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PROCEEDINGS
OF
TOKYO INTERNATIONAL WORKSHOP 2009
ON
EARTHQUAKE DISASTER MITIGATION FOR SAFER HOUSING

地震防災のための東京国際ワークショップ 2009 報告書

＜住宅の被害軽減を目指して＞

January 21-22, 2009

Tokyo, Tsukuba, Jakarta,Bandung,Yogyakarta,Kathmandu, Islamabad,Peshawar,Istanbul,Ankara

Building Research Institute (BRI)
National Research Institute for Earth Science and Disaster Prevention (NIED)
Mie University
National Graduate Institute for Policy Studies (GRIPS)

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Facilitator: Dr. Kenji OKAZAKI

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ファシリテーター：岡崎 健二

第４部　テーマ１「リスク管理システム」及びテーマ３「技術の社会への定着」の活動紹介
ファシリテーター：花里利一

＜参考資料＞

1. OUTLINE OF WORKSHOP
ワークショップ概要

Tokyo International Workshop 2009 on Earthquake Disaster Mitigation for Safer Housing

1.Date and Time

	Session 1&2 January 21 (Wed), 2009	Session 3&4 January 22 (Thu), 2009
JAPAN	16:00 – 20:20	16:00 – 21:00
INDONESIA	14:00 – 18:20	14:00 – 19:00
NEPAL	12:45 – 17:05	12:45 – 17:45
PAKISTAN	12:00 – 16:20	12:00 – 17:00
TURKEY	9:00 – 13:20	9:00 – 14:00

2.Venues

・JAPAN
- □ Tokyo—World Bank Tokyo Development Learning Center (TDLC)
- □ Tsukuba—Japan (Sub Venue)：Building Research Institute (BRI)

・INDONESIA
- □ Jakarta—JICA Indonesia Office
- □ Bandung—Bandung Institute of Technology
- □ Yogyakarta—Gadjah Mada University

・NEPAL
- □ Kathmandu—JICA Nepal Office

・PAKISTAN
- □ Islamabad—JICA Pakistan Office
- □ Peshawar—NWFP University of Engineering, Peshawar(UETP)

・TURKEY
- □ Istanbul—Bilgi University
- □ Ankara—JICA Turkey Office

3.Participants

Venue	No. of participants	
	Session1&2	Session3&4
□ Tokyo	24	21
□ Tsukuba	9	10
□ Jakarta	2	2
□ Bandung	8	15
□ Yogyakarta	9	6
□ Kathmandu	7	5
□ Islamabad	6	7
□ Peshawar	3	2
□ Istanbul	1	2
□ Ankara	1	2
□ Web streaming	5	5
Total	75	77

4.Language：English

地震防災のための東京国際ワークショップ 2009
＜住宅の被害軽減を目指して＞

１．日時

	第 1 部、第 2 部 2009 年 1 月 21 日（水）	第 3 部、第 4 部 2009 年 1 月 22 日（木）
日本	16:00 - 20:20	16:00 - 21:00
インドネシア	14:00 - 18:20	14:00 - 19:00
ネパール	12:45 - 17:05	12:45 - 17:45
パキスタン	12:00 - 16:20	12:00 - 17:00
トルコ	9:00 - 13:20	9:00 - 14:00

２．場所

下記の５ヶ国を世界銀行グロバール・ディスタンス・ラーニング・ネットワークのビデオ会議システムで繋いで実施。

- 主会場：世界銀行東京開発ラーニングセンター（内幸町富国生命ビル）
- 国内サブ会場：建築研究所（つくば市）
- 海外サブ会場：インドネシア（ジャカルタ、バンドン、ジョグジャカルタ）
- ネパール（カトマンズ）
- パキスタン（イスラマバード、ペシャワール）
- トルコ（イスタンブール、アンカラ）

３．参加者

会場	参加者数	
	第 1 部、第 2 部	第 3 部、第 4 部
□　東京	24	21
□　つくば	9	10
□　ジャカルタ	2	2
□　バンドン	8	15
□　ジョグジャカルタ	9	6
□　カトマンズ	7	5
□　イスラマバード	6	7
□　ペシャワール	3	2
□　イスタンブール	1	2
□　アンカラ	1	2
□　ウェブストリーミングス	5	5
合計	75	77

４．言語：英語

Summary of discussions/comments during Q & A times

Session 1:

- ***PP-band***

Attaching is easy. Just prepare the mesh, put them inside and outside, and just connect them by steel wire or any material. The effect will be low if there's any space between the mesh and the inside brick so if the connection is imperfect, you should put material (mortar or cement) on the surface.

Several model houses using our system are in central Java and you can visit them.

Certainly by lowering the cost, it is easier to make PP-band more acceptable, but in fact, an insurance company is very interested in the system and a village scale implementation is now on progress in India. Also it may be well promoted by firstly introducing it to public facilities but this system is basically for the non-engineering section and it should be promoted by establishing good seismic call and a quality control system.

Efficiency would be higher if we use 45°mesh, but 90°mesh is more than enough and also it is easy to prepare. / ***Dr. Kimiro MEGURO***

- ***Minimum requirement for reconstruction after EQ***

We learned from the experience of the Java Earthquake when we were criticized by the government that our proposal did not fit the local standard. We are still developing the minimum requirement. This is just one approach of the Peruvian experience. / ***Mr. Ichiro KOBAYASHI***

- ***EEW system***

EEW is one technology to give a warning before strong motion and another research is needed to fully utilize it to make it result in reducing damages. / ***Dr. Tatsuo NARAFU***

Some core space inside the building must be prepared to escape. / ***Dr. Shunroku YAMAMOTO***

JR uses the same system for 5-10 years. / ***Dr. Shunroku YAMAMOTO***

A station costs 40 million yen, home seismometer costs 40-60 thousand yen. / ***Dr. Shigeki HORIUCHI***

Session 2:

- ***Disaster Relief***

When disaster happens we contact JICA(located in more than 150 countries), MOFA and Japanese embassy. Time to time we share it with the rescue team. / ***Mr. Hitoshi SATO***

When the team dispatch the country we try to cooperate with local government through LEMA (Local Emergency Management Agency). We provide a scheme on rescue training, disaster reduction / mitigation and rescue technique. JICA has training courses; one or two person(s) will be invited for 2 weeks up to 3 months (the period depends on the course). Please contact local JICA offices for information. / ***Mr. Hitoshi SATO***

Instructors / graduates of our PR program are familiar with interact process and they know the requirement of collaboration. Response given by the MFR is higher than first aid but lower than medical response but it can stabilize the victims. Assessment will be given and injury will be identified. But when the victim is to be taken out and transported to the hospital, they should be provided with necessary medical response. Therefore some medical rescue course is necessary to be taken to gain medical response skills to be used inside the collapsed buildings. / ***Mr. Amod DIXIT***

Session 3:

➢***Why the result differed between Japanese and Pakistani brick***

The reason why the Japanese brick survived the shake and the Pakistani brick didn't, is an issue we are still studying on, but at least there are two factors to be considered; (1) Strength between mortar and brick --- Japanese brick bond harder to mortar than Pakistan's, (2) The two walls only became separated on the Pakistani brick side. / ***Dr. Toshikazu HANAZATO***

➢***Future advancement of cyclic loading experiment***

We are trying to quantify numerical data of the common practice of Indonesia. This is just a first step and it's a basic result. We'll continue adding to this result. / ***Dr. Dyah KUSUMASTUTI, Dr. Tatsuo NARAFU***

➢***Difficulty in introducing sliding seismic isolator by steel plate to a masonry unit***

Slab is a big problem. There is a need to make a rigid base and reinforce it to introduce this system to a masonry unit which isn't a rigid block. / ***Dr. Eizaburo TACHIBANA***

➢***Cost of the seismic isolation technology using scrap tires***

Maybe about $15. It's nearly free. If there's any need for expenses they're for steel between the tires and rods to join. / ***Dr. Ahmed TURER***

➢***Period of sliding style isolator***

There's no natural period for sliding isolation system. / ***Dr. Yuji ISHIYAMA***

➢***Relation between seismic characteristic and the system operation***

Structural period equals seismic characteristic period and if the character is soft, earthquake period will be large. That means, if the seismic characteristic is rigid, base isolation period will be short, and base isolation system works better. / ***Dr. Iman Satyarno***

Session 4:

➢***Difference in earthquake risk perception among different areas in Indonesia***

Capacity of schools / teachers does differ between big island and small islands, and big cities / urban areas and rural areas. / ***Dr. Krishna PRIBADI***

An Iranian case shows that information exchange of school retrofitting program and education program is effective. / Dr. Ando

➢***Further action to enhance the crisis provision by women***

It would be nice to expand this approach to some activities of introducing retrofitting improvement program or method that is easy for women to understand. / ***Dr. Shoichi ANDO***

➢***Difficulties in developing administration and enforcement capacity***

There are many difficulties but the main difficulty is that each of the twenty-eight local governments has different local regulation on building permit and we have to arrange / prepare documents for all of them. / ***Mr. Yasuyuki KAMEMURA***

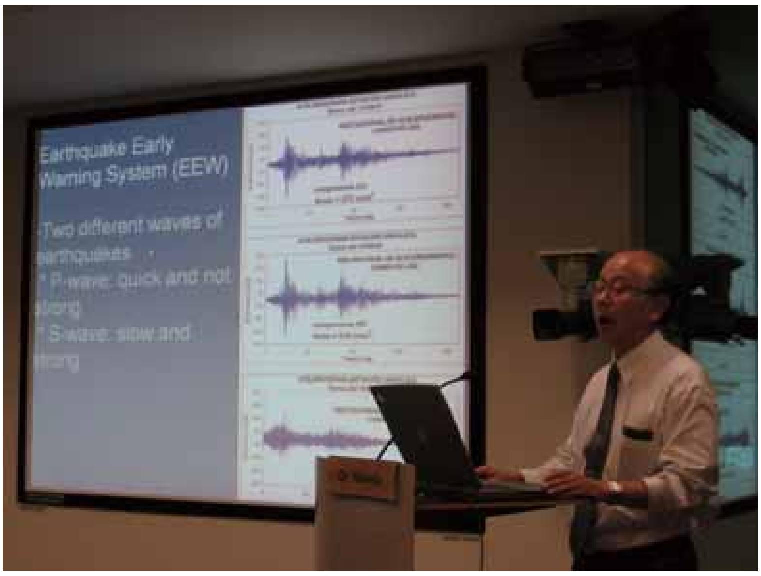
In Nepal, in order to generalize administration and enforcement capacity development, the best practice in introducing building permit system had been introduced to other municipality through national workshop or government information system. / ***Dr. Dr. Shoichi ANDO***

東京会場風景

各会場風景

ウエブストリーミングス風景

発表風景１



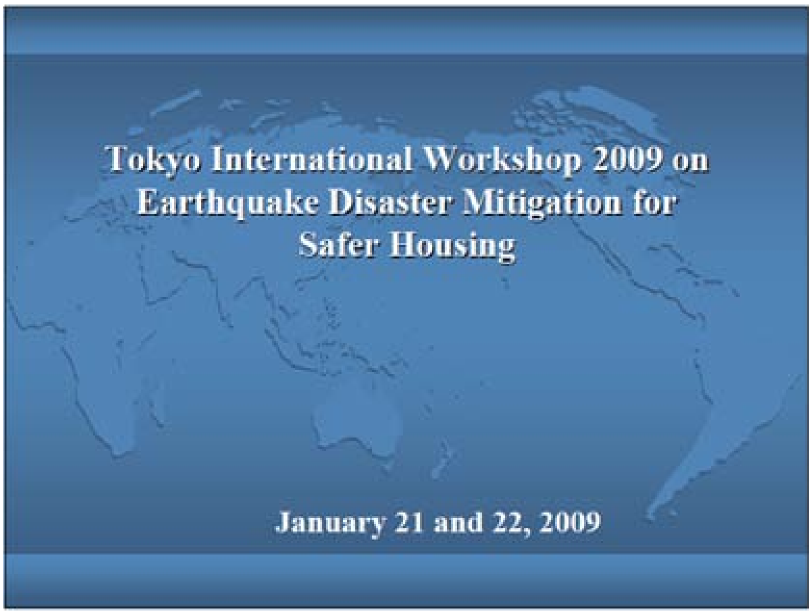
発表風景２

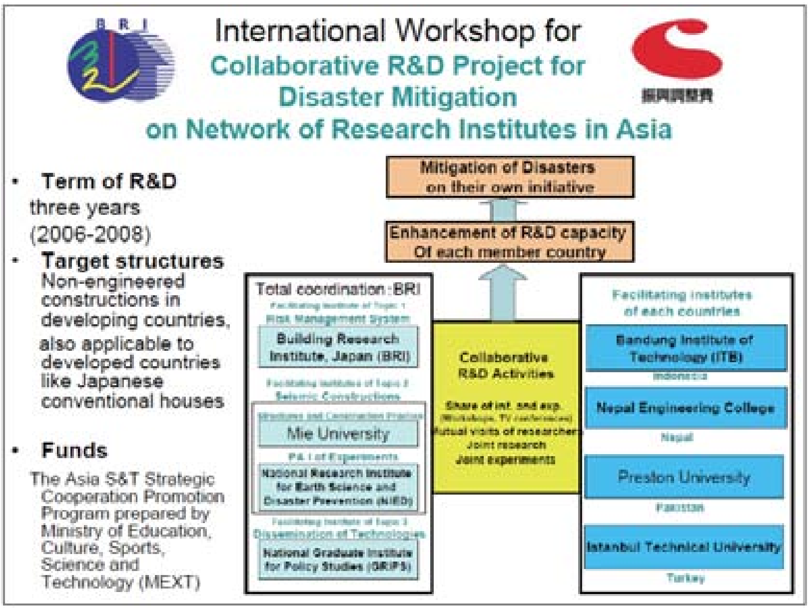
会場風景（質疑応答、コメント）

2. PRESENTATION MATERIALS OF WORKSHOP
ワークショップ発表資料

1.1. Inauguration (Tatsuo NARAFU)

開会（独立行政法人建築研究所　楢府龍雄）





Content of WS

January 21

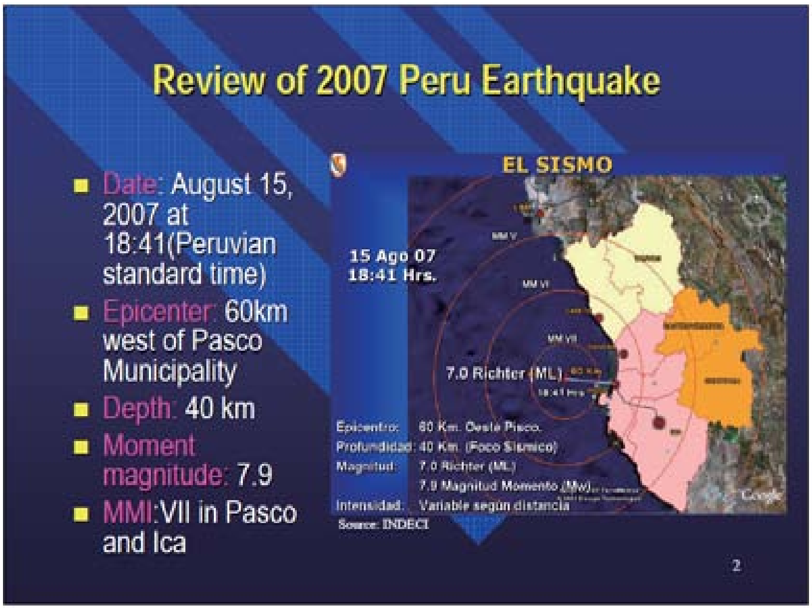
- Inputs from outside resource persons
- Introduction of new technologies/approaches which could contribute to reduce disasters
- Summary of activities 2008 and new steps forward

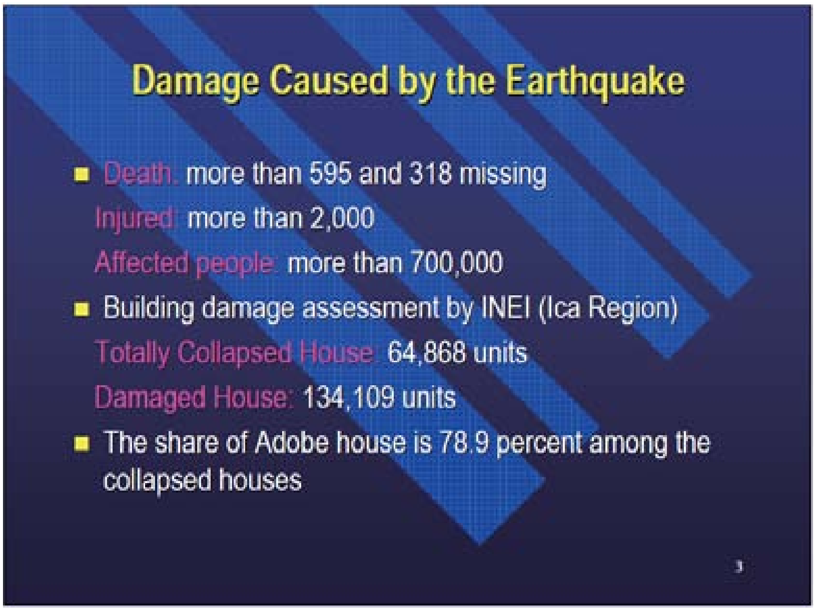
January 22

- Outline of R&D activities
  - Topic 2: Feasible and Affordable Seismic Construction
  - Topic 1 and 3: Risk Management, Strategies for Dissemination of Technologies

1.2. Outline of Pilot Project for Dissemination of Technology in Reconstruction from Pisco Earthquake 2007 (Ichiro KOBAYASHI)

