CNRRS
National Center for
Seismic Risk Reduction

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Official ceremony of equipment donation to MTCT by Japanese Ambassador in Romania, HE Naotoshi Sugiuchi, on Thursday, November13, 2003

On November 13, 2003, the *Japanese International Cooperation Agency*, *JICA* officially donated to Romania a set of earthquake research equipment in value of 1.7 million US$ within the *JICA Technical Cooperation Project on Seismic Risk Reduction*. The equipments consist in seismic instrumentation and investigation equipments: *Kinemetrics K2* and *ETNA* accelerometers, *Geodas* (Geophysical Data System) acquisition systems, tri-axial testing apparatus model - *DTC-367*, and a truck with *FRASTE Multidrill - XL* drilling equipment.
The ceremony took place at the *Ministry of Transports, Constructions and Tourism*, *MTCT* of Romania in the presence of HE Naotoshi Sugiuchi, the *Japanese Ambassador in Romania* and HE Miron Mitrea, the *Minister of Transports, Constructions and Tourism*, as well as Romanian and Japanese officials and experts and mass media representatives.

HE Naotoshi Sugiuchi, the Japanese Ambassador in Romania (left) and HE Miron Mitrea, the Minister of Transports, Constructions and Tourism (right), during the donation ceremony

Official handing over of the list with equipment donated

The donation was made in the framework of the *JICA* Project entitled *Technical Cooperation Project on the Reduction of Seismic Risk for Buildings and Structures*, started on October 1st, 2002 and having the *National Center for Seismic Risk Reduction, NCSRR* as implementing agency.

Official speech of HE Miron Mitrea, the Minister of Transports, Constructions and Tourism

In his speech, HE Miron Mitrea, the *Minister of Transports, Constructions and Tourism*, presented the efforts of *MTCT* to evaluate the seismic resistance of some 3.600 buildings in 22 counties, amongst which 200 buildings require retrofitting, 122 of them being in Bucharest. " In 2002 the *MTCT* effort was to convince apartment owners to apply for retrofitting works that started in 2003. The budget of 2004 will have 57 billion Ro Lei for these works including retrofitting of 36 buildings at risk".

Official speech of HE Naotoshi Sugiuchi, the Japanese Ambassador in Romania

HE Naotoshi Sugiuchi, the *Japanese Ambassador in Romania*, stated: "This summer Japan was shaken by a large earthquake in Tohoku region, but without victims. I think that this example illustrates well the results of our activities against seismic disasters. Looking towards Europe, Romania suffered in several occasions because of earthquakes. We understood that in 1977 a destructive earthquake struck Bucharest. We want to share our knowledge and technology with Romanian people".

Official speech of Mrs. Ileana Tureanu, State Secretary of MTCT

Mrs. Ileana Tureanu, *State Secretary of MTCT*, said: "Cooperation will have positive effects such as the assistance of Japanese experts, transfer of Japanese expertise and technologies to Romanian civil engineers, harmonization of Romanian standards with contemporary international trends and preparedness of population."

A part of the donated seismic observation equipment exhibited in the ceremony hall

The truck with drilling equipment in front of the MTCT building

Impressive drilling equipment attracted the mass-media; HE Naotoshi Sugiuchi, the Japanese Ambassador in Romania and HE Miron Mitrea, the Minister of Transports, Constructions and Tourism were interviewed by many newspaper reporters. Mrs. Ileana Tureanu, State Secretary of MTCT, exchanged views about JICA Project with Japanese and Romanian experts

Data about the equipment donated by JICA
Seismic instrumentation and investigation equipment
Partially the equipment was described in the *NCSRR Newsletter* 2, September 2003, but a brief description is also included in this issue.

KINEMETRICS K2
The equipment is used for recording the ground and/or building motion during earthquakes. It is digital equipment with 3, 6 or 12 independent channels and includes an internal tri-axial acceleration sensor.
In the case of borehole instrumentation *FBA-23DH* borehole sensors are connected to the *K2* acquisition station. In the case of building instrumentation *EPISENSOR ES-T* sensors are connected to the *K2* acquisition station.
All sensors can record motions up to ±2g.

KINEMETRICS ETNA
The equipment is used for recording the ground motion during earthquakes.
It is digital equipment with 3 independent channels and includes an internal tri-axial acceleration sensor. The motion is continuously monitored but it is recorded only when a preset sensibility threshold is exceeded.
This equipment is used for ground motion monitoring in free-field conditions outside Bucharest.

GEODAS (Geophysical Data System)

The equipment is used for data acquisition and recording of ambiental and artificial vibrations.
It includes a pre-amplifier (amplifying factor 0, 20, 40 dB), analog-digital convertor with a 24 bits resolution, *GPS* build in receiver and laptop *PC* for control and data processing.

FRASTE MULTIDRILL - XL DRILLING EQUIPMENT
The equipment is used for seismic and geotechnical investigations in order to predict the soil behavior during major earthquakes. The understanding of soil seismic response is an essential issue for improvement of new buildings design and of vulnerable buildings retrofitting.

Technical Data
Engine: *Perkins 1006.60T*
Power: 108 *kW*
Pull-up force: 5000 *kgf*
Pull-down force: 4000 *kgf*
Torque and speeds in the four gears:
1st gear: *kgm* 90@270 *rpm*
2nd gear: *kgm* 180@135 *rpm*
3rd gear: *kgm* 350@80 *rpm*
4th gear: *kgm* 700@40 *rpm*
Borehole diameter: 60-250 *mm*

TRIAXIAL TESTING APPARATUS MODEL - DTC-367

The equipment is used to evaluate the static and dynamic parameters of soil behavior that are used in soil-structure interaction analysis and site-specific seismic response assessment.

