

Annex 3. Performance Grid

Topics		Questions	Information/data to be collected	Remarks
Inputs	Was the input from the Romanian side provided as planned?		Input record	See Annex 3-A: "Input".
	Was the input from the Japanese side provided as planned?		Input record	See Annex 3-A: "Input".
<i>Overall evaluation of the Inputs: The Inputs have been provided appropriately on the whole in line with the plan of the Project.</i>				
Achievement of the "Outputs"	Has the Output 1 been achieved? "Effective and low-cost retrofit techniques are developed by Center and acquired by structural engineers."	Indicator 1-1: Number and topics of the manuals developed. (Target: Not less than 1 technical manual on effective and low-cost retrofit techniques are developed. 1 manual including retrofitting works)	Indicator 1-2: Number of seminars held and number of participants (Target: Not less than 8 seminars on effective and low-cost retrofit techniques are held and not less than 400 structural engineers participate).	The first draft of "Manual for seismic retrofitting of reinforced concrete buildings" was completed. (3/2006) => will be finalized by the end of the Project.
				As of March 2007, this technical theme was taken up in 8 seminars, in which 263 structural engineers participated.
				85.9% of the respondents to the questionnaire answered "understood" or "understood very well" the content of the seminars.
Indicator 1-3: Percentage of satisfied seminar participants (Target: Not less than 80% of participants to the seminar are satisfied)				

Topics	Questions	Information/data to be collected	Remarks
<p>Has the Output 2 been achieved? "Regulations/codes concerning seismic issues for both new buildings and existing ones are improved by MTCT and Center."</p>	<p>Indicator 2-1: Number and topics of technical manuals on earthquake resistant design (Target: Not less than 4 technical manuals on earthquake resistant design (new buildings or retrofitting) are newly developed by Center; 4 manuals include; (1) seismic evaluation of existing buildings, (2) seismic retrofitting design, (3) input design earthquake ground motion, (4) seismic design for new building)</p>	<ul style="list-style-type: none"> The first draft of "Manual for seismic evaluation of reinforced concrete buildings" was completed. (3/2007) => will be finalized by the end of the Project. The first draft of "Manual for seismic retrofitting of reinforced concrete buildings" was completed. (3/2006) (shared with the Output 1-1) => will be finalized by the end of the Project. The second draft of "Manual for Design Input Earthquake Ground Motion" was completed. (3/2007) => will be finalized by the end of the Project. "P100-1/2006 Seismic design Code" was completed (7/2006). It was developed by UTCB with technical contributions by the Project. 	<p>Indicator 2-2: Not less than 4 seminars on manuals are held and not less than 200 structural engineers participate.</p> <p>Indicator 2-3: Percentage of satisfied seminar participants (Target: Not less than 80% of participants to the seminar are satisfied)</p>
			<p>As of March 2007, this technical theme was taken up in 18 seminars, in which 551 structural engineers participated.</p> <p>86.1% of the respondents to the questionnaire answered "understood" or "understood very well" the content of the seminars.</p>

Topics	Questions	Information/data to be collected	Remarks
	<p>Has the Output 3 been achieved? "Post-earthquake evaluation techniques of the damaged buildings are developed by Center and acquired by structural engineers."</p>	<p>Indicator 3-1: Number and topics of the technical manuals on post-earthquake evaluation techniques developed by the Center. (Target: Not less than 1 technical manual on post-earthquake evaluation techniques of the damaged buildings are developed (manual shall include the following subjects; (1) quick inspection of damage, (2) damage degree evaluation") Indicator 3-2: Number of seminars and participants of post-earthquake evaluation techniques (Target: Not less than 5 seminars on post-earthquake evaluation techniques of the damaged buildings are held and not less than 250 structural engineers participate.)</p>	<p>The second draft of "Methodology regarding the emergency investigation of post seismic safety of buildings and establishing frame solutions for intervention" was completed (11/2006) and endorsed by MITC. As of March 2007, this technical theme was taken up in 3 seminars, in which 31 structural engineers participated.</p>
		<p>Indicator 3-3: Percentage of satisfied seminar participants (Target: Not less than 80% of participants to the seminar are satisfied)</p>	<p>93.8% of the respondents to the questionnaire answered "understood" or "understood very well" the content of the seminars.</p>
	<p>Has the Output 4 been achieved? "Disaster prevention education for the citizens is improved by Center."</p>	<p>Indicator 4-1: Number of seminars on earthquake disaster prevention and number of participants (Target: Not less than 5 seminars on earthquake disaster prevention are held and not less than 250 citizens participate.) Indicator 4-2: Percentage of satisfied seminar participants (Target: Not less than 80% of participants to the seminar are satisfied)</p>	<p>As of March 2007, 7seminars were held for citizens and school children, in which 643 participated. 90.2% of the respondents to the questionnaire answered they "understood" the content of the seminars.</p>