ピスコ地震復興事業における耐震技術普及の取り組み（オリエンタルコンサルタンツ　小林一郎）





Introduction of the Study

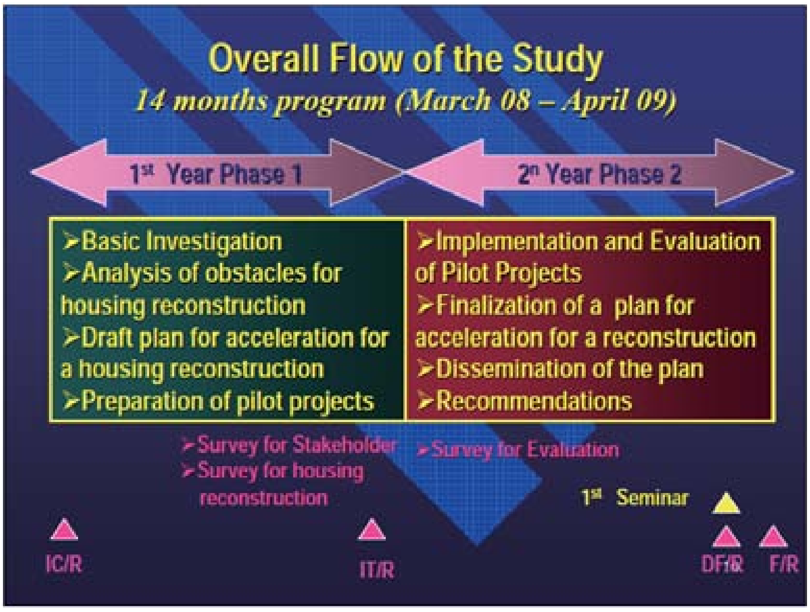
- The Project is funded by JICA
- Title: The Study on Housing Reconstruction with Seismic-resistant house in the Republic of Peru
- Counterpart organization: the Ministry of Housing and Sanitation (Peru)
- Consultants: Oriental Consultants Co. LTD,

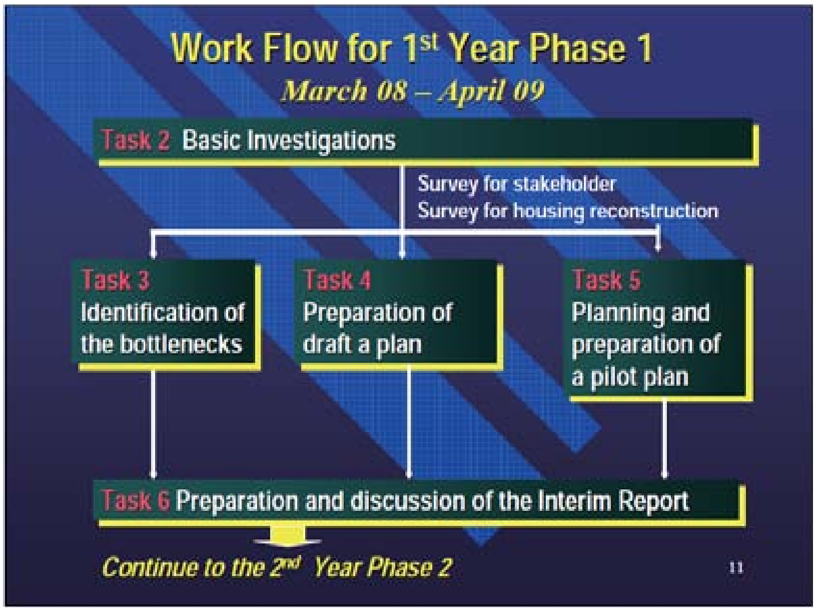
7

Objectives of the Study

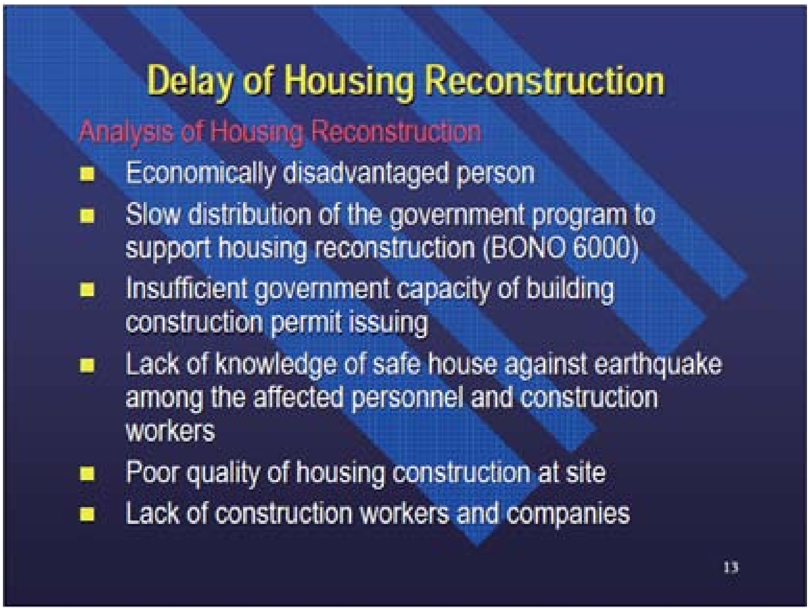
- To formulate an acceleration plan for housing reconstruction, which consists of a set of practical measures to facilitate the housing reconstruction with seismic-resistant houses
- To implement pilot projects to test the effective and practicality of the measures, and improve the plan reflecting the test results
- To understand technical transfer to relevant Peruvian officials and engineers through the Study activities

9

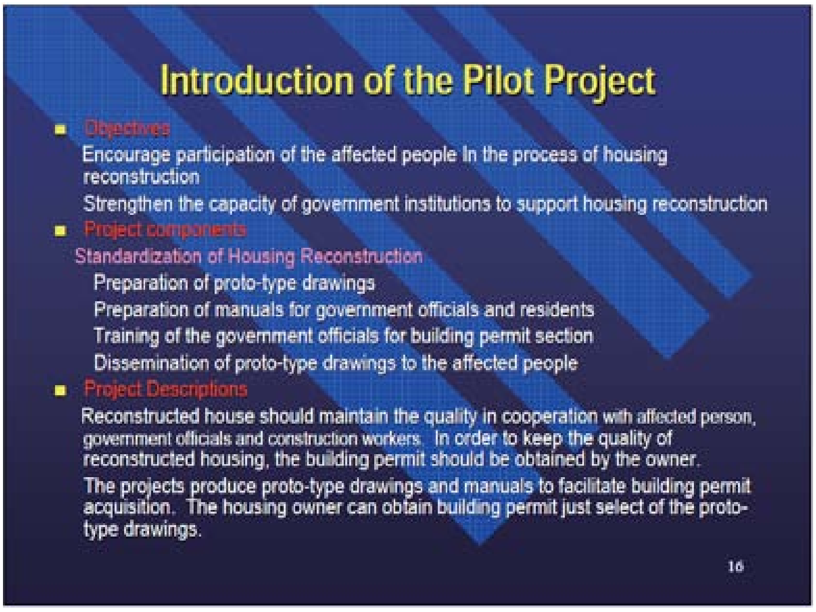



Work Flow for 1st Year Phase 1
March 08 – April 09
Task 2 Basic Investigations
Survey for stakeholder
Survey for housing reconstruction
Task 3
Identification of the bottlenecks
Task 4
Preparation of draft a plan
Task 5
Planning and preparation of a pilot plan
Task 6 Preparation and discussion of the Interim Report
Continue to the 2nd Year Phase 2
11

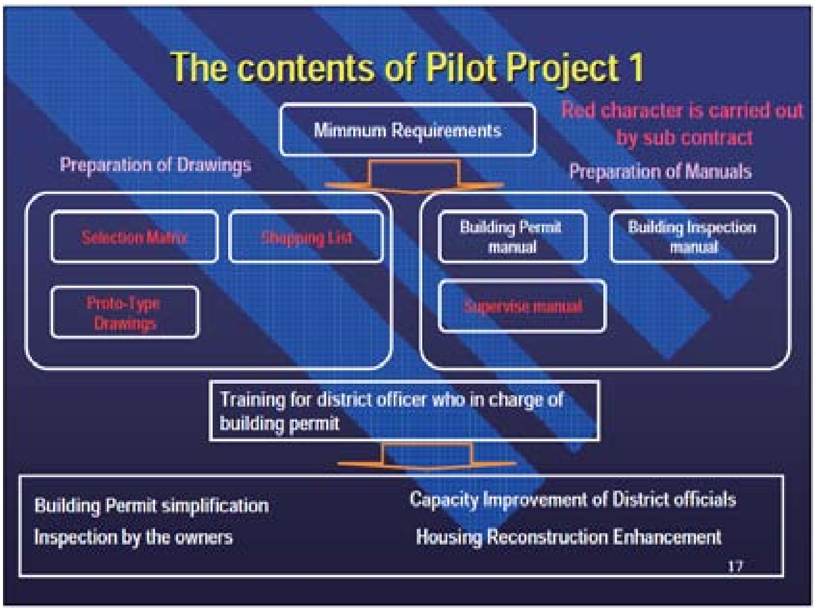

Work Flow for 2nd Year Phase 2
July 08-April 09
Task 7 Implementation of pilot projects
Task 8 Preparation and discussion of progress report
Task 9
Evaluation of pilot project
Task 10
Finalization of a plan
Task 11
Proposal of additional measures
Survey on housing reconstruction
Task 12 Preparation and discussion of draft final report
1st Dissemination of the plan seminar
12


Delay of Housing Reconstruction
Analysis of Housing Reconstruction
Economically disadvantaged person
Slow distribution of the government program to support housing reconstruction (BONO 6000)
Insufficient government capacity of building construction permit issuing
Lack of knowledge of safe house against earthquake among the affected personnel and construction workers
Poor quality of housing construction at site
Lack of construction workers and companies
13

Design of Pilot Project
Keep the quality of reconstructed house
Involvement of affected person to the building reconstruction process
The reconstructed house should be safe against earthquake
Building permit should be applied whole reconstructed buildings
Capacity improvement of the government officials, especially building permit issuing section
Dissemination of the safe house against earthquake to affected people and construction workers
14

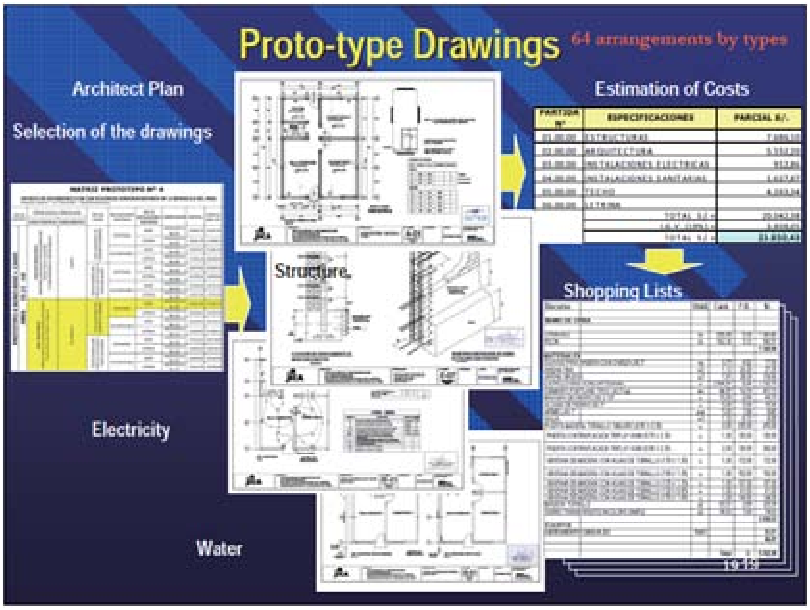


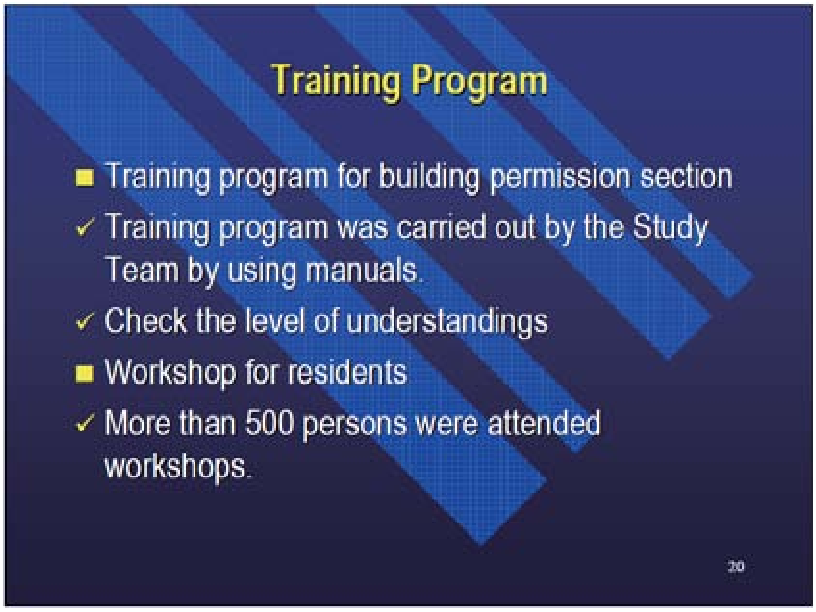
Introduction of the Pilot Project
Objectives
Encourage participation of the affected people In the process of housing reconstruction
Strengthen the capacity of government institutions to support housing reconstruction
Project components
Standardization of Housing Reconstruction
Preparation of proto-type drawings
Preparation of manuals for government officials and residents
Training of the government officials for building permit section
Dissemination of proto-type drawings to the affected people
Project Descriptions
Reconstructed house should maintain the quality in cooperation with affected person, government officials and construction workers. In order to keep the quality of reconstructed housing, the building permit should be obtained by the owner.
The projects produce proto-type drawings and manuals to facilitate building permit acquisition. The housing owner can obtain building permit just select of the proto-type drawings.
16



The contents of Pilot Project 1
Mimmum Requirements
Red character is carried out by sub contract
Preparation of Drawings
Preparation of Manuals
Selection Matrix
Shopping List
Proto-Type Drawings
Building Permit manual
Building Inspection manual
Supervise manual
Training for district officer who in charge of building permit
Building Permit simplification
Inspection by the owners
Capacity Improvement of District officials
Housing Reconstruction Enhancement
17


Minimum Requirements
Minimum requirements are basic Idea for whole materials produced by the projects.
Minimum requirements are composed of material, dimension and connection.
Minimum requirements draw from Peruvian standard
JICA
REQUERIMIENTOS MINIMOS
PARA VIVIENDAS MAS SEGURAS


Proto-type Drawings
64 arrangements by types
Architect Plan
Selection of the drawings
Estimation of Costs
PARTIDA N°
ESPECIFICACIONES
PARCIAL S/.
ESTRUCTURAS
ARQUITECTURA
INSTALACIONES ELECTRICAS
INSTALACIONES SANITARIAS
TECHO
LETRINA
Structure
Shopping Lists
Electricity
Water


Training Program
Training program for building permission section
Training program was carried out by the Study Team by using manuals.
Check the level of understandings
Workshop for residents
More than 500 persons were attended workshops.
20

Project bank registration

- Project bank is regulated by the existing law
- When the drawings are registered to the project bank, applied building are approved without building evaluation.
- Three district congress approved to register prototype drawing to the project bank.
- The building permission will be simplified by using prototype drawings, which developed by the Team
- Peruvian government appreciate to have one solution of enhancement of building construction with keeping the building quality

21

Dissemination Activities

- Dissemination of safe housing and proto-type drawing to the affected people
- One-day training and theater presentation to attract people's attention

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Lesson Learned

- Team's proposals are accepted by the Peruvian governments
- Proto-type drawings with manuals are effective methods of enhancement housing reconstruction with keeping quality
- The approach produces win-win solution both the government officials and residents
- Knowledge of safe housing construction and building permit system is still low
- Dissemination of proto-type drawings to the residents is important
- Extension of proto-type drawings and manuals to other districts is necessary

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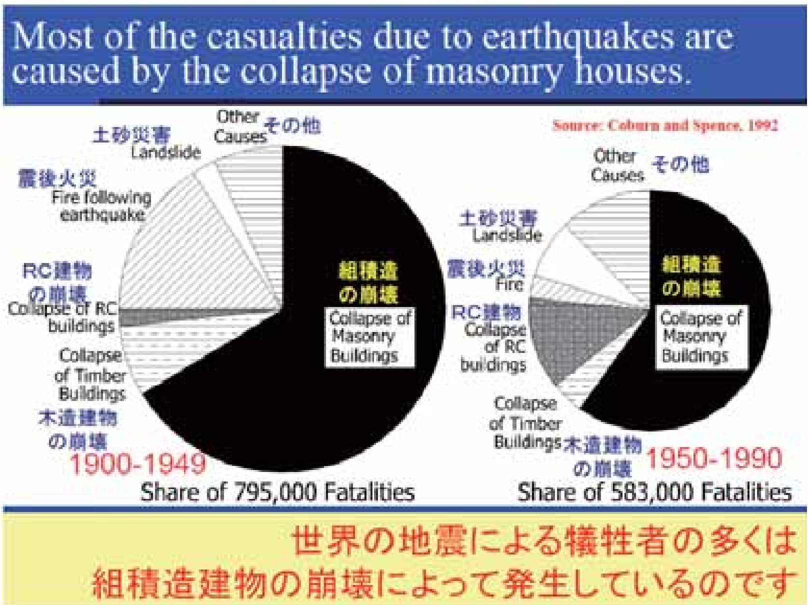
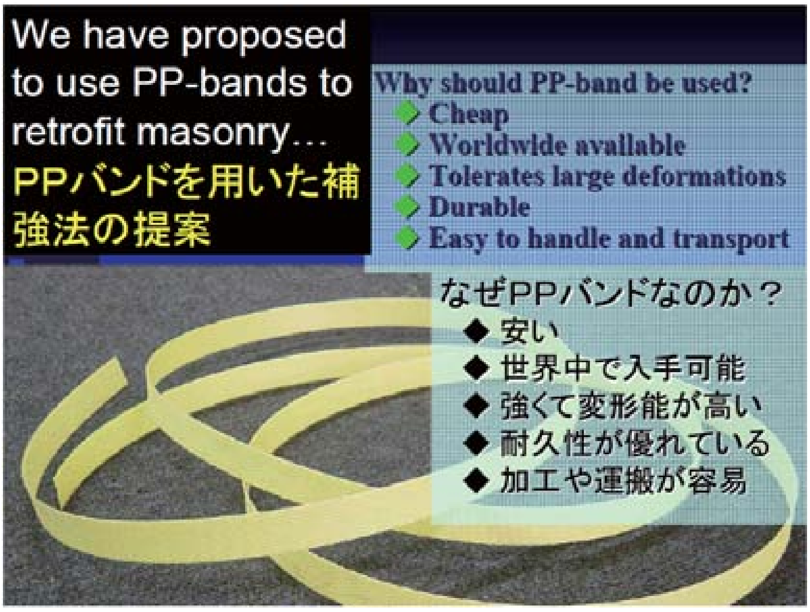
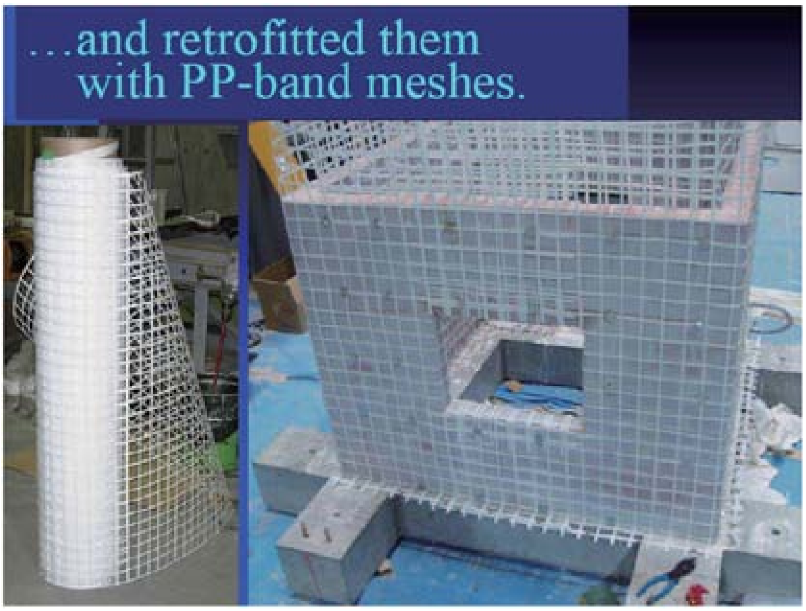
1.3. Implementation of earthquake safer housing through technological and social approaches (Kimiro MEGURO)

