



Capacity Building in Earthquake Research for Risk Reduction in Urban Environments

Reporting

Project Information

CYBER

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€ 649 680

Coordinated by
MIDDLE EAST TECHNICAL
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Final Report Summary - CYBER (Capacity Building in Earthquake Research for Risk Reduction in Urban Environments)

The CYBER project is developed in relevance to the seismic risk reduction RTD activities of the Sixth Framework Programme to initiate implementations for safer urban environments, hence to search for methods for reducing exposure to seismic risk. It is aimed at increasing the capacity of an earthquake research centre in Turkey to a centre of excellence. Collaboration of METU Civil Engineering Department with the expert seismic research institutions of Europe within the scope of the project increases the level of scientific cooperation, technical capabilities and enhancement of human potential.

In the first activity period, technical investigations were carried out first for the most proper testing system to be designed and installed at METU. Laboratories with similar facilities were visited, and meetings were held with the potential producers. The project team was established, composed of an electrical and a

mechanical engineer and a research assistant, in addition to the academic staff involved.

In the second activity period, the contract documents were prepared and signed for the PsD testing system. Then the design and manufacturing was completed, and all components were shipped after initial verifications at the plant. The project team was enlarged with another research assistant in the second period.

The PsD testing system was assembled at the METU Earthquake Engineering Laboratory in the third activity period and all necessary verification tests were carried out on the hardware and control software. Three new research assistants were employed for training on the new testing system. The GIS facility was also prepared, and training activities for the GIS operations were accomplished.

An upgrading of the laboratory for PsD tests began in the first activity period. Firstly, a detailed research on the market was made with comparative studies on PsD testing methods. JRC-ELSA provided technical assistance for the alternatives available. A detailed literature survey has been carried out to determine the exact computing - controlling parts of the PsD test system as well. Although the purchase and delivery of the components of the PsD system was planned to be completed by the end of the first activity period, a long delay occurred. The main reason for this delay was the time needed for the preparation of the official quotations by the equipment manufacturers. For hydraulic equipment suppliers, it is difficult to negotiate on custom and precision parts.

Connection of large-scale specimens to existing strong floor and connection of hydraulic actuators to strong wall needs special fixtures. These fixtures were manufactured by local companies. Also the hydraulic pump had been upgraded by installing a new cooling system, and a pipe line had been constructed under the strong floor to distribute the pressurised oil flow on the test floor during the first activity period.

In the second activity period, the focus was on the completion of the contract phase for the procurement of the PsD system, its manufacturing and delivery to Turkey. In the third and final activity period, engineers assembled the PsD system components. Following a successful assembly, verification tests have been performed attended by technicians and the JRC experts. The end product, which is a flawlessly functioning PsD testing system established at the METU, is verified by testing several specimens under cyclic and simulated earthquake excitations.

GIS is a missing facility at METU Earthquake Engineering Laboratory for conducting loss estimation and vulnerability assessment studies of the built environment. Although the procurement of GIS hardware and software was scheduled in the first year, these activities are postponed to the final reporting period, after commencement of the GIS training program at JRC. This decision was based on the fact that the needs for these items will be better identified after advancement of the training activities at JRC, and completion of case studies on earthquake loss estimation simulation in a selected region in Turkey together with JRC.

The GIS training had been completed in the third activity period, and the necessary components for a complete GIS system had been identified. In fact, almost all components of the GIS facility now exist at METU. There are few missing components such as a display screen and a plotter, which are planned to purchase from the final payment

purchase from the initial payment.

Related documents

 [121978991-6_en.pdf](#)

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