Topics	Questions	Information/data to be collected	Remarks
		<p>Indicator 4-3: Number of publications on earthquake disaster prevention. (Target: Not less than 2 printed matters on earthquake disaster prevention are published by Center: 2 printed matters (1) legal incentives for retrofitting, (2) disaster preparedness)</p> <p>Indicator 4-4: Percentage of satisfied readers (Target: Not less than 80% of readers are satisfied)</p>	<p>(1) A publication for citizens on legal incentives for retrofitting is being drafted and will be completed in April 2007.</p> <p>(2) "Educatia si protectia elevilor in caz de cutremur" was published in 2006: A material for schoolchildren, consisting of four versions for particular ages/grades.</p>
	<p>Has the Output 5 been achieved? "Conditions necessary to verify the technologies developed by the Center through application have been set up."</p> <p>* The Activities 5-1 and 5-2 were added in the Mid-term evaluation, but the Outputs corresponding were not. Output 5 was added in the Terminal Evaluation in order to streamline the logic of PDM.</p>	<p>Activity 5-1: To select the target buildings for introducing new technology</p> <p>Activity 5-2: To make proposals for retrofitting the target building.</p>	<p>(1) Publication for citizens: questionnaire survey will be carried out when it is distributed.</p> <p>(2) Questionnaire survey will be carried out by the end of the Project.</p> <p>Two buildings were selected.</p> <p>(1) A Class I building built before 1940</p> <p>(2) A building built after 1940, which has a typical structure of that period</p> <p>Basic plans were approved by the technical committee of MTCT.</p> <p>Phase I (Basic retrofitting planning) and Phase II (Retrofitting detailed design) were completed.</p> <p>Phase III (Retrofitting working drawing) is ongoing. Bidding and construction will follow after presentation to residents.</p>
<p><i>Overall evaluation of achievement of the Outputs:</i> The Outputs are highly likely to be achieved by the end of the Project.</p>			

Topics	Questions	Information/data to be collected	Remarks
<p>Achievement of the Project Purpose. "Improvement and dissemination of technology for reducing building collapse in case of great earthquakes are achieved."</p>	<p>1. By the end of the Project, will the technology introduced by Center be incorporated in the detailed design of retrofitting for one or more buildings built before 1940 and for one or more buildings built after 1940?</p>	<p>Number of buildings to which the techniques developed by Center is/will be applied to retrofitting work, including information on the year of building construction.</p>	<p>(as Output 5 above) Two buildings were selected. (1) A Class I building built before 1940 (2) A building built after 1940, which has a typical structure of that period. Basic plans were approved by the technical committee of MTCT. <ul style="list-style-type: none"> Phase I (Basic retrofitting planning) and Phase II (Retrofitting detailed design) were completed. Phase III (Retrofitting working drawing) is ongoing. Bidding and construction will follow after presentation to residents. </p>
	<p>2. By the end of the Project, will the technical manuals and guidelines for seismic evaluation and retrofitting as well as input ground motion be endorsed by the Romanian authorities?</p>	<p>Manuals endorsed by the Romanian authorities.</p>	<p>These manuals were developed by UTCTB with technical contribution of the Center. <ul style="list-style-type: none"> The first draft of "P100-3/2006 Code for the Assessment and design of retrofitting works for existing buildings, vulnerable to earthquakes Vol.1 - Assessment" was completed. (11/2005) => will be finalized and technically endorsed by MTCT by the end of the Project. The first draft of "P100-3/2006 Code for the Assessment and design of retrofitting works for existing buildings, vulnerable to earthquakes Vol.2 - Retrofitting" was completed. (11/2005) => will be finalized and technically endorsed by MTCT by the end of the Project. "P100-1/2006 Seismic design Code" was completed in July 2006 and endorsed on 1 January 2007. It includes a chapter on input </p>