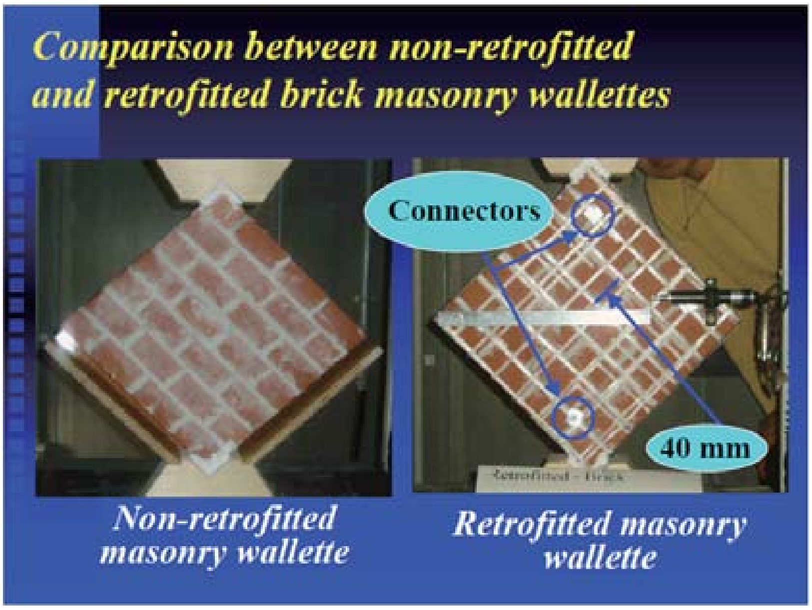
工学的・社会学的なアプローチで実現する地震に強い建物（東京大学　目黒公郎）

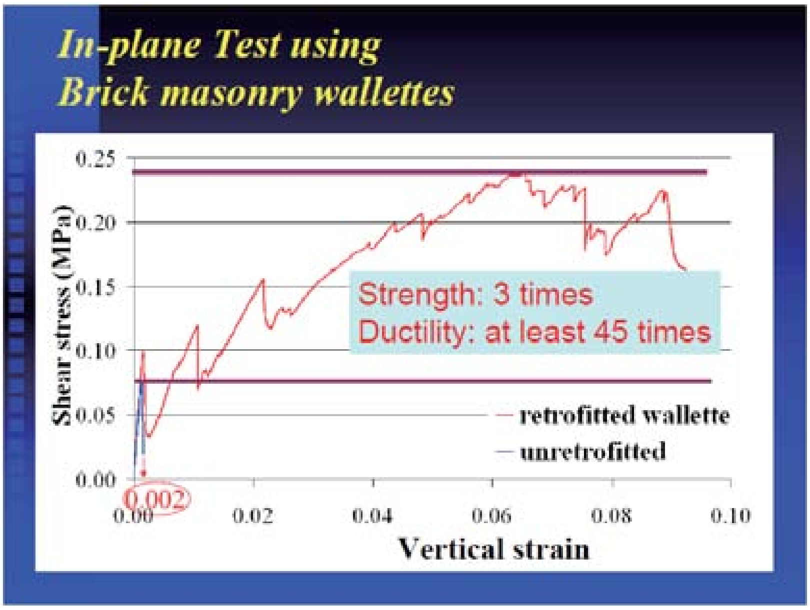



Most important issues
Increase of disaster imagination capability
(It's impossible to prepare for unimaginable situation.)
Good/proper structural codes
(The codes that are not followed are bad codes.)
Implementation system of the codes
(quality control system of design and construction, education/re-education of engineers, good workmanship, etc.)
Cares for existing structures, especially built before the establishment/revision of the codes
(seismic capacity evaluation and retrofit: methods and implementation system, etc.)
by K. Meguro (University of Tokyo)

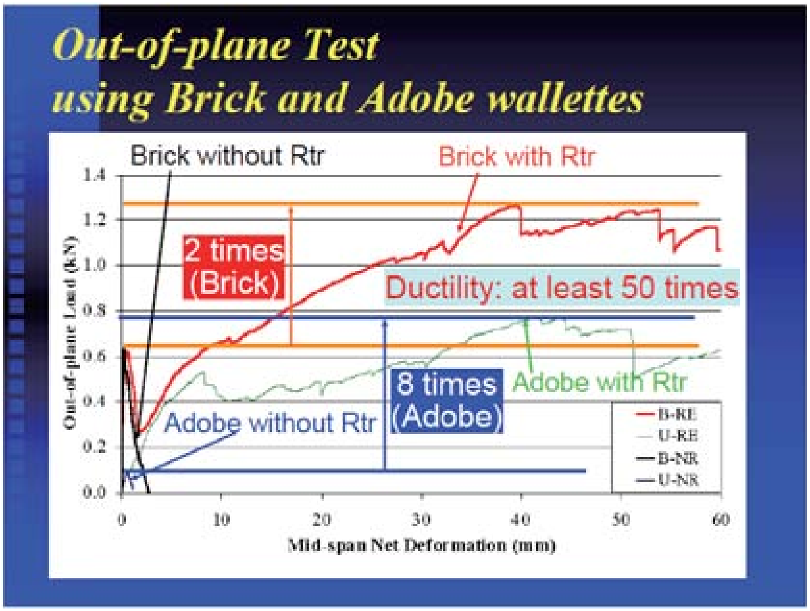

We have proposed to use PP-bands to retrofit masonry…
PPバンドを用いた補強法の提案
Why should PP-band be used?
Cheap
Worldwide available
Tolerates large deformations
Durable
Easy to handle and transport
なぜPPバンドなのか？
安い
世界中で入手可能
強くて変形能が高い
耐久性が優れている
加工や運搬が容易

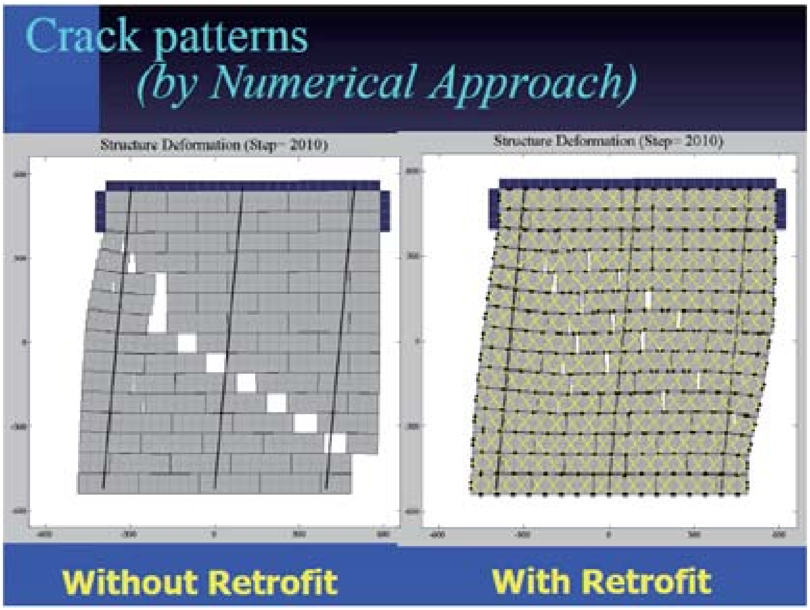

…and retrofitted them with PP-band meshes.

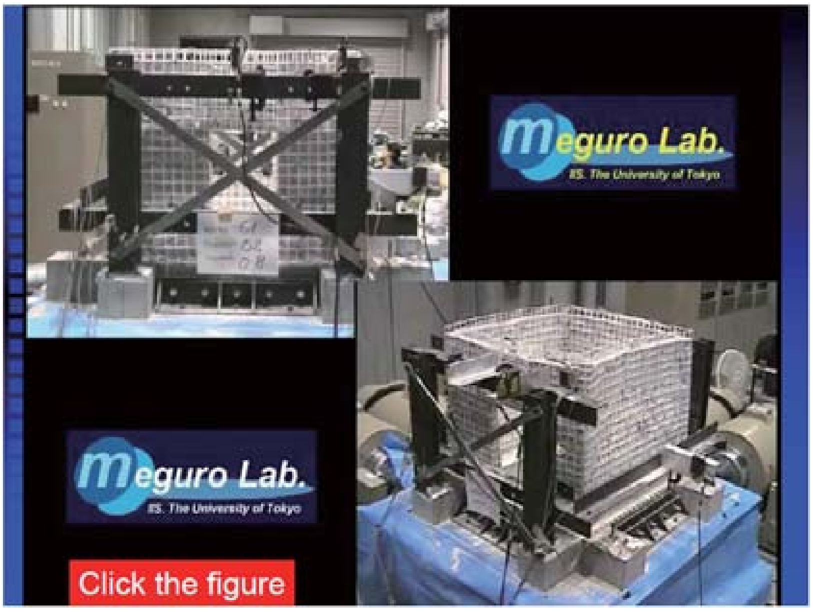

Comparison between non-retrofitted and retrofitted brick masonry wallettes
Connectors
40 mm
Non-retrofitted masonry wallette
Retrofitted masonry wallette

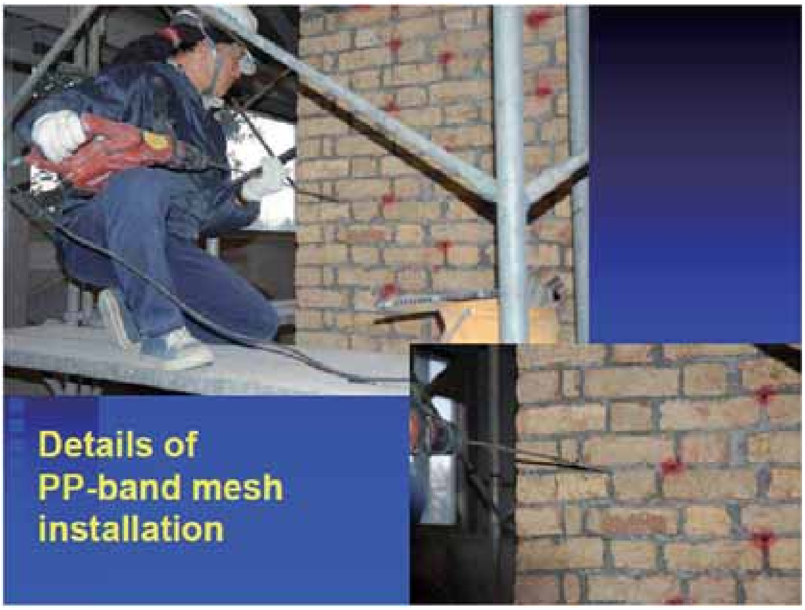

In-plane Test using Brick masonry wallettes
Shear stress (MPa)
0.25
0.20
0.15
0.10
0.05
0.00
0.002
0.00
0.02
0.04
0.06
0.08
0.10
Vertical strain
Strength: 3 times
Ductility: at least 45 times
retrofitted wallette
unretrofitted


Out-of-plane Test/面外破壊試験
Without Retrofit 非補強
With Retrofit 補強済み


Out-of-plane Test
using Brick and Adobe wallettes
Brick without Rtr
Brick with Rtr
2 times
(Brick)
Ductility: at least 50 times
8 times
(Adobe)
Adobe with Rtr
Adobe without Rtr
B-RE
U-RE
B-NR
U-NR
Out-of-plane Load (kN)
Mid-span Net Deformation (mm)


Crack patterns
(by Numerical Approach)
Structure Deformation (Step= 2010)
Structure Deformation (Step= 2010)
Without Retrofit
With Retrofit


Meguro Lab.
IIS, The University of Tokyo
Meguro Lab.
IIS, The University of Tokyo
Click the figure


Details of
PP-band mesh
installation


1/6 Scaled Model
Full-Scale Model
Site Demonstration of
Construction and Simple Shaking
Table Test done after the 2005
Pakistan Eq. for decision makers,
local practitioners, mass media
people and the general public
Shaking Table Test
using Scale model
(Both Shaking table and
Specimen are prepared
at the site)


PP-band technique is introduced
in local language
現地の言葉を用いてPP-バンド補強法が紹介された
Meguro Lab.
Professor Meguro explains PP-band
method and Mr. Amod Dixit, NSET,
translates it into local language.

Conclusions

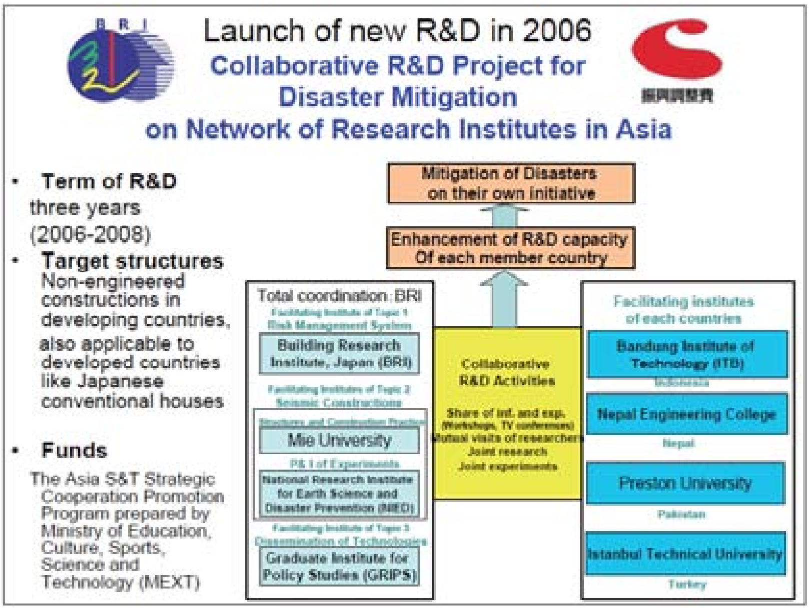
- We cannot prevent earthquake occurrence, but earthquake does not kill people. Structures kill the people.
- Today's poor-quality structures will be negative inheritance in next generations and attack their society.
- By strengthening weak structures by both technological and social approaches which are local available, applicable and acceptable, we can drastically reduce earthquake damage.

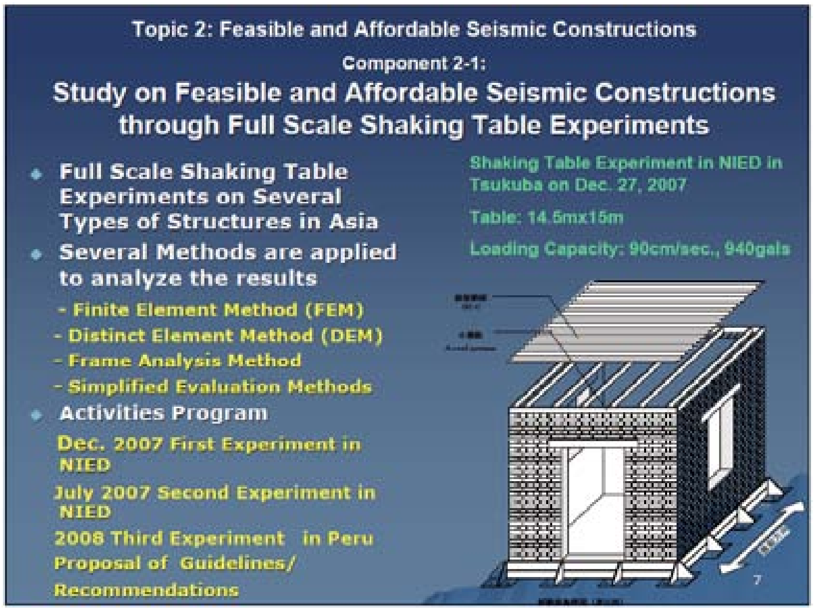
What should we do from now?
It's A Time for Action

1.4. Introduction of technologies which has potentials to reduce casualties (Tatsuo NARAFU)

人的被害軽減に活用可能性を有する技術について（早期地震警報及び緊急援助活動）

（独立行政法人建築研究所　楢府龍雄）





Topic 2: Risk Feasible and Affordable Seismic Constructions

Component 2-2:

Bridge between Engineering and Construction Works

- Monitoring Construction Practices on Site
- Elaborating Recommendations which could be accepted and adopted by Local Workers

Topic 3: Strategies for Dissemination to Technologies to Communities

Component 3-1:

Comprehensive Study on Dissemination of Technologies to Communities

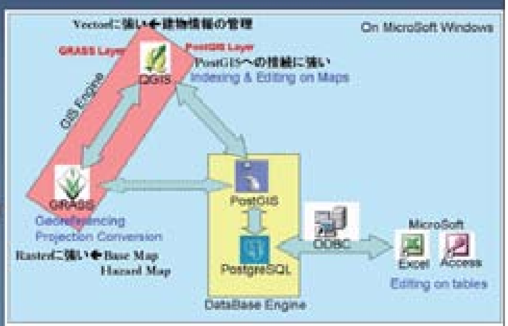
- Comprehensive Study on Dissemination of Technologies consisting followings
  - collecting and analyzing good practices
  - interview survey on risk perception of communities
  - survey on policies of local and central government on disaster mitigation strategies
  - pilot project with several approaches
  - analysis of effectiveness of each approach

Topic 1: Risk Management System

Component 1-1:

Contrivance for Seismic Risk Recognition by Communities

- Development of a new system for Risk Management which enhances risk recognition of communities
- Community-based approach/Community participation
- Activities Program
  - preparation of tools
    mapping base using satellite image/aero photos
    simple evaluation criteria of seismic safety of houses
  - case study in several districts
  - elaboration of the system



選定したフリーソフトウェアによるシステム構成概念図

Findings during three-year R&D activities

- Huge number of vulnerable houses in the world
- It is not easy to construct safer houses in a short period
- We need to deepen the topics and expand our scope to realize disaster reduction

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Proposal of Future R&D

based on Achievements of R&D project 2006-2008

- To Expand the scope

- Earthquake Early Warning system (EER) for escape
- Collaboration with Emergency Relief activities

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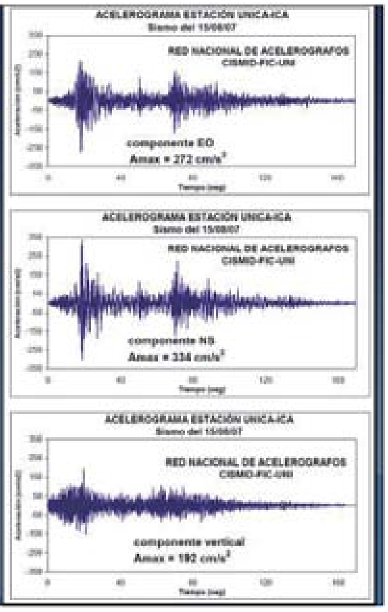
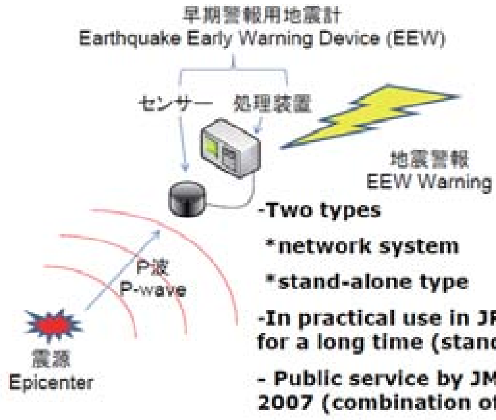
Earthquake Early Warning System (EEW)

-Two different waves of earthquakes
 * P-wave: quick and not strong
 * S-wave: slow and strong



Outline of Earthquake Early Warning System



- Two types
  - *network system
  - *stand-alone type
- In practical use in JR for Shinkansen for a long time (stand-alone type)
- Public service by JMA started in Oct. 2007 (combination of two types)
- Good chance to introduce stand-alone type to developing countires

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Collaboration with Emergency Relief

Background

- Emergency relief activities after EQ is by international community is very active recently
- Collaboration with ER has also a big potential for reduction of casualties

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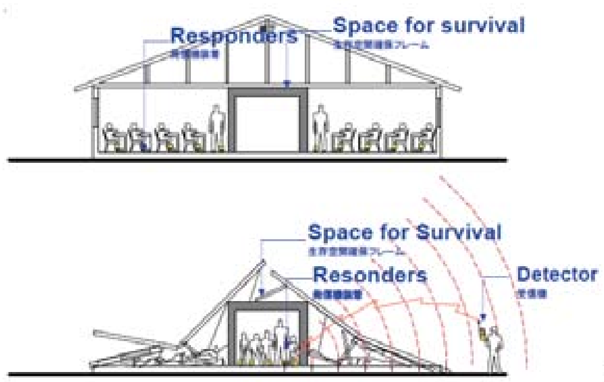
Several Ideas for Collaboration

- Design and construction of “Space for Survival”
- Low cost detecting system of survivors



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1.5. Introduction of Earthquake Early Warning System (EEW) operated in Japan (Shigeki HORIUCHI)

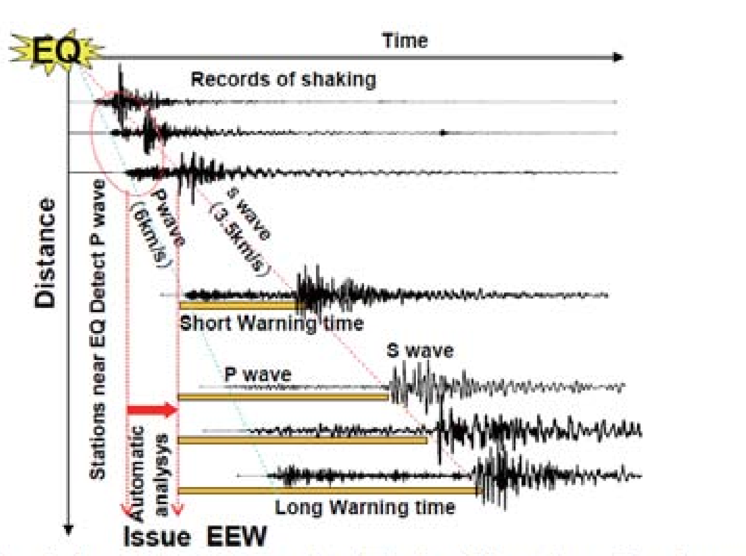
日本の早期地震警報の概要（独立行政法人防災科学技術研究所　堀内茂木）

Earthquake Early Warning System in Japan

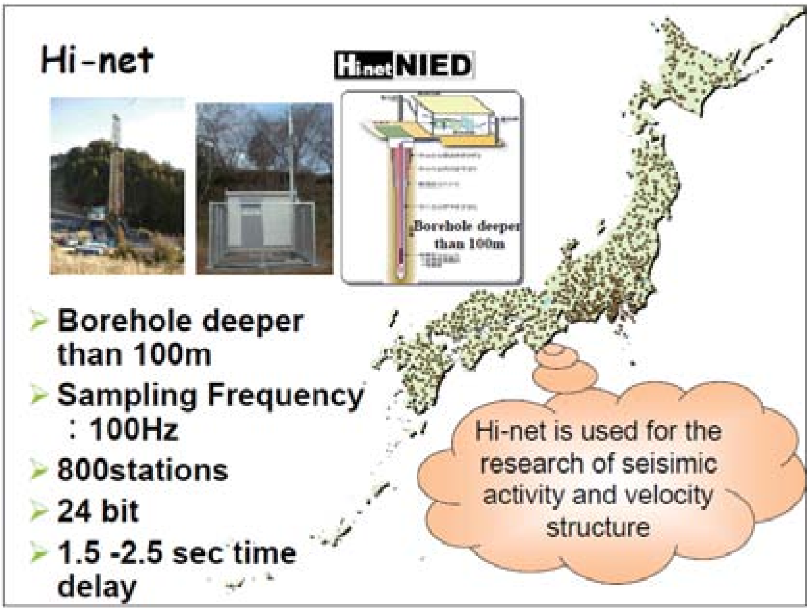
Shigeki Horiuchi
National Research Institute for Earth Science and Disaster Prevention (NIED), Japan

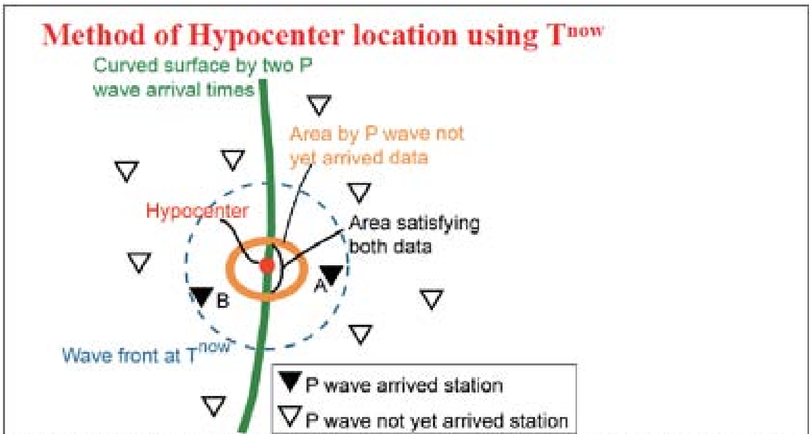
1. Installation of an Earthquake Early Warning (EEW) system creates about 30 seconds of warning time before the strong shaking by Tokai, Tonankai and Nankai earthquakes to people in big cities such as Osaka and Nagoya.
2. We developed an automatic processing system of seismic wave for EEW.
3. Japan Meteorological Agency (JMA) has started the practical service of EEW.

1)Automatic hypocenter location for EEW.
2)Shaking intensity magnitude.
3)Home seismometer for EEW of the next generation.

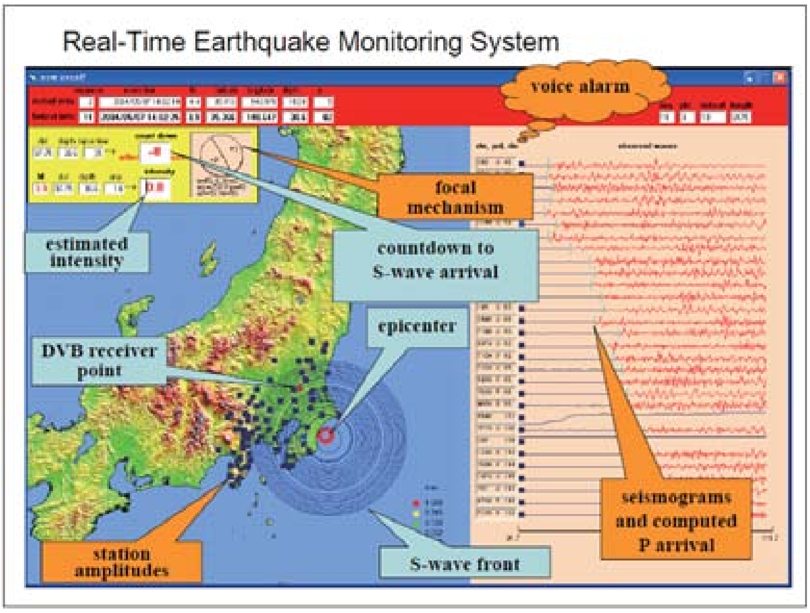


Principle of Earthquake Early Warning System.





Since an early warning system requires the determination of a reliable earthquake parameters as quickly as possible, it is unreasonable to wait until waveform data from numerous stations have been collected for analysis. We have developed a novel method of determining the hypocentral location. Let's consider that a large earthquake occurs at a point and the wave front expands to a position shown by the blue circle at time T^{now}. It is clear that stations outside the wave front will observe P wave soon. It shows that this event occur when and where stations outside the wave front can not detect P wave arrivals up to T^{now}. We get an unequality equation that theoretical arrival times for these stations must be larger than T^{now}. We determine hypocenter numerically by using both observed P wave arrival times and the unequality equations for many stations outside the wave front. Detail explanation is shown in Horiuchi et al.(2005, BSSA, No.2)



Introduction of a new parameter for the reliable shaking intensity estimation

M_{jma}= 1.73 log Δ + log A - 0.83 (1)

Δ ; Epicentral distance

A ; Maximum displacement amplitude

I = 2 log (Va) + 0.94 (2)

I ; Shaking intensity of JMA definition

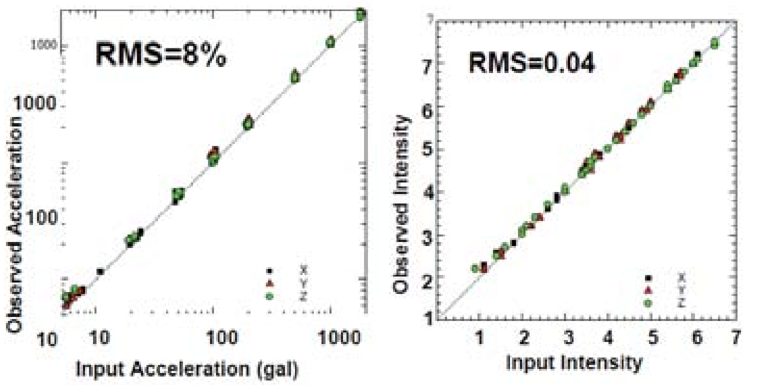
Va; Maximum amplitude(0.3sec) of filtered acceleration

The displacement and acceleration are different physical parameters. We introduce a new magnitude, which is defined directly from observed shaking intensity so as to decrease the effect of complexity of source time function of earthquakes in shaking intensity estimation.

Home seismometer for the EEW of the next generation

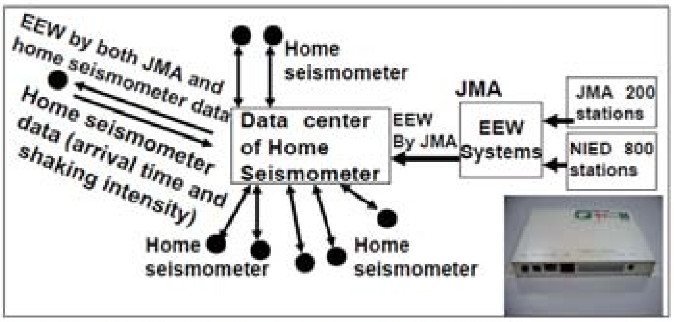
We need ten times of seismic stations so as to decrease the area where EEW is not available.

1) A large number of people may install the receiving unit of EEW in Japan, which is connected to internet and equipped with a CPU.
2) The extra addition of cheap seismometer and A/D converter would transform the receiver into a real-time seismic observatory, which we call "Home seismometer".
3) Spread of Home seismometers will create an extremely dense seismic network, which can be available for the seismic network of EEW.

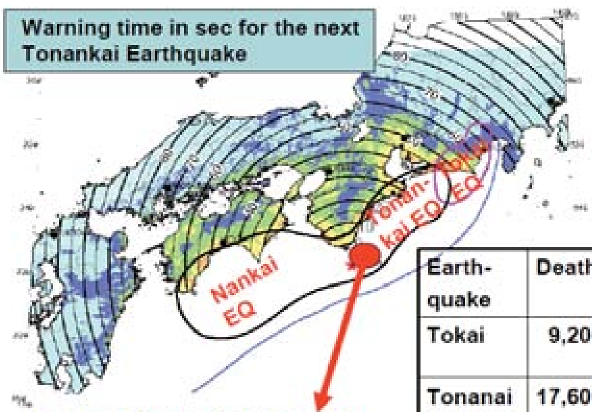


Result of shake tests of home seismometer on a one-dimensional shake table using sinusoidal oscillations. Vertical and horizontal axes in the left figure show observed and input acceleration, respectively. The right figure shows the comparison of shaking intensity. Home seismometer is 1000 times less sensitive than Hi-net station. However, it is available for the seismic station of EEW.

Earthquake Early Warning System Based on Home Seismometer Networks(10,000sets)



Home seismometer is about 1000 times less expensive and 1000 times less sensitive than Hi-net station. However, it is available for the seismic station of EEW.



Earth-quake	Death	Damage (Yen)
Tokai	9,200	37 trillion
Tonanai -Nankai	17,600	57 trillion

Issue information that the Tonankai Earthquake occurs when small part of its fault area is ruptured. Its brings long warning time.

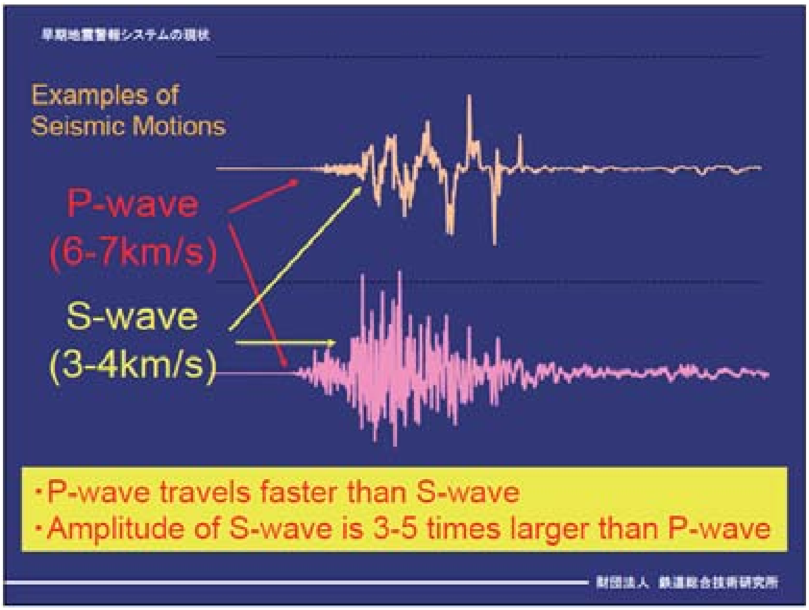
Meguro(2004) pointed out that the installation of EEW decreases death tolls by the next Tokai EQ by 82%.

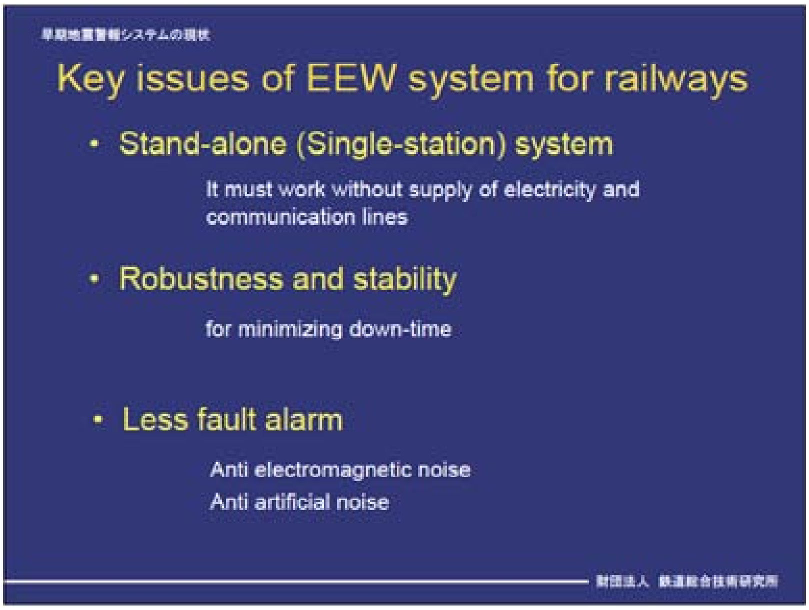
Conclusion

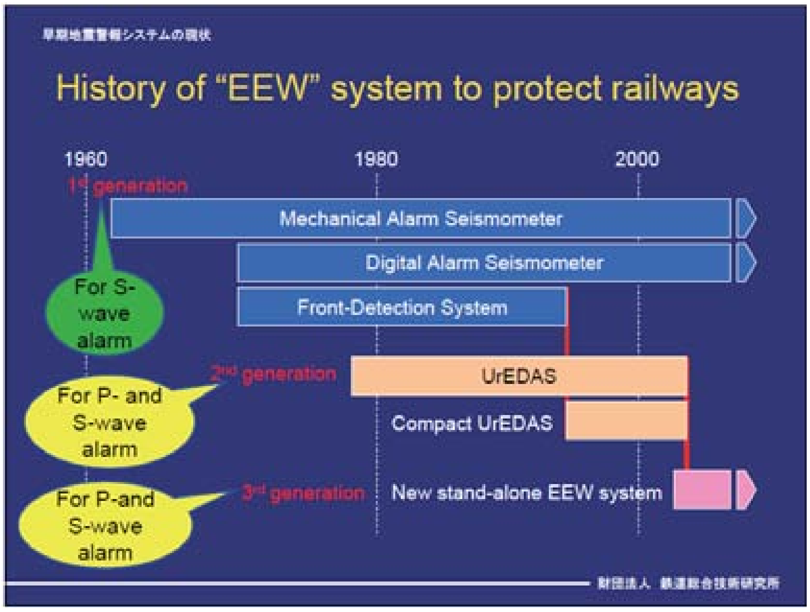
1. We development a EEW system, which determines nearly correct earthquake parameters for 99% of events within a few seconds.
2. We proposed home seismometer for EEW of the next generation.