The tri-axial cyclic apparatus manufactured by *Seiken Corporation*, Japan performs the following type of tri-axial compression tests:

1.Unconsolidated - Undrained test
2.Consolidated - Undrained test
3.Consolidated - Undrained test on soil with pore water pressure measurements
4.Consolidated – Drained test
5.Cyclic undrained tri-axial test on soils
6.Cyclic tri-axial test to determine deformation properties of geomaterials

Visit of short-term expert in ground motion and microtremor investigation

Japanese expert, Dr. Shin KOYAMA from *National Institute for Land and Infrastructure Management*, Tsukuba, visited *NCSRR* in November-December 2003 as a short-term expert for *Division 2 – Seismic observation network*.

Dr. Koyama and *NCSRR* staff checked the free field seismic stations in Ploiesti, Buzau, Giurgiu, Focsani and Ramnicu Sarat, as well as the borehole stations *NCSRR/INCERC*, *City Hall*, *UTCB* (*Pache* and *Tei*), *Piata Victoriei* and *Municipal Hospital*, and the building stations *BRD* and *TVR*. A new free field station was installed at Urziceni.

At all the sites Dr. Koyama and *NCSRR* staff performed ground microtremor measurements. The Japanese expert also participated in a building microtremor measurement at the main building of *Technical University of Civil Engineering of Bucharest*, *UTCB*, and instructed *NCSRR* staff in processing and analysis of building microtremor records.

Checking of City Hall seismic station by Dr. Koyama and NCSRR staff

Microtremor data acquisition by Dr. Koyama at seismic stations sites

Visit of Mr. Shinya Kobayashi, short-term expert dispatched at NCSRR in the field of structural retrofitting

Mr. Shinya KOBAYASHI was dispatched to Romania in February-March 2004 for *Assistance to MTCT Retrofitting Program*. The expert concentrated and worked on two themes: *Balcescu 25*, *Pherekyde* building as an example of pre-1940 building and *Dinicu Golescu 23-25*, *Tronson 3* building as typical soft and weak groundfloor building. He discussed on the planned retrofitting methods with Romanian counterparts from *NCSRR* and with professionals form private design offices including *IPCT* and *Project Bucharest*. He evaluated the methods planned by the companies and suggested some alternative proposals for the retrofitting solutions.

Mr. Shinya Kobayashi noticed that there are so many constrains and restrictions in the retrofitting design of residential buildings that the designers had few options to retrofit the buildings. He suggested that the revision of legislation and shifting of priorities would be necessary for saving lives of residents.

On March 18, 2004 Mr. Shinya Kobayashi presented a seminar entitled *Seismic Rehabilitation Methods in Japan* at *Technical University of Civil Engineering*, Bucharest. The seminar focused on *Actual Examples of Retrofitting in Japan* and *Pressure Welding Technology*. The Romanian counterparts presented an *Overview of Base-Isolation Design Practice in Japan* at the Seminar. Professionals from *Technical University of Civil Engineering*, *MTCT* and design offices attended the seminar.

Talk-show on Realitatea TV on March 4, 2004

On March 4, 2004 at the regular talk-show *In Focus* (*In Centrul Atentiei*), *Realitatea TV* invited Mr. Isao Tojo – *JICA Coordinator at NCSRR*, Dr. Radu Vacareanu – *NCSRR* Director and Gen. Liviu Viorel Nemes – *Commander in Chief of Romanian Civil Protection* to discuss about the consequences of March 4, 1977 earthquake in Bucharest as well as about the preparedness of authorities and population facing a future strong earthquake. The talk-show focused on the devastating effects of March 4, 1977 earthquake and on the reduction of seismic risk in Bucharest through the retrofitting of vulnerable buildings.

Snapshots during the talk-show at Realitatea TV

The Sustainable Development Strategy Session in the Romanian Parliament Palace

On March 12, 2004, the *National Romanian Permanent Commission for Elaborating the Strategy of Sustainable Development up to 2025* held the *Second Session of Evaluation of the Long-term Development Strategy in the Field of Territorial Planning, Construction and Tourism*, in the *Palace of the Romanian Parliament*. The Session was opened by HE Mr. Ion Iliescu, the *President of Romania*. The *Presidents of the Parliament Chambers*, high officials of *MTCT* and many specialists from private sectors as well as public sectors attended the session.

The *Minister of Transports, Constructions and Tourism*, HE Miron Mitrea presented the general aspects of *MTCT* strategy. In his comprehensive presentation the Minister referred to the measures for seismic risk reduction and to the vital role of the *JICA Project* that is implemented with good results in the framework of *NCSRR*.

Section 2, *Sustainable Territorial Planning and Constructions* was convened by Mrs. Ileana Tureanu, State Secretary of *MTCT*. Mr. Isao Tojo, *JICA Coordinator* at *NCSRR* made a presentation on *Education of population concerning seismic risk* based on the outcome of a questionnaire survey on earthquake disaster prevention preparedness of citizens of Bucharest. As a part of the *JICA Technical Project on Seismic Risk Reduction*, the study assessed the seismic risk perception of apartment owners in Bucharest. The study intended to facilitate the active involvement in structural retrofitting of the residents living in first class of risk buildings. The questionnaire survey proved to be useful in understanding the opinions concerning earthquakes effects and retrofitting of citizens who live in vulnerable buildings. The answers show a remarkable consciousness about the seismic risk in Bucharest and they are correlated to the age and profession structure and depend on the experienced March 4, 1977 earthquake effects. He said: “Real experiences convince people that the retrofitting is important”. Mr. Isao Tojo concluded on the necessity of educating younger generation by taking advantage of senior citizens who experienced the past devastating earthquakes.

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