Topics		Questions		Information/data to be collected		Remarks	
<p><i>The overall evaluation of achievement of the Project Purpose: The Project Purpose is highly likely to be achieved by the end of the Project.</i></p>							
Forecast of achievement of the Overall Goal "Measures against earthquake-induced disasters in Romania are strengthened."	Within 5 years after the completion of the Project, will the number of housing evaluated and retrofitted as well as newly built using the outcomes of the Project increase to such extent that is satisfactory to stakeholders (including administrative agency, academic institution, professional association)?	1. Number of buildings to which the outcomes of the Project applied in construction and retrofitting work. Especially about the Class I buildings in Bucharest. 2. Prospect by the Romanian government and the Project members.	<ul style="list-style-type: none"> Codes and manuals will diffuse the new techniques. People's awareness on earthquake damage prevention / retrofitting has been raised. Number of retrofitting work would not increase dramatically due to various constraints. 				
<p><i>The overall evaluation of estimated achievement of the Overall Goal: It is highly likely that the "measures against earthquake-induced disasters in Romania are strengthened", but the number of retrofitted buildings would not increase to the "satisfactory" level due to constraints that the Project can intervene only to very limited extent.</i></p>							

IMPLEMENTATION PROCESS							
Topics		Questions		Information/data to be collected		Remarks	
Activities	Have the "Activities" of the Project been implemented as planned throughout the Project period?	Progress of the "Activities."	<p>Activities have been carried out appropriately on the whole as planned. The progress of the activities is indicated in Annex 3-B. Most outcomes of the project (finalized manuals etc.) will be completed just before the end of the Project.</p>				
Transfer of technology	Was there any problem in the process of transfer of technology from the Japanese experts?	How the transfer of technology has been carried out.	<p>Transfer of technology has been made appropriately through the day-to-day activities and counterpart training. The counterparts not only strengthened</p>				

Topics	Questions	Information/data to be collected	Remarks
Management system	Decision-making process: What was the decision-making process for revision of activities and direction, selection of staff, etc.?	Process of decision-making and its challenge	technical skills and knowledge, but also developed professionalism through the Project. Within the Center: the Director, division heads of the Center and the Japanese experts have participated actively in the management of the Project. With MTCT: the Director and Japanese experts have had discussions with MTCT as needed. The last Joint Coordination Committee meeting was held during the Mid-term Evaluation in March 2005
	Was the selection of the Romanian Project members appropriate in terms of expertise, position, roles and number?	Number, expertise, position, level, etc. of the Counterparts	It was appropriate in terms of expertise, level of skills and knowledge. There was shortage of the staff particularly in Division 4. The fact that the majority of the staff was part-time meant that they had to cope with constraints in time-management.
	Monitoring system: How has the Project been monitored? Was the result of monitoring utilized in the Project activities?	System of monitoring. How the result of monitoring is used.	Meetings: Monthly division head meeting. Division meeting (weekly or as needed). All-staff meeting (held when a staff member comes back from training in Japan). Reports: 6-month reports. The plan has been modified appropriately when needs arose.
	Communication among Project members: Did the Japanese experts and Romanian counterparts communicate well?	How and how often the Project members communicate each other. How they reacted to the change of the plan. How they coordinate themselves to solve problems. How trust has been built between the Project members.	The project members communicated well through day-to-day activities and meetings. They have solved problems through discussions. Good relationship and trust have been built among the project members.