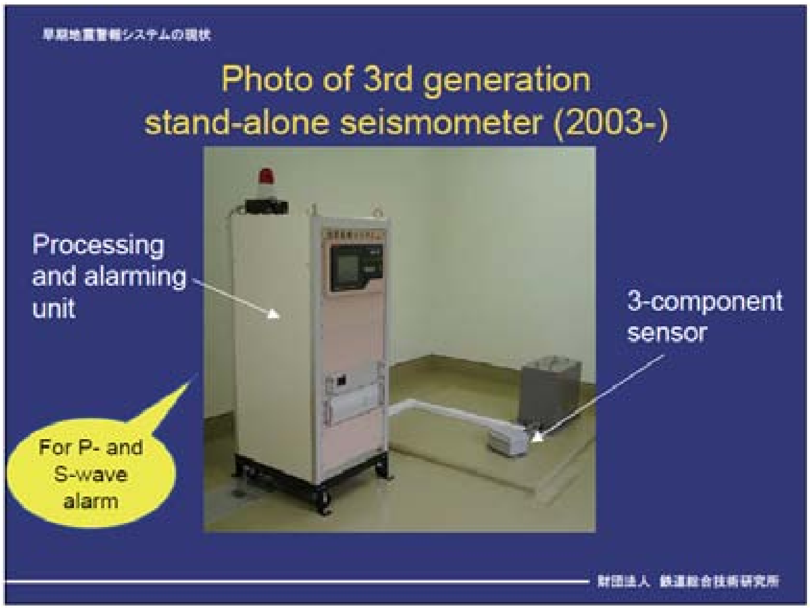
1.6. Introduction of Stand Alone Type of Earthquake Early Warning System (EEW) （Shunroku YAMAMOTO）

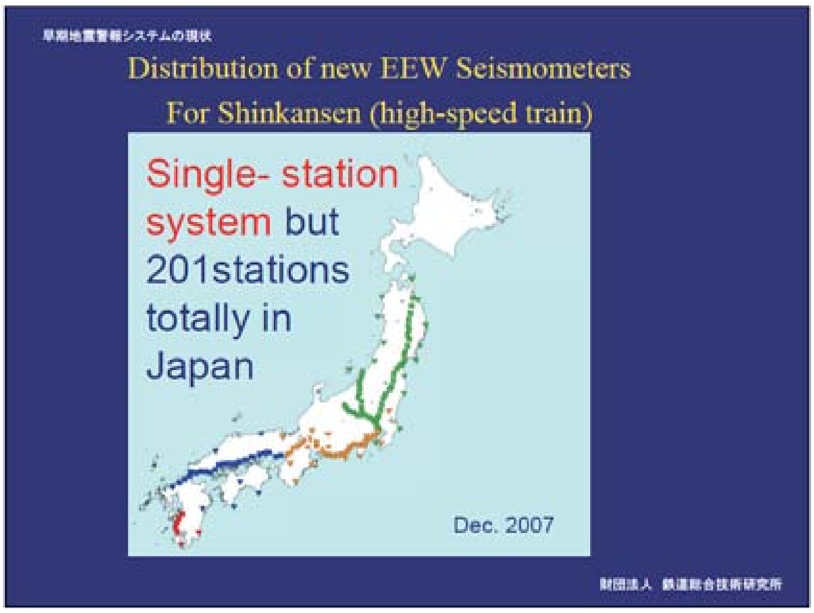
スタンドアローン型早期地震警報の概要 （財団法人鉄道総合技術研究所　山本俊六）

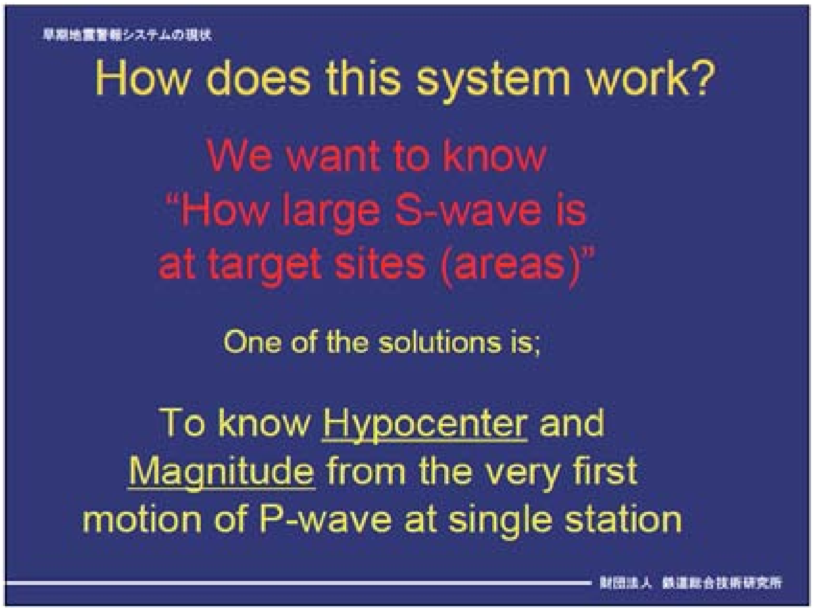




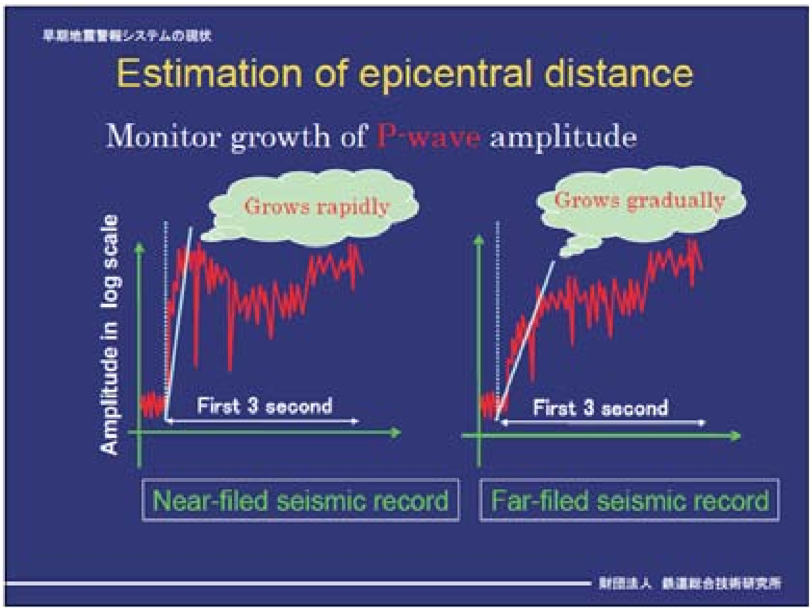

早期地震警報システムの現状
History of "EEW" system to protect railways
1960
1980
2000
1st generation
Mechanical Alarm Seismometer
Digital Alarm Seismometer
Front-Detection System
For S-wave alarm
2nd generation
UrEDAS
For P- and S-wave alarm
Compact UrEDAS
3rd generation
New stand-alone EEW system
For P-and S-wave alarm
財団法人 鉄道総合技術研究所


早期地震警報システムの現状
Photo of 3rd generation stand-alone seismometer (2003-)
Processing and alarming unit
3-component sensor
For P- and S-wave alarm
財団法人 鉄道総合技術研究所

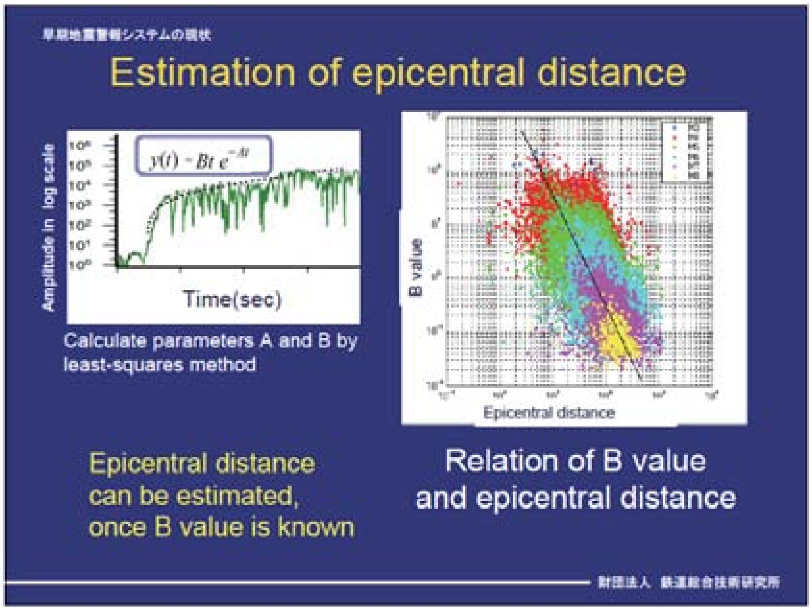

早期地震警報システムの現状
Distribution of new EEW Seismometers For Shinkansen (high-speed train)
Single- station system but 201stations totally in Japan
Dec. 2007
財団法人 鉄道総合技術研究所



How does this system work?
We want to know
"How large S-wave is
at target sites (areas)"
One of the solutions is;
To know Hypocenter and
Magnitude from the very first
motion of P-wave at single station

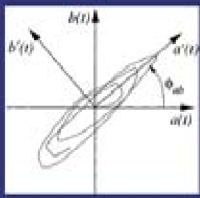


Estimation of epicentral distance
Monitor growth of P-wave amplitude
Grows rapidly
Grows gradually
Amplitude in log scale
First 3 second
First 3 second
Near-filed seismic record
Far-filed seismic record



Estimation of epicentral distance
$y(t) = Bt\,e^{-At}$
Amplitude in log scale
Time(sec)
Calculate parameters A and B by
least-squares method
B value
Epicentral distance
Epicentral distance
can be estimated,
once B value is known
Relation of B value
and epicentral distance

Estimation of epicentral direction

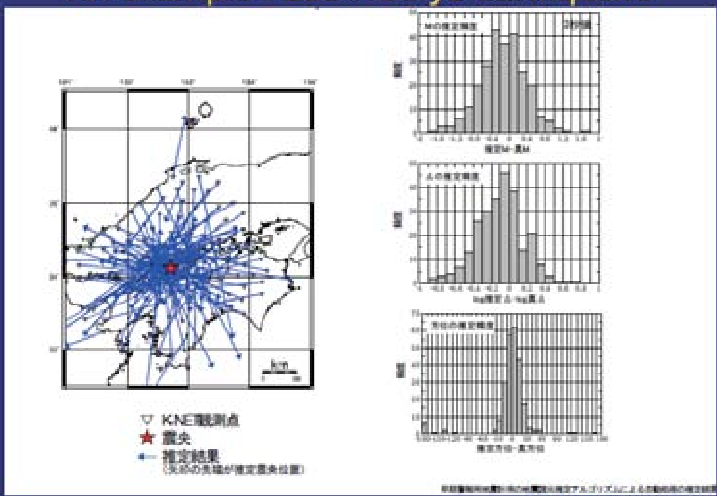


Horizontal particle motion

Estimation of magnitude

- Magnitude is estimated in every second from empirical relation of displacement amplitude and hypocentral distance

An example : 2001 Geiyo earthquake

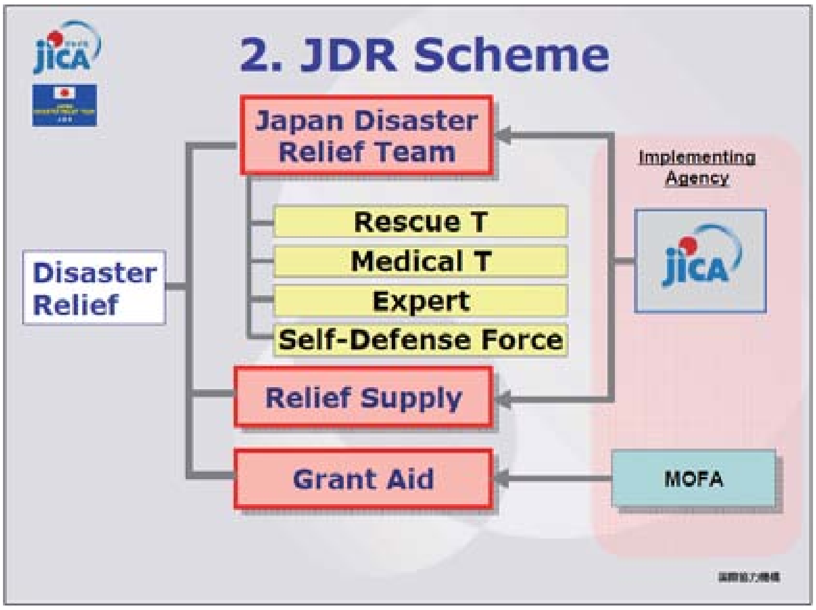


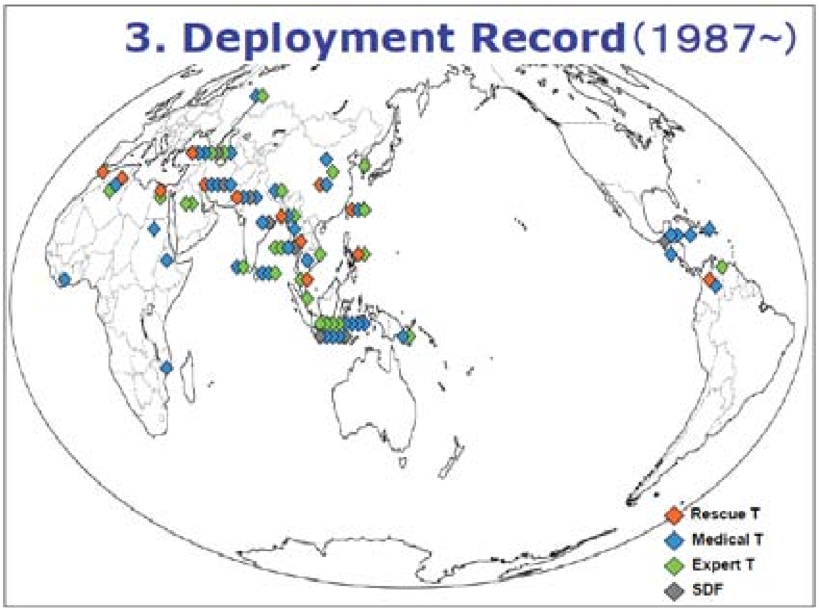
Conclusions

- Stand-alone EEW system is now operated in Japan to protect railways
- The system is used for JMA EEW system combined with network EEW system
- This system can estimate epicenter and magnitude from 1-3 sec record of P-waves

2.1. Outline of Emergency Relief Activities by Japan Relief Team (Hitoshi SATO)

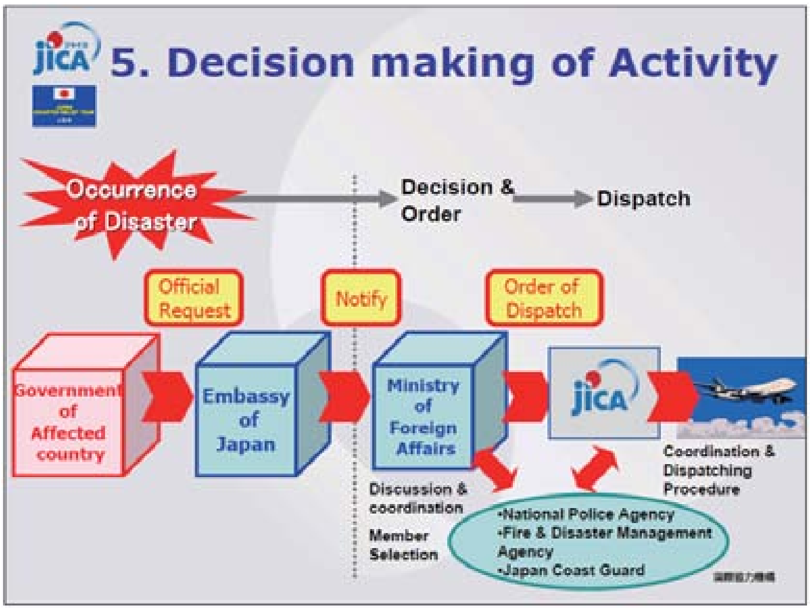
日本の緊急援助隊の概要（JICA 国際緊急援助隊事務局　佐藤　仁）





3. Deployment Record（1987~）
Rescue T
Medical T
Expert T
SDF

4. Features of Rescue Team
Earthquake in Sichuan province in China (May 2008)



5. Decision making of Activity
Occurrence of Disaster
Decision & Order
Dispatch
Official Request
Notify
Order of Dispatch
Government of Affected country
Embassy of Japan
Ministry of Foreign Affairs
JICA
Coordination & Dispatching Procedure
Discussion & coordination
Member Selection
•National Police Agency
•Fire & Disaster Management Agency
•Japan Coast Guard

6. JDR Policies (1/2)

- **To Strengthen Quick Dispatch System**
  - Ready-to-go registered personnel
  - Stock carry-on medical/logistical items and emergency relief supplies
  - Coordination with Japanese Embassy and JICA overseas offices
- **To Maintain Self Sufficiency**
  - Providing & Carrying drug, medical equipment, food, tent on our own
- **To Coordinate with UN/Other Teams**
  - Coordination with international organizations / other teams
  - Participate in international meeting, conference, and training

6. JDR Policies (2/2)

- **To Continue to improve the quality of activities**
  - Providing various training
    - Rescue Team: Joint Comprehensive Exercise (on-site training)
    - Medical Team: Introduction Course, Intermediary Course
  - Maintaining the quality of stocked items (medicine, equipment, etc.)
  - Improving capacity of surgical operation (ex. introduction of X-ray, echo)
  - Preparing operation & treatment guidelines for medical and rescue team
  - Continuing "seamless aid" – seamless transition from emergency relief phase to reconstruction/rehabilitation phase

7. Disaster Management Cycle & "Seamless Aid"

8. JDR & UN Policy

- **JDR team respect and follow the UN policy**
  - Based on Request from Affected Countries
    - International team should not be deployed without agreement of affected country.
  - Considering Responsibility of Affected Countries
  - Emergency Response activities should follow the initiative of affected countries
    - International team should be under control of the affected country.

