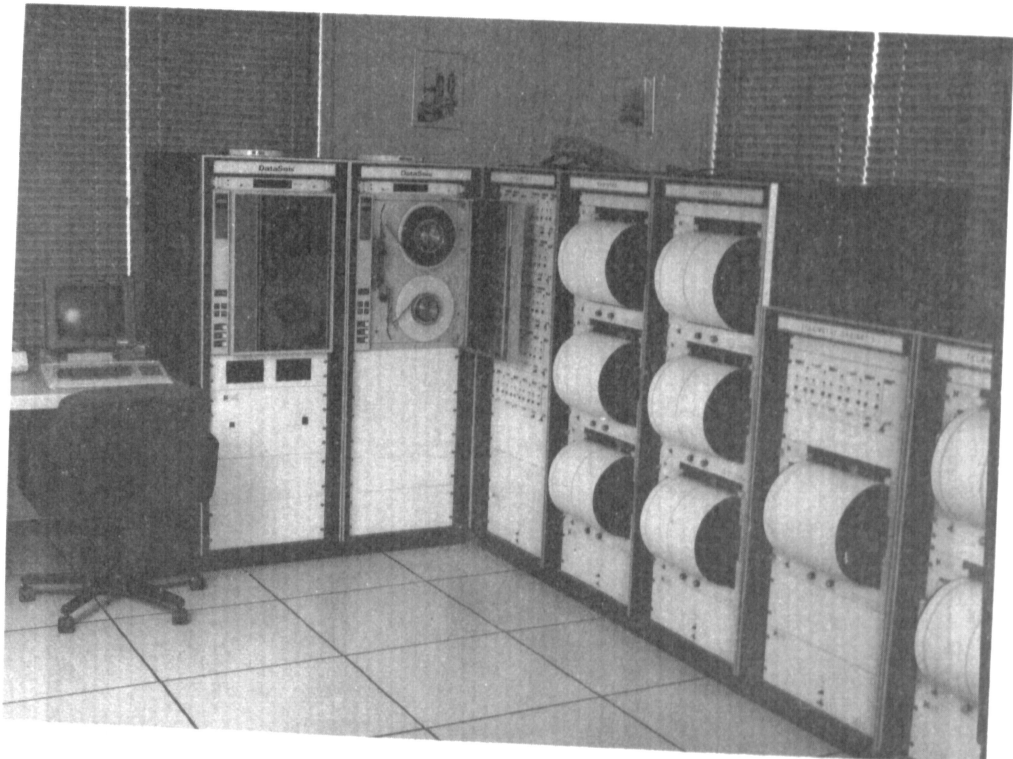
Laboratorio Central de Estructuras y Materiales (CEDEX)



Laboratorio de Geotecnia (CEDEX)



Instituto de Ciencias de la Construcción "Eduardo Torroja" (CSIC)



Instituto Geográfico Nacional (MOPT)