Topics	Questions	Information/data to be collected	Remarks
	<p>Did the Japanese partner organizations (JICA Romania Office and Headquarters, Ministry of Land, Infrastructure and Transportation, Building Research Institute) support the project well? Was the communication good?</p> <p>Does the Project communicate well with MTCT, UTCB, and INCERC?</p>	<p>Frequency, style and content of communication. How they reacted to the change of the plan.</p> <p>Style of communication, frequency, agenda of meetings.</p>	<p>JICA and the Project do not hold regular meetings, but meet when needed. Their support to the Project was appropriate.</p> <p>Support from Japanese partner organizations was appropriate and highly appreciated by the Project members.</p> <p>With MTCT: communicated as needed. Report of progress, annual plan, etc.</p> <p>With UTCB/INCERC: through Project activities.</p>
Ownership	<p>Are the mission and responsibility of NCSRR clearly defined and announced?</p> <p>Do the Romanian project leaders actively participate in the project management?</p> <p>Has the Romanian input (budget, personnel, office and equipment) to the Project been appropriate?</p> <p>Do the Romanian project members take initiative in the Project activities?</p> <p>Is the equipment provided by the Project utilized and maintained properly?</p> <p>Is there any challenge in the process of project implementation?</p>	<p>Center's mission, position, legal framework, position vis-à-vis other organizations.</p> <p>Ownership and participation of the Romanian leaders</p> <p>Romanian input.</p> <p>How the Counterparts participate in the Project.</p> <p>How the equipment has been utilized and maintained.</p> <p>Issues that came up in the process of Project implementation. Causes and solutions.</p>	<p>Center's mission is clearly defined and the Project is going well within this framework. However, it might be necessary to review its mission and status for competitiveness and sustainability after the project period</p> <p>Project leaders (director and division heads) participated actively and took initiative. MTCT was involved in the management of the Project as needed..</p> <p>It was appropriate. There was a shortage in number of the Staff.</p> <p>The details are shown in Annex 3-A (Inputs). They have taken initiative in the Project.</p> <p>The equipment is almost fully utilized and well maintained.</p> <p>Factors beyond Project's control: citizen's awareness, laws, etc.</p> <p>Low level of salary of the Center staff</p>
Others			

**Annex 3. Performance grid
Annex 3-A. Inputs**

Item	Details	Remarks
Inputs by Romanian side		
Counterpart personnel	MTCT Minister Delegate for Public Works	Laszlo BORBELY (since Dec.2004)
a. Ministry and partner organizations	UTCB Rector INCERC Director General MTCT, Director of DRC	Dan STEMATIU (since Dec.2004) Dan CONSTANTINESCU Cristian STAMATIADÉ
b. Staff of NCSRR	Director Div 1 (Building retrofitting and design codes) Div 2 (Seismic observation network) Div 3 (Technical experimentation for soil and structures) Div 4 (Dissemination of knowledge and training of engineers) Administration Total	Radu VACAREANU 6 (F2 + P4) 5 (F1 + P4) 11 (F4 + P7) 1 (P1) 5 (F5) 28 (F12 + P16)
		P4 =UTCB Tudor POSTELNICU, Division Head is on sabbatical leave due to illness. Dan ZAMIFIRESCU is acting Division Head (he is not official NCSRR staff officially yet). P4 = UTCB P7 = UTCB 6 + INCERC 1 P1 = INCERC P16 =UTCB 14 + INCERC 2 20 positions filled, out of 30 positions approved (full 12 + part-time 16x0.5) Between 2004-05, Ordinance prohibited public institutions to employ new staff.

Item	Details	Remarks
Offices and facilities	Offices	NCSRR/Project have offices in INCERC and UTCB. Div1, 2, & 3: INCERC and UTCB Div4: INCERC only
Budget	Budget	Of which, generated income by Center was: (thousands RON) 2004: 58 2005: 30 2006: 21 <u>Total: 109</u>
<p>Inputs from Japanese side</p>		
Experts a. Long-term experts	Ground motion	Earthquake observation and soil testing: N. Hurukawa 02.10.1-04.9.30
	Structure	Seismic retrofitting and design: A. Mikame 02.10.01-05.9.30 M. Seki 05.9.4-07.9.13 Seismic retrofitting: T. Kaminosono 04.9.21-06.9.30 H. Kato 06.9.14-07.9.30 Project coordinator: I. Tojo 02.10.1 -05.6.30 K. Miyara 05.6.15-07.6.14 Seven long-term experts
b. Short-term experts (as of March 2007)	Total	FY2003: 1, FY2004: 1, FY2005: 1, FY2006: 1
	Structure	Seismic evaluation and retrofitting: a total of 4 Seismic code, disaster recovery: a total of 4 Assistance of MTCT Retrofitting activity: a total of 4 Seismic retrofitting techniques: 2