9. INSARAG & JDR
(International Search & Rescue Advisory Group)

- **Network of international USAR teams**
- **Secretariat = Field Coordination Support Section of UNOCHA**

<Activities>

- **To standardize and to develop the capacity of International USAR teams**
- **To develop the INSARAG Guideline**
- **To plan and organize the meeting and training**
- **To conduct the INSARAG External Classification (IEC)**

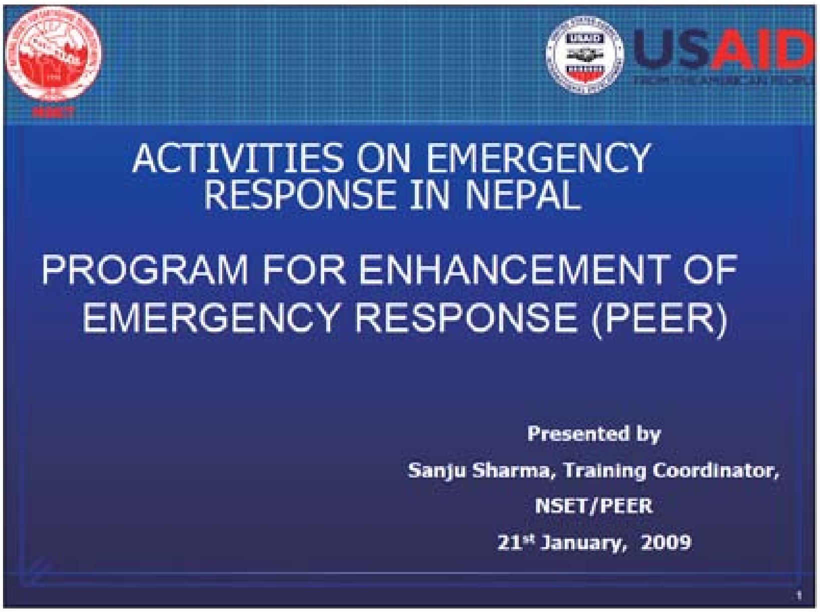
INSARAG

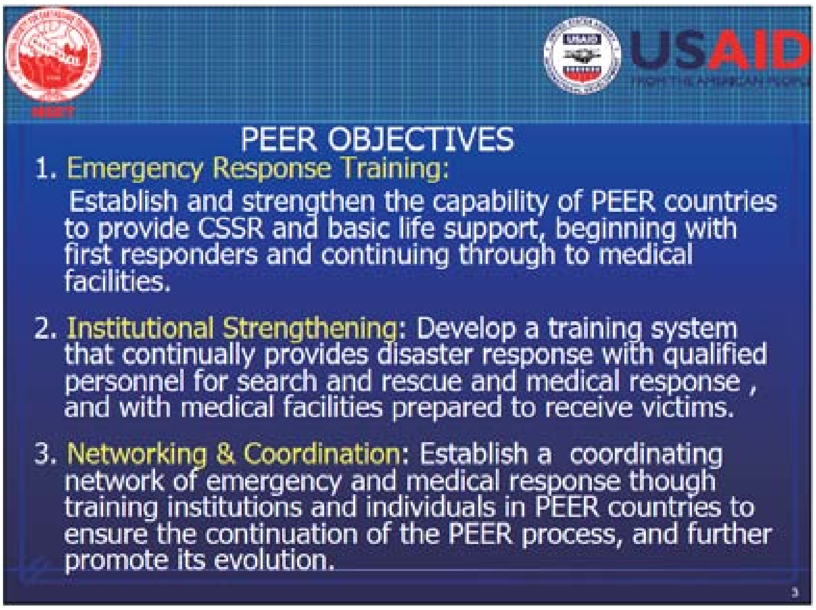
10. INSARAG External Classification (IEC)

- International USAR team be classified into "Heavy", "Medium" and "Light" at the points of rescue technique, equipment, document, and so on, in accordance with INSARAG Guideline.
- IEC classification exercise be conducted over min.36hrs demonstration.
- USAR team must demonstrate its activities of the following stages (Preparedness, Mobilization, Operations, Demobilization, and Post-mission).
- Activities be evaluated and classified at the field of Management, Search, Rescue, Medical, and logistics.
- USAR team capacity be regarded officially depending on the result of classification

2.2. Outline of Activities relating Emergency Rescue in Nepal such as Program for Enhancement of Emergency Response (PEER) (Amod DIXIT)

ネパールにおける緊急救助活動に関連する活動の紹介（N-SET　アモッド・ディキシット）





PEER Core Courses

Basic Courses in Emergency Response

- MFR
- CSSR and
- HOPE

Series of Training Courses

Basic Courses:

MFR & CSSR

Instructor Development Courses:

TFI → MFRIW → CSSRIW → MIW

Basic Course:

HOPE

Instructor Development Course:

HOPE-TFI

PEER Countries

- PEER I (1993-2003) in 4 countries- India, Indonesia, Nepal and Philippines.
- PEER II (2003-2009) in 6 countries- Bangladesh, India, Indonesia, Nepal, Pakistan and Philippines.

Agencies Involved in Nepal

- **Medical First Responder (MFR) & Collapsed Structure Search and Rescue (CSSR) Course**
  - Nodal Agency-Ministry of Home, Govt. of Nepal
  - Partnering Institutions- Nepal Police/ Nepal Army/ Armed Police Force / Nepal Red Cross Society.
- **Hospital Preparedness for Emergencies (HOPE) Course**
  - Focal Agency - Ministry of Health and Population
  - Partnering Institutions-Institute of Medicine, Tribhuvan University

7

Funding Arrangement

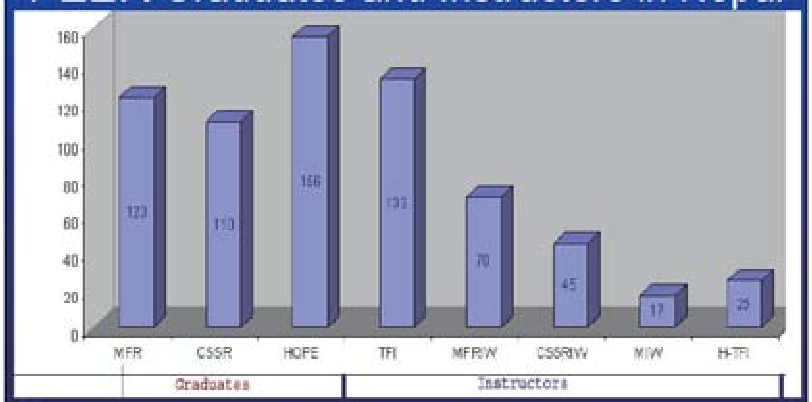
- Full Funding - (USAID/OFDA)

  12 Courses
- Partial Funding Assistance Program (PFAP)-USAID/OFDA & Govt. of Nepal

  9 Courses

8

PEER Graduates and Instructors in Nepal



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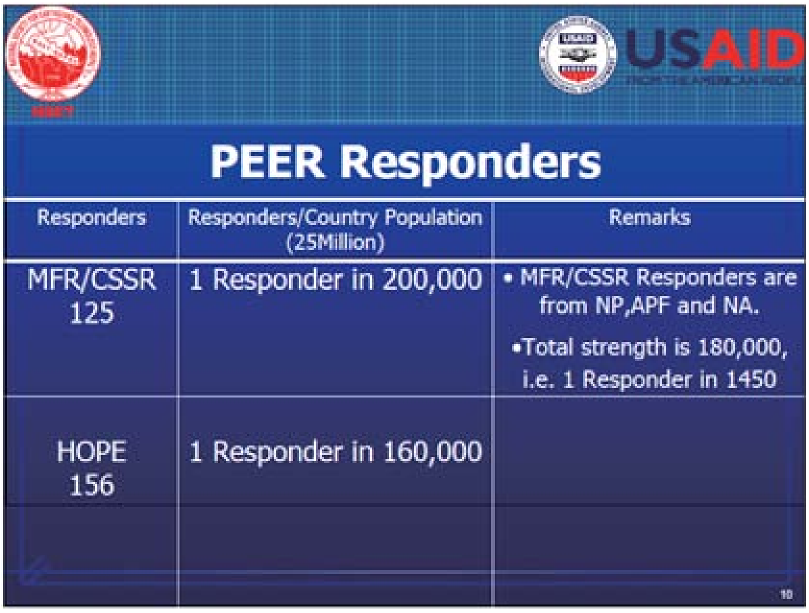
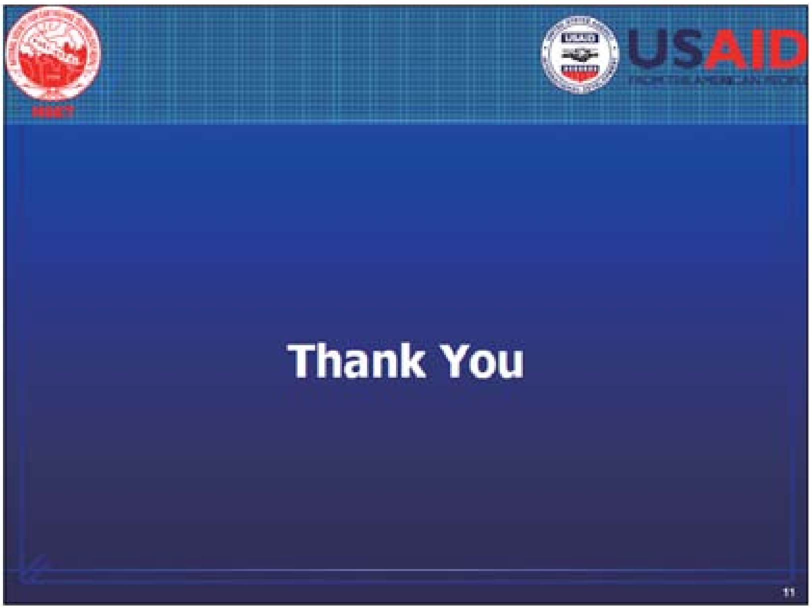


PEER Responders

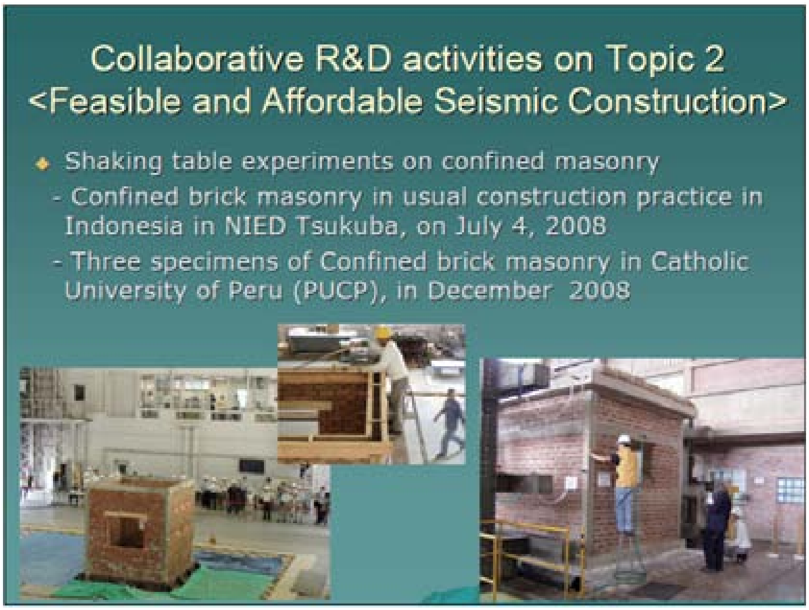
Responders	Responders/Country Population (25Million)	Remarks
MFR/CSSR 125	1 Responder in 200,000	• MFR/CSSR Responders are from NP,APF and NA. •Total strength is 180,000, i.e. 1 Responder in 1450
HOPE 156	1 Responder in 160,000	

10



2.3. Summary of Activities 2008 and new step forward (Tatsuo NARAFU)

2008 年度活動の紹介(独立行政法人建築研究所　楢府龍雄)



Topic 1: Risk Management System

Contrivance for Seismic Risk Recognition by Communities

- Development of a new system for Risk Management which enhances risk recognition of communities
- Community-based approach/Community participation
- Activities Program
  - preparation of tools mapping base using satellite image/aero photos
  - case study in Nepal
  - elaboration of the system

Topic 3: Strategies for Dissemination to Technologies to Communities

Component 3-1:

Comprehensive Study on Dissemination of Technologies to Communities

- Comprehensive Study on Dissemination of Technologies consisting followings
  -implementation of pilot project in four participating countries in 2008
- Reports in WS
  - Summary
  - brief reports of pilot projects on each of four countries

Workshops and symposium organized so far

- Workshop for sharing the experiments results of shaking table experiments on Brick Structure
  - for Asian countries: July 25, 2008
  - for Latin American countries: July 26, 2008


Workshops and symposium organized so far
International Symposium on November 28 and 29 co-organized by BRI, GRIPS and UNCRD inviting 12 researchers from participating countries

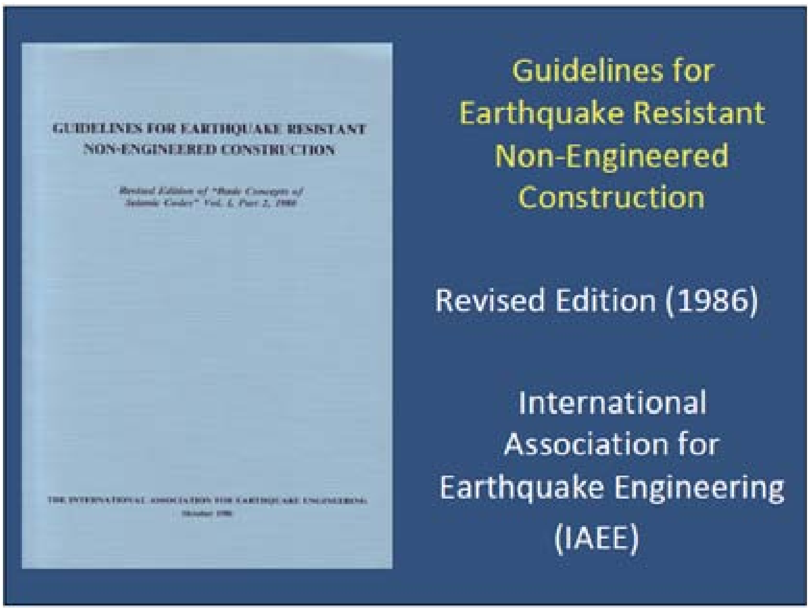

Participation in International events
14 World Conference on Earthquake Engineering (14WCEE) in Beijing in October, 2008
Organizing a special session "Earthquake Disaster Mitigation on Non-engineered Houses"
13 oral presentations and 9 poster presentations
Preparatory Meeting on a Proposal of a new Task Group in CIB (International Platform for R&D)
Technical Meeting for Collaborative R&D with our partners (four members were invited)
8

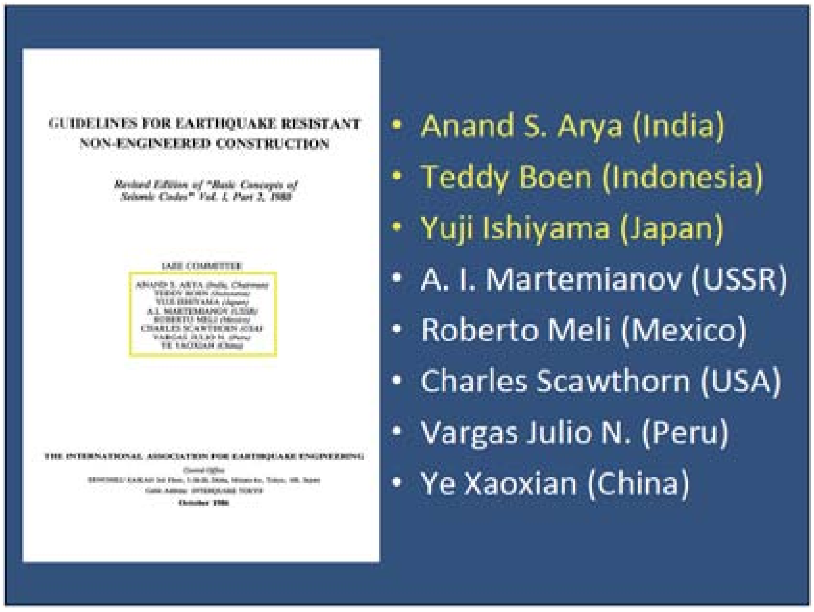

Participation in International events
7th General Assembly of Asian Seismological Commission and Seismic Society of Japan, 2008 (ASC2008) in Tsukuba, Japan
Booth exhibition on Collaborative R&D Project
Three Presentation on Collaborative R&D Project (two partner researchers were invited from abroad)


Proposals for activities next steps
A new study group on non-engineered construction in a international platform for R&D, CIB (International Council for Research and Innovation in Building and Construction)
TG75 Engineering Studies on Traditional Constructions
A proposal of revision of Guideline for non-engineered construction by IAEE (International Association for Earthquake Engineering)
10

2.4. Proposal of Activities for Next Step, Revision of Technical Guideline for Non-engineered Construction by IAEE (Yuji ISHIYAMA)

IAEE のノンエンジニアド構造物ガイドラインの改訂の提案（北海道大学名誉教授　石山祐二）





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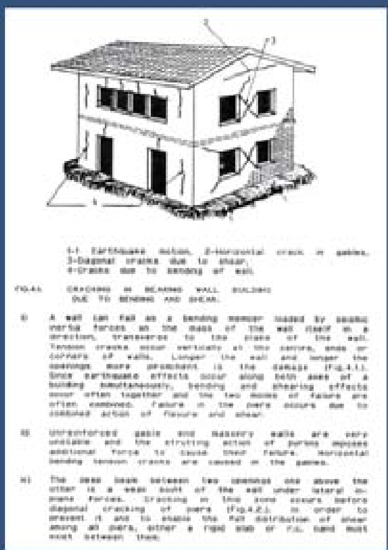
Down Load

http://www.nicee.org/IAEE_English.php



Easy to understand with many illustrations

Applicable at construction site

Principal Points for the Revision

(1) Total number of pages should be kept minimum as the current edition

(2) A few pages to explain the minimum requirements for safer housing will be included at the beginning of each construction type

(3) All should be easy to understand and be applicable at the construction site

If you have interest, please contact

Anand S. Arya : anandsarya@gmail.com

Teddy Boen : tedboen@cbn.net.id

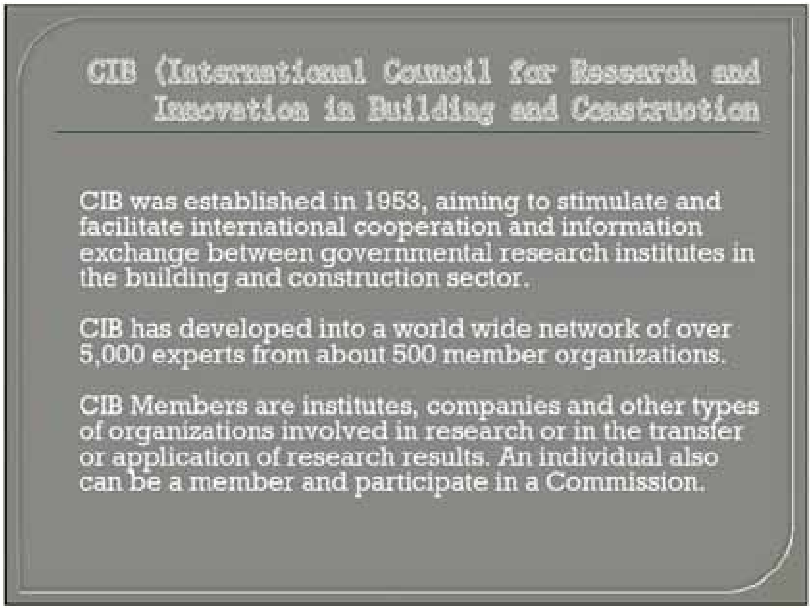
Yuji Ishiyama : to-yuji@nifty.com

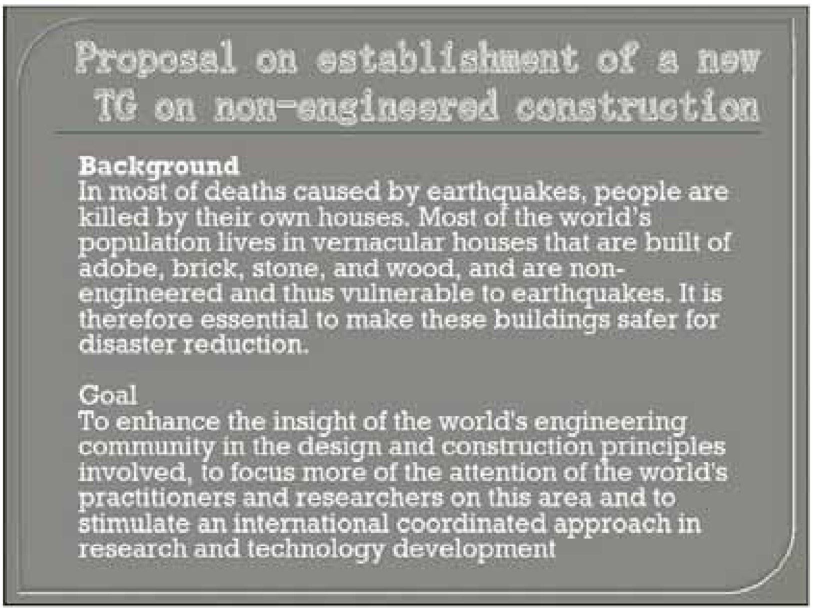
Thank you

2.5. Establishment of a New Task Group (TG75) for Research on Non-engineered construction in CIB

(Kenji OKAZAKI)

CIB の新たな TG の設立（政策研究大学院大学　岡崎健二）





Preparatory activities

Various projects focusing on non-engineered buildings in the last several years Building Research Institute (BRI), Japan, National Graduate Institute for Policy Studies (GRIPS), and other interested experts and institutes.

A preparatory meeting at AIJ in September, 2008 to discuss the proposal and activities.

A special session on non-engineered structures at 14th World Conference of Earthquake Engineering 13-17 October 2008 in Beijing (14WCEE).

Invitation of interested experts at the 21st EAROPH (Eastern Regional Organization for Planning & Human-Settlements) World Congress 21-24 October 2008 in Himeji, Japan.

Establishment of "TG75 – Engineering Studies on Traditional Constructions"

Proposal was accepted by the CIB Board in November 2008 (Coordinator: Kenji Okazaki)

Objectives of the TG 75
- to collect information on the non-engineered structures in the world to grasp actual designs, materials, construction practices and labor forces, and the past achievements on non-engineered structures
- to discuss and identify crucial issues to be studied.
- to encourage the researchers and practitioners to focus on the non-engineered structures
- to propose working programs for the next activities.
- to organize forums such as workshops, video conferences and web site, for exchange of information, knowledge and views.

Scope of TG75

Structure types
Masonry structures of brick, stone, and concrete block, confined masonry structures, adobe, wood structures, historical constructions, which have no/little engineering intervention

Countries/areas
Any country/area where the non-engineered structures are commonly seen

Expertise fields
Structure engineering, earthquake engineering materials engineering, construction/production engineering, social studies on construction workers, social science on dissemination of technologies through both formal approaches (such as technical guidelines and building codes) and informal approach (such as community based activities)

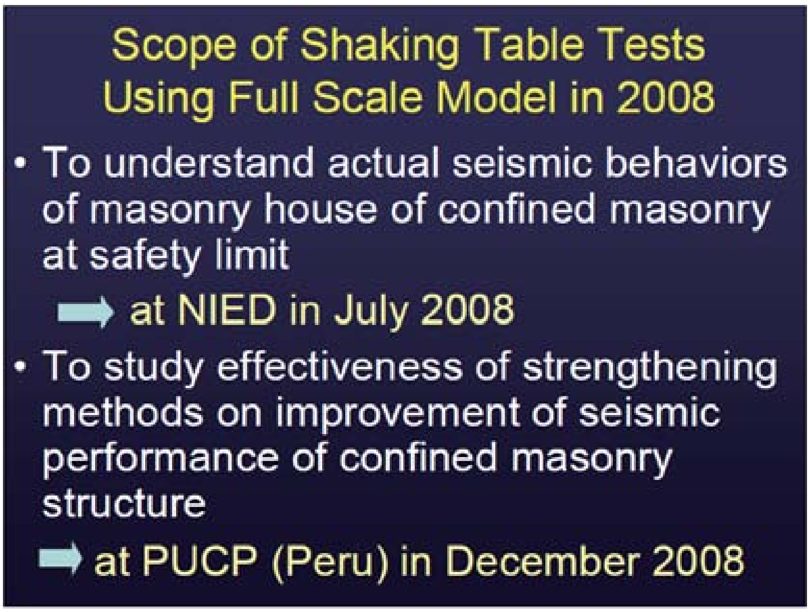

Major Activities 2009 – 2011
2009
- Invitation of participation into TG75
- Identification of the activities, and collection of information
- Kick-off meeting in Sep. 2009 in Japan
2010
- CIB World Congress in 10-13 May 1020 in UK.
- Proposal on Activities Programs
2011
- Task Group Report


Invitation to TG75
If you are a member of CIB, or your institute is a member of CIB, you would be most welcome to participate in TG75
If you are not, you would be encouraged to become a member of CIB, or your institute would become a member of CIB to participate in TG 75.
Thank you!!

3.1.1. Outline of Shaking Table Experiments of Full Scale Specimens in Peru in December 2008

(Toshikazu HANAZATO)

実大試験体振動台実験の概要（三重大学　花里利一）



Outline of Test – Model structure
Shaking table test at NIED in July

Designing confined masonry structure being popular in South East Asia – Indonesian type

Fabrication of thin brick wall using joint mortar made in consideration of actual construction condition

Behaviors of Model Structure

Input motion	Peak Acc.	Peak Disp.	Damage
Step	0.29G	1mm	No damage
Pisco Eq. Ica August 15,2007	0.79G	10mm	No damage
Pisco Eq. Ica August 15,2007	1.22G	15mm	No damage
Pisco Eq. Ica August 15,2007	2.27G	30mm	Crack in wall and damage in tie-column
Pisco Eq. Ica August 15,2007	0.60G	140mm	Serious damage but survived
JMA Kobe NS	1.07G	200mm	Collapse

Findings

- Typical failure behaviors of confined masonry house were reproduced and successfully recorded by the shaking table tests.
- Most of cracks occurred between brick surface and mortar, indicating the bonding has essential effect on the seismic resistance of wall. (the wall fabricated by imported bricks collapsed, while the wall by Japanese bricks survived.)
- Joint between brick wall and tie-column also has significant effect.

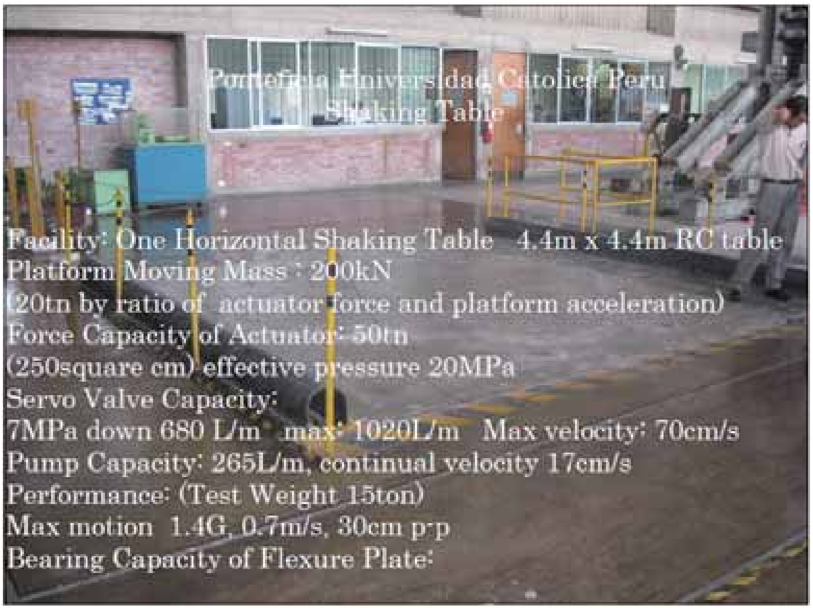
3.1.2. Outline of Shaking Table Experiments of Full Scale Specimens in Peru in December 2008

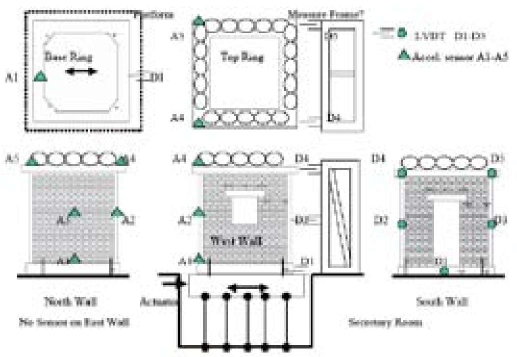
(Chikahiro MINOWA)

実大試験体振動台実験の概要(独立行政法人防災科学研究所　箕輪親宏)

Shaking Table Test of Confined Brick Masonry at PUCP

Nov. – Dec. 2008

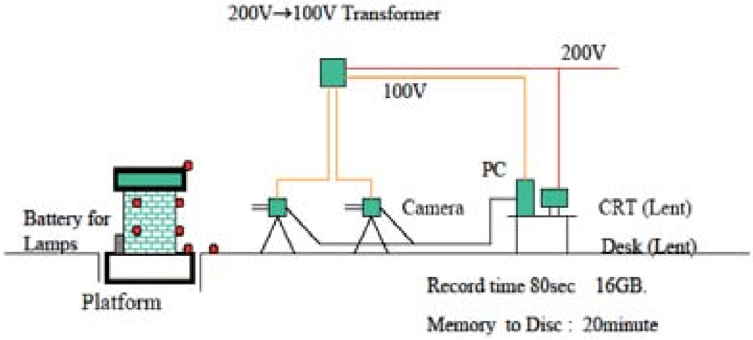




Sensor Distribution for Three Models

Test Model A	Confined Masonry
Test Model B	Confined Masonry with Lintel Beams
Test Model C	Confined Masonry With Wire Mesh and Mortal
	No bolt connection with table, and
	Bolt connection with table, and

Image Processing Measurement System

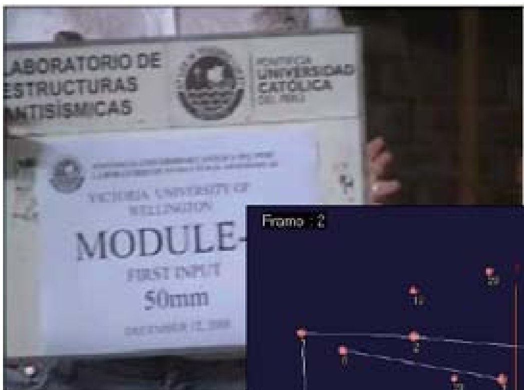


Model C

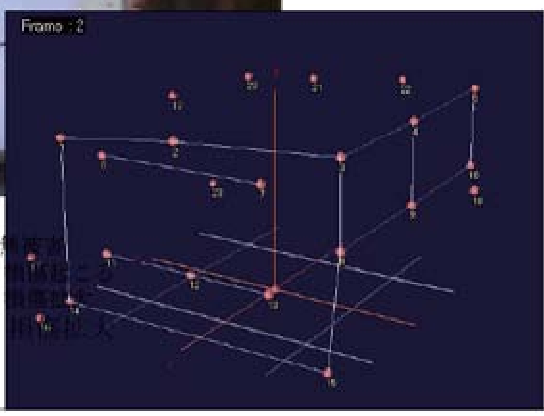
Confined
Masonry
with Wire Mesh

Test Weight 15t

M 2 .	ICA	TS=1/10	30mm	2.07G	2.50G	13Hz	clamped
M 3 .	ICA	TS=1/5	70mm	2.17G	1.67G	11.5Hz	
M 4 .	May	70	120mm	1.67G	1.55G	12Hz	



Tire Band Reinforced
Adobe Model Tests
by Andrew Charlson



A1. May 70 50mm

A2. May 70 90mm

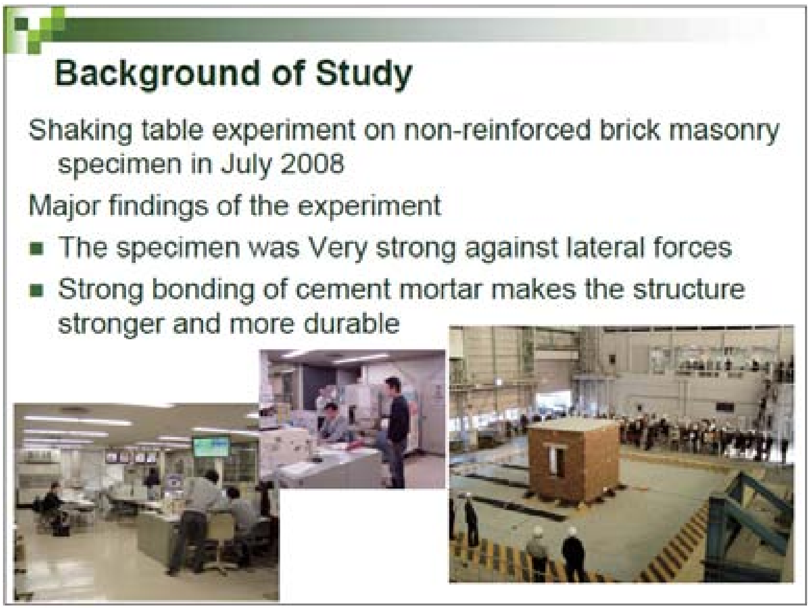
A3. May 70 130mm

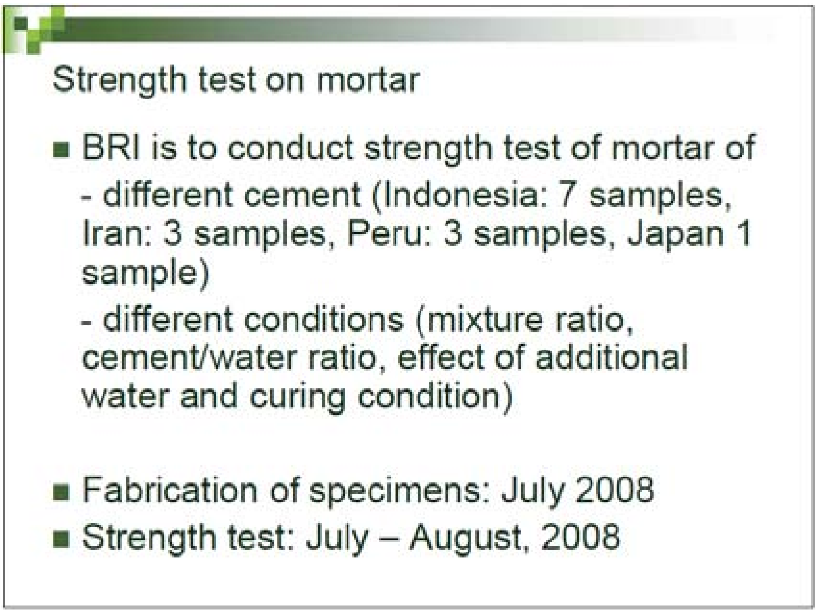
A4. May 70 130mm

3.2. Outline of Comparative Strength Test of Cement from Indonesia, Iran, Peru and Japan

4ヵ国（インドネシア、イラン、ペルー、日本）のセメントについての比較実験の概要

（独立行政法人建築研究所　楢府龍雄　／ Tatsuo NARAFU）

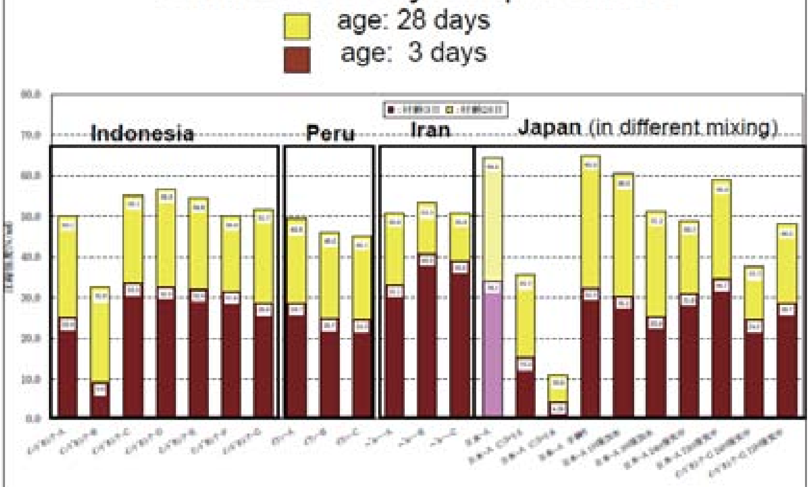




List of sample cement

sample	manufacturer	Shop/donor	remarks
Indonesia A	Holcim	Construction site, Jogja	Donation by a resident
Indonesia B	Gresic	Laboratory of Univ., Jogja	Donation by Univ.
Indonesia C	Gresic	Shop, Jogja	Buy by KG
Indonesia D	Gresic	Shop, Jogja	Buy by KG
Indonesia E	Gresic	Shop, Jogja	Buy by KG
Indonesia F	Indocement	Shop, Jogja	Buy by KG
Indonesia G	Indocement	Shop, Jakarta	Buy by bag
Peru A	SOL	Home Center, Lima	Buy by KG
Peru B	SOL	Shop, Lima	Buy by KG
Peru C	SOL	Shop, Lima	Buy by KG
Iran A	NA	Cement Plant, Kerman	Buy by KG
Iran B	NA	Construction site, Bam	Donation by workers
Iran C	NA	Construction site, Bam	Donation by workers
Japan	Taiheiyo Cement	Wholesaler	Buy by bulk