Item	Details		Remarks
	RC Specimen making technique & structural experiment technique: 1		FY2005: 1
	Ground motion	Collection & analysis of seismic information data: a total of 3	FY2003: 1, FY2005: 1, FY2006: 1
		Database for ground condition & structure: 1	FY2003: 1
		Input earthquake ground motion - draft manual: 2	FY2004: 1, FY2005: 1
	Soil testing	In-Situ soil testing and investigation: 3	FY2004: 2, FY2006: 1
		Indoor soil testing and investigation: 2	FY2004: 2, FY2006: 1
	Public awareness	Public awareness and dissemination: 1	FY2005: 1
	Total	A total of 27 short-term experts	FY2002: 1, FY2003: 4, FY2004: 9, FY2005: 7, FY2006: 6
Counterpart training		A total of 41 counterparts participated in training.	FY2002: 9, FY2003: 7, FY2004: 11, FY2005: 8, FY2006: 6
Provision of equipment		Total: JPY137,039,487 plus US\$258,000	
		Main items:	
		Reaction frame: JPY76,657,400	
		Triaxial testing apparatus: JPY25,937,580	
		Truck and drilling rig: US\$258,000	
		Total: JPY44,940,000 (FY2002-2007)	FY2007 = budget plan
Project management cost	Project management cost	FY2002: JPY2,600,000 FY2003: JPY4,380,000 FY2004: JPY5,508,000 FY2005: JPY4,403,000 FY2006: JPY14,049,000 FY2007: JPY 14,000,000 (budget plan)	

**Annex 3. Performance grid
Annex 3-B1. Progress of activities**

Progress of activities and Achievement of Outputs (as of 1 October 2006)

Cited from the 6-month Report of October 2006. The progress since then, confirmed by the Project in March 2007, is shown in Italics.

Progress of Activities and achievement of Outputs (as of 1 October 2006)