Compression strength of cement mortar by sample cement



Findings 1

- Difference in samples in compression strength of standard mixture ratio
  - All the specimen in age 28 days show 45 - 64 N/mm^2 except one from Lab. of Univ.
  - Difference between countries or manufactures is not significant
  - Difference of circulation does not influence much (shop or home center, packed or measured and packed)

Findings 2

- Difference in cement/sand ration is significant
  - Different Cement/sand ratio and almost same flow value
  - Compression strength shows a wide range of 64.4 to 10.8 N/mm^2

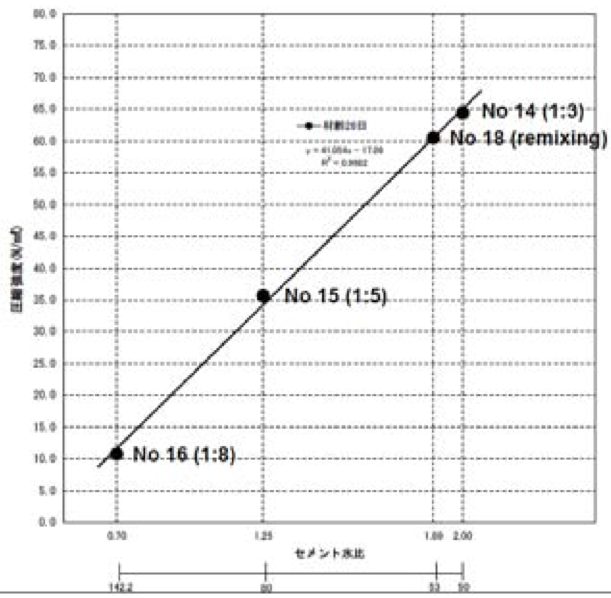
Measurement of flow value

No	Cement/sand C:S	Water/cement W/C	Cement/water C/W	Compression strength N/mm^2	Strength ratio
14	1:3	50	2.0	64.4	100
15	1:5	80	1.25	35.7	
16	1:8	142.2	0.7	10.8	

Findings 2

- Dominant index of strength: Cement/water ratio
- In case volume of sand becomes large, mortar needs more water to have similar flow value
- Larger water ratio makes mortar strength smaller

Compression strength test



Findings 3

- Influence by remixing
- Two specimens by remixing
  - remixing one hour after mixing
  - remixing three hours after mixing
- Mortar needs additional water to have similar flow value

No	remixing	Water/cement W/C	Cement/water C/W	Compression strength N/mm²	Strength ratio
14	-	50	2.0	64.4	100
18	One hour later	80	1.25	60.5	94
19	Three hours later	142.2	0.7	51.2	81

Findings 4

- Influence by curing
- Two specimens of different curing
  - in water, 1day in water, 3 days in water

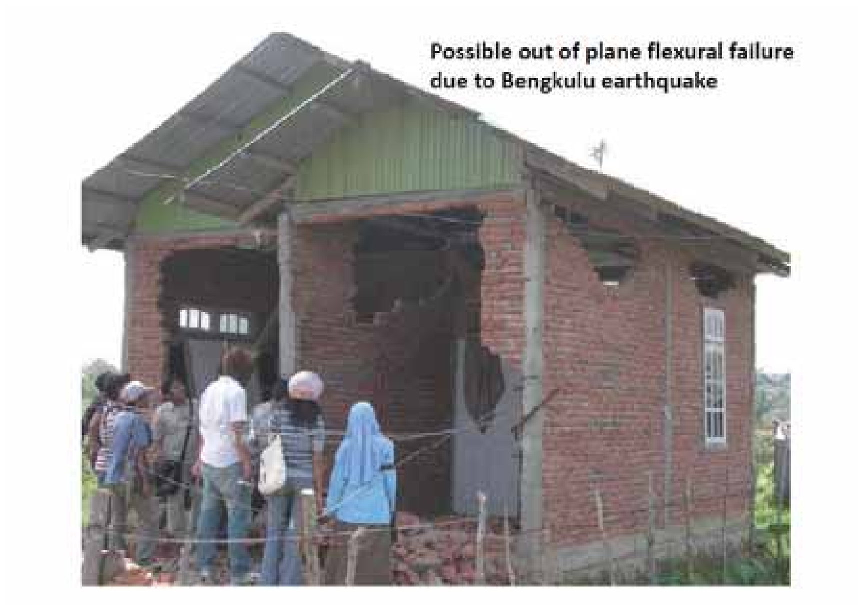
No	curing	Compression strength N/mm²	Strength ratio
14	In water	64.4	100
20	I day in water	49.1	76
21	3 days in water	58.9	91
7	In water	51.7	100
22	I day in water	37.7	73
23	3 days in water	48.2	93

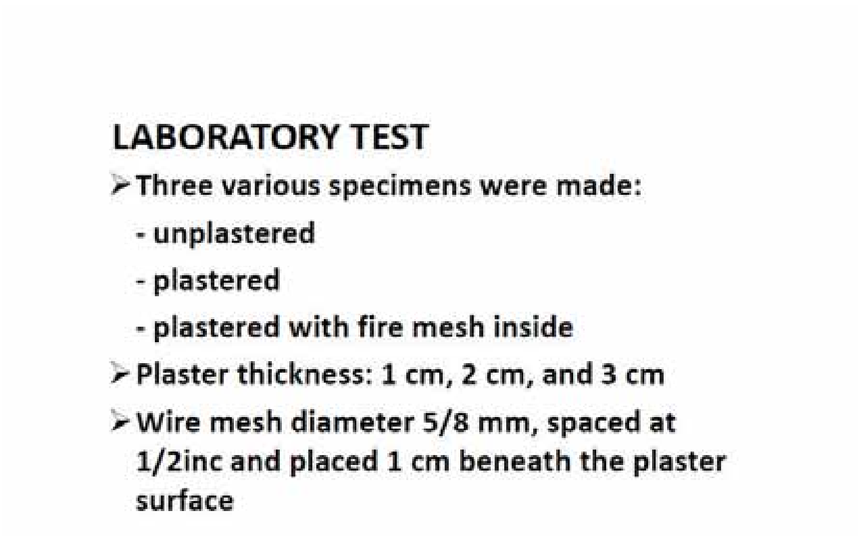
Conclusion

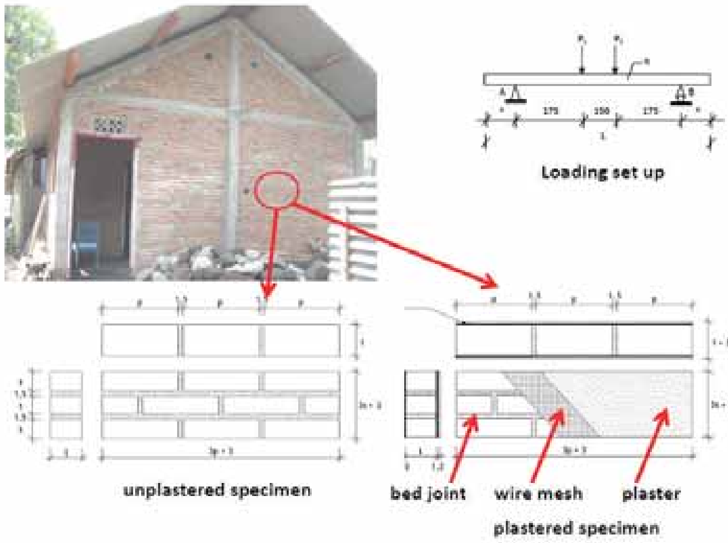
- Difference of mortar strength of different manufacturers is not so big
- Cement/sand ratio makes a significant difference in compression strength
- Remixing with additional water makes the strength smaller
- In both cases, cement/water ratio is the dominant index for the strength
- Curing has also certain influence to the strength
- Further investigation to identify dominant factors for the lateral strength of brick wall in necessary such as filling work, soaking

3.3. Introduction of Research Activities in Gadjah Mada University (Iman Satyarno)

インドネシア、ガジャマダ大学の取り組み（ガジャマダ大学　イマン・サトゥヤルノ）

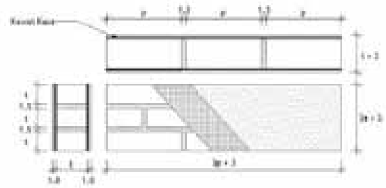






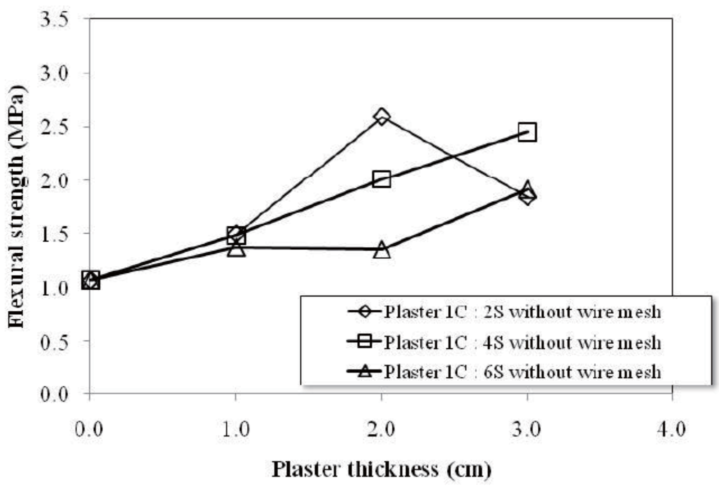
LABORATORY TEST

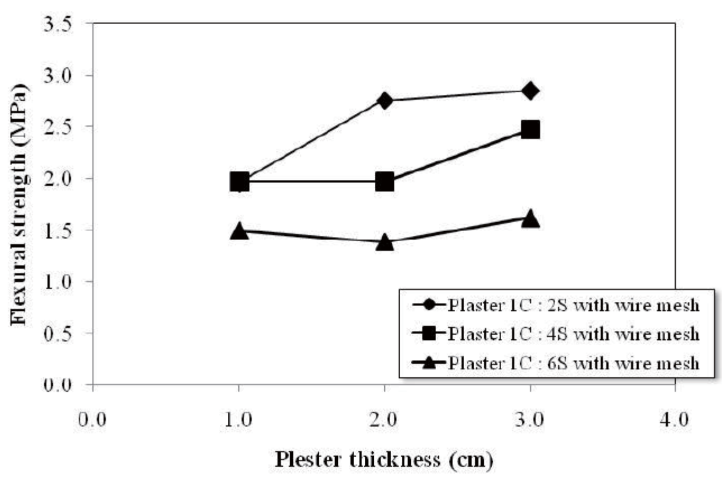
- Specimen dimension is three times brick length and thickness plus it 1.5 cm bed joint
- The bed joint is made of mortar with volumetric ratio of cement and sand 1 cemen : 4 sand
- The plaster is made of various volumetric ratio of cement and sand, they are: 1 : 2, 1 : 4 and 1 : 6

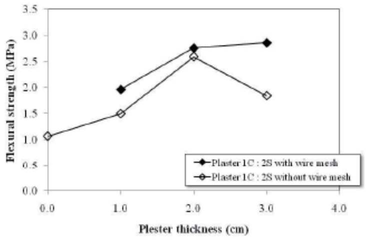


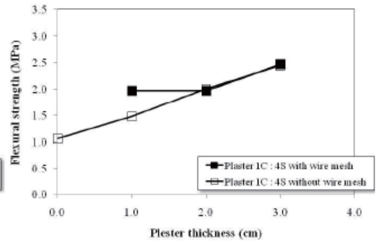
RESULT AND DISCUSSION

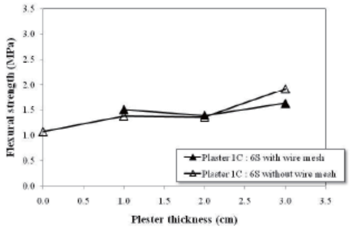
- Test results show that the increment of flexural strength is more significant if the plaster is made of mortar of 1 cement : 2 sand
- The application of wire is significant for thinner plaster with higher cement content
- The wire mesh increase the wall ductility and to prevent cracks due to shrinkage
- The time history analysis result shows that the typical unplestered wall flexural strength gives inadequate safety
- The wall is suggested to be plastered at least with 1 cm thickness

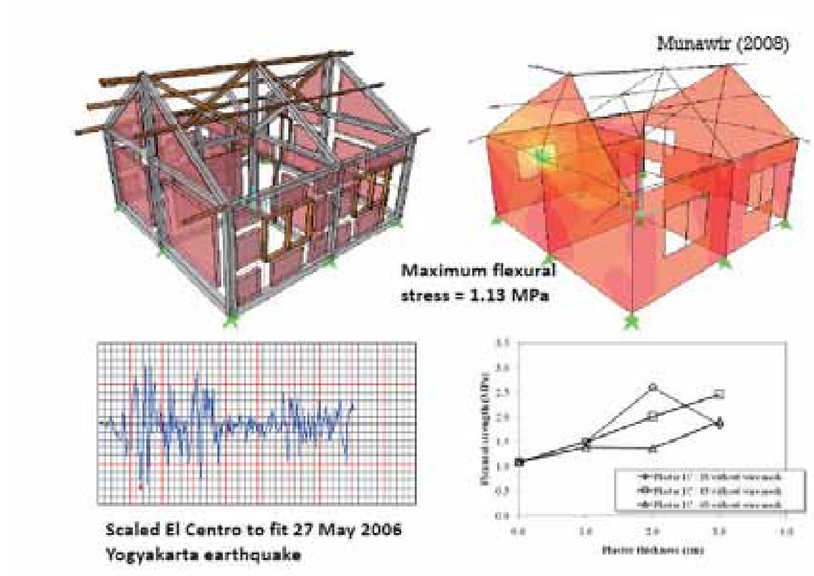


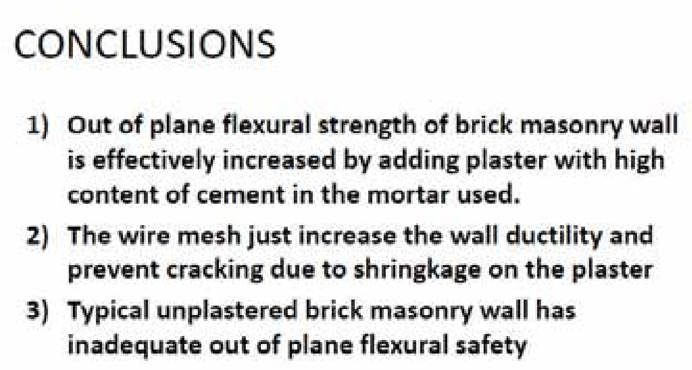



Flexural strength (MPa)
Plaster 1C : 2S with wire mesh
Plaster 1C : 2S without wire mesh
Plester thickness (cm)


Flexural strength (MPa)
Plaster 1C : 4S with wire mesh
Plaster 1C : 4S without wire mesh
Plester thickness (cm)

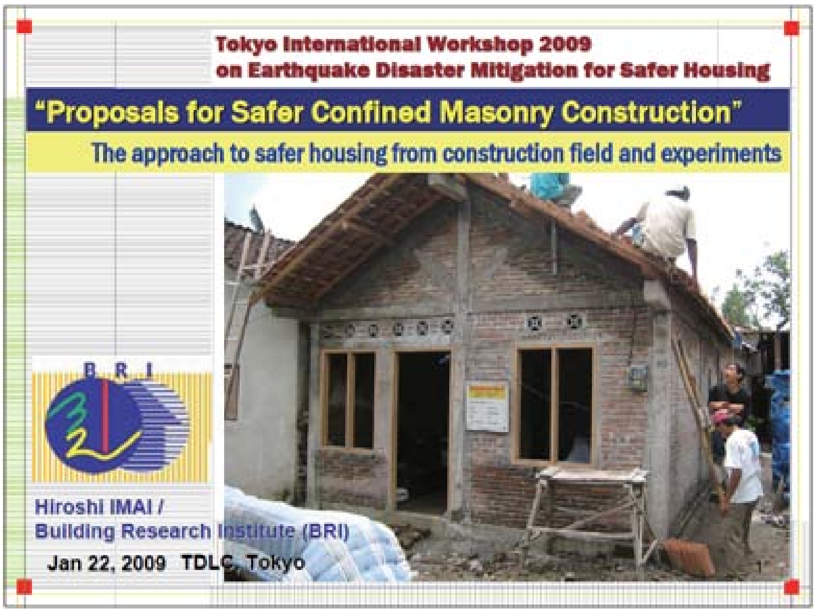

Flexural strength (MPa)
Plaster 1C : 6S with wire mesh
Plaster 1C : 6S without wire mesh
Plester thickness (cm)


Munawir (2008)
Maximum flexural stress = 1.13 MPa
Scaled El Centro to fit 27 May 2006 Yogyakarta earthquake