Activities of PDM	Field	Plan 2006.04-2006.09 (JFY2006Q1-2)	Progress so far
1-1. To examine the building seismic performance listed in the MTCT's retrofit projects 1-2. To support and evaluate MTCT's retrofit projects 1-3. To study the methods of building retrofitting (strength and ductility, and displacement-based methods) 1-4. To prepare manual explaining retrofit methods 1-5. To disseminate the technical information to structural engineers by seminar	① Seismic evaluation	● Detailing of Manual for Seismic Evaluation of Buildings in Romania (1-1, 1-4) ● (Referred to Input ground earthquake motion of ⑦) ● Selection of target buildings and feasibility study for retrofitting of target buildings (5-1,5-2)	● A revised draft of the manual for the seismic evaluation method is discussed with short-term experts. ● Meetings with MTCT and a Structural Design Company are held for selecting the target buildings and schedule of the implementation of this task. ● CNRRS/UTCB staff participated in the preparation of seismic evaluation and seismic retrofit code
2-1. To prepare equipment and facilities for seismic structural testing 2-2. To implement experiment and analyze data 2-3. To study the methods of seismic design (shear strength and ductility, and displacement-based design)	② Retrofit technique	● Detailing of Manual for the seismic retrofitting of buildings in Romania (1-3, 1-4) ● Selection of target buildings and feasibility study for retrofitting of target buildings (5-1,5-2)	● A revised draft of the manual for the seismic retrofitting of buildings is discussed with short term experts ● Meetings with MTCT and a Structural Design Company are held for selecting the target buildings and schedule of the implementation of this task. ● CNRRS/UTCB staff participated in the preparation of seismic evaluation and seismic retrofit code
2-4. To prepare equipment for strong-motion earthquake record (underground, free field and building) 2-5. To collect ground information (micro-tremor characteristic, underground soil condition) and analyze/accumulate the data 2-6. To prepare equipment and facilities for soil test/investigation	③ Inspection/Restoration	● Draft of the Manual for Post-Earthquake Inspection and Restoration (3-1, 3-2, 3-3) ● Interim proposal of new codes for seismic design (2-12)	● Manual for Post-Earthquake Inspection has been prepared for MTCT by INCERC-UTCB-CNRRS
2-7. To study the methods for soil test 2-8. To accumulate the data on earthquake intensity corresponding to ground condition 2-9. To accumulate the data on input earthquake ground-motion to buildings 2-10. To prepare the manual of input design earthquake-ground-motion 2-11. To disseminate the technical information to structural engineers by seminar 2-12. To prepare draft of technical manuals, regulations and new codes	④ Seismic design ⑤ MTCT Retrofit	● Selection of target buildings and feasibility study for retrofitting of target buildings (5-1,5-2) ● Corroboration and correspondence with World Bank project with MTCT ● Testing of retrofitted members (1-3, 1-4,1-5)	● Code for the earthquake resistant design for buildings has been enforced and the part of the input ground motion for design of buildings is discussed with a short-term expert. ● Meetings with MTCT and a Structural Design Company are held for selecting the target buildings and schedule of the implementation of this task. ● Details of retrofit works for the apartment buildings in Japan are introduced by the short-term expert. ● The performance of the structural tests on five RC walls is evaluated.
3-1. To collect information concerning post-earthquake evaluation techniques (quick inspection of damaged buildings and judgment of damage degree) 3-2. To prepare technical manual explaining the methods of post-earthquake evaluation techniques 3-3. To disseminate the technical information to structural engineers by seminar	⑥ Structural experiment ⑦ Database	● Building up/ updating database on ground information (2-5) ● Ground structure investigation (2-5, 2-8, 2-9) ● Micro-tremor array observations (2-5) ● PS logging observations (2-5) ● Draft of the manual for input earthquake ground motion (2-8, 2-9, 2-10) ● Summary of the ground vibration characteristics (2-11, 2-12)	● Database on ground information is updated with new-recorded ground motions and new data from ground survey. ● Study on the latest recorded vibration of ground and building due to the earthquakes ● Data from micro-tremor array observations are analyzed with a short-term expert. ● A draft manual of input design earthquake ground motion is discussed with a short term expert. ● The draft manual of input design earthquake ground motion is discussed with the short-term expert and the schedule for writing the manual is set.
4-1. To investigate disaster prevention preparedness of the citizens 4-2. To disseminate information on disaster prevention preparedness to the citizens by seminar 4-3. To publish printed matter concerning disaster prevention preparedness to the citizens 5-1. To select the target building for introducing new	⑧ Soil test/Ground survey	● Summary of ground information based on ground survey (2-7) ● (Feed to Building up/ updating database on ground information of ⑦) ● Testing by CPT outside Bucharest (2-5) ● Core boring by big auger bit and sampling and data analyzing of soil specimens (2-5)	● Core borings are performed outside Bucharest

<p>technology 5-2. To make proposals for retrofitting the target building</p>	<p>⑩ Dissemination/Awareness</p>	<ul style="list-style-type: none"> ● Awareness seminars for Citizens, educators, students, children and inhabitant in vulnerable buildings. (4-1, 4-2) ● Technical seminars to structural engineers. (1-5, 2-11, 3-3) ● Presentation at abroad conferences (4-1, 4-3) ● Printed matter concerning disaster prevention preparedness to the citizens (4-3) ● Newsletter (4-3) 	<ul style="list-style-type: none"> ● Technical seminars are held including in Brasov. ● An awareness seminar for children is held with BURURU. ● Action manual for students at the earthquakes prepared by INCERC supported by NCSRR and JICA long-term experts is evaluated in MTCT. ● Research papers and Abstracts are presented in International conferences. ● Outline of current activities is to be published in the newsletter.
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Plan of the 3rd and 4th quarters of JFY2006 (October 2006 - March 2007) (*Italics = Achievement between October 2006 - March 2007*)

Activities of PDM	Field	Schedule
<p>1-1. To examine the building seismic performance listed in the MTCT's retrofit projects 1-2. To support and evaluate MTCT's retrofit projects 1-3. To study the methods of building retrofitting (strength and ductility, and displacement-based methods) 1-4. To prepare manual explaining retrofit methods 1-5. To disseminate the technical information to structural engineers by seminar</p>	<p>① Seismic evaluation</p>	<p>Plan 2006.10-2007.03 (JFY2006Q3-4)</p> <ul style="list-style-type: none"> ● Detailing of Manual for Seismic Evaluation of Buildings in Romania (<i>=> Draft Ver.2 completed</i>) ● Detailing design for retrofitting of selected target buildings (<i>=> Completed</i>) ● Detailing of Manual for the seismic retrofitting of buildings in Romania (<i>=> Draft Ver.2 completed</i>) ● Detailing design for retrofitting of selected target buildings (<i>=> Completed</i>)
<p>2-1. To prepare equipment and facilities for seismic structural testing 2-2. To implement experiment and analyze data 2-3. To study the methods of seismic design (shear strength and ductility, and displacement-based design) 2-4. To prepare equipment for strong-motion earthquake record (underground, free field and building) 2-5. To collect ground information (micro-tremor characteristic, underground soil condition) and analyze/accumulate the data 2-6. To prepare equipment and facilities for soil test/investigation 2-7. To study the methods for soil test 2-8. To accumulate the data on earthquake intensity corresponding to ground condition 2-9. To accumulate the data on input earthquake ground-motion to buildings 2-10. To prepare the manual of input design earthquake ground-motion 2-11. To disseminate the technical information to structural engineers by seminar 2-12. To prepare draft of technical manuals, regulations and new codes</p>	<p>② Retrofit technique ③ Inspection/Restoration ④ Seismic design ⑤ MTCT Retrofit</p>	<ul style="list-style-type: none"> ● A draft of the manual for the seismic retrofitting of buildings is discussed short-term expert and revised. ● CNRRS/UTCB staff participated in the preparation of seismic evaluation and seismic retrofit code ● The feasibility study and the technical evaluation for the several retrofit methods are carried out. ● A draft of the manual for the seismic retrofitting of buildings is discussed short-term expert and revised. ● CNRRS/UTCB staff participated in the preparation of seismic evaluation and seismic retrofit code ● The feasibility study and the technical evaluation for the several retrofit methods are carried out. ● Seminars for the manual for quick inspection are planned. ● The post-earthquake evaluation and restoration techniques are studied. ● Code for the earthquake-resistant design for buildings has been enforced. Staff of UTCTB/CNRRS participated in the preparation of the code ● The feasibility study and the technical evaluation for the several retrofit methods are carried out. ● Details of retrofit design are explained using Japanese examples of retrofit design flows. ● The structural tests on columns are carried out and reported.
<p>3-1. To collect information concerning post-earthquake evaluation techniques (quick inspection of damaged buildings and judgment of damage degree) 3-2. To prepare technical manual explaining the methods of post-earthquake evaluation techniques 3-3. To disseminate the technical information to structural engineers by seminar</p>	<p>⑥ Structural experiment ⑦ Database ⑧ Strong motion</p>	<ul style="list-style-type: none"> ● Interim proposal of new codes for seismic design (2-12) (<i>=> A seminar was held in October 2006</i>) ● Detailing design for retrofitting of selected target buildings (<i>=> Completed</i>) ● Exchanged information with the World Bank project with MTCT ● Testing of retrofitted columns with CF sheets (1-3, 1-4, 1-5) ● Building up/ updating database on ground information (<i>=> Ongoing</i>) ● Ground structure investigation (2-5, 2-8, 2-9) (<i>=> Ongoing</i>) ● Micro-tremor array observations (2-5) (<i>=> Ongoing</i>) ● PS logging observations (2-5) (<i>=> Ongoing</i>) ● Draft of the manual for input earthquake ground motion (<i>=> Draft Ver.2 completed</i>) ● Summary of the ground vibration characteristics (2-11, 2-12) (<i>=> Ongoing</i>)
<p>4-1. To investigate disaster prevention preparedness of the citizens 4-2. To disseminate information on disaster</p>		<ul style="list-style-type: none"> ● Database on ground information is updated with new-recorded ground motions and new data from ground survey. ● Study on the latest recorded vibration of ground and building due to the earthquakes ● Micro-tremor array observations are carried out using new micro-tremor sensors ● A draft manual of input design earthquake ground motion is discussed and revised.

<p>prevention preparedness to the citizens by seminar.</p> <p>4-3. To publish printed matter concerning disaster prevention preparedness to the citizens</p> <p>5-1. To select the target building for introducing new technology</p> <p>5-2. To make proposals for retrofitting the target building</p>	<p>⑨ Soil test/ground survey</p>	<ul style="list-style-type: none"> ● Summary of ground information based on ground survey and investigation (2-7) (Feed to Building up/ updating database on ground information of ⑦) (=> <i>Ongoing</i>) ● Testing by CPT outside Bucharest (2-5) (=> <i>Not performed yet</i>) ● Core boring by big auger bit and sampling and data analyzing of soil specimens (2-5) (=> <i>Ongoing</i>) ● Awareness seminars for Citizens, educators, students, children and inhabitant in vulnerable buildings. (4-1, 4-2) (=> <i>Held 5 times</i>) ● Technical seminars to structural engineers. (1-5, 2-11, 3-3) (=> <i>Held 4 times</i>) ● Printed matter concerning disaster prevention preparedness to the citizens (4-3) (=> <i>An educational material for schoolchildren was issued. A material on legal incentives of retrofitting is being drafted.</i>) ● Newsletter (4-3) 	<ul style="list-style-type: none"> ● Core borings and CPT tests are performed inside and outside Bucharest ● Soil tests are carried out on samples took from core boring sites <ul style="list-style-type: none"> ● Seminars for students in schools are held.. ● Technical/Awareness seminars are held. ● International Conference in April 2007 is prepared. ● Printed matters on earthquake preparedness and education are prepared ● Outline of current activities is to be published in the newsletter.
	<p>⑩ Dissemination /Awareness</p>		

Plan of Operation

Plan of Operation (Cited from the 6-month Report of October 2006. Confirmed by the Project in March 2007)

Activities	2002			2003			2004			2005			2006			2007										
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep		
1-1. To examine the building seismic performance listed in the MTCT retrofit projects																										
1-2. To support and evaluate MTCT retrofit projects																										
1-3. To study the methods of building retrofitting																										
1-4. To prepare a manual explaining retrofit methods																										
1-5. To disseminate the technical information to structural engineers by seminar																										
2-1. To prepare equipment and facilities for seismic structural testing																										
2-2. To implement experiment and analyze data																										
2-3. To study the methods of seismic design (shear strength and ductility, and displacement-based design)																										
(Under ground)																										
(Free field, Building)																										
2-4. To prepare equipment for strong-motion earthquake record (underground, free field and building)																										
2-5. To collect ground information and analyze/accumulate the data																										

Plan of Operation

Activities	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
Design/Order																																					
2-6. To prepare equipment and facilities for soil test/investigation																																					
2-7. To study the methods for soil test																																					
2-8. To accumulate the data on earthquake intensity corresponding to ground condition																																					
2-9. To accumulate the data on input earthquake - ground-motion to buildings																																					
2-10. To prepare the manual of input design earthquake- ground- motion																																					
2-11. To disseminate the technical information to structural engineers by seminar																																					
2-12. To prepare draft of technical manuals, regulations and new codes																																					
2-13 Databasing of existing structure testing data, last INCERC																																					
3-1. To collect information concerning post- earthquake evaluation techniques																																					
3-2. To prepare technical manual explaining the methods of post- earthquake evaluation techniques																																					
3-3. To disseminate the technical information to structural engineers by seminar																																					
4-1. To investigate the level of disaster prevention preparedness to the citizens																																					
4-2. To disseminate information on disaster prevention preparedness to the citizens by seminar																																					
4-3. To publish primed matter concerning disaster prevention preparedness to the citizens																																					
5-1. To select the target building for introducing new technology																																					
5-2. To make proposals for retrofitting the target building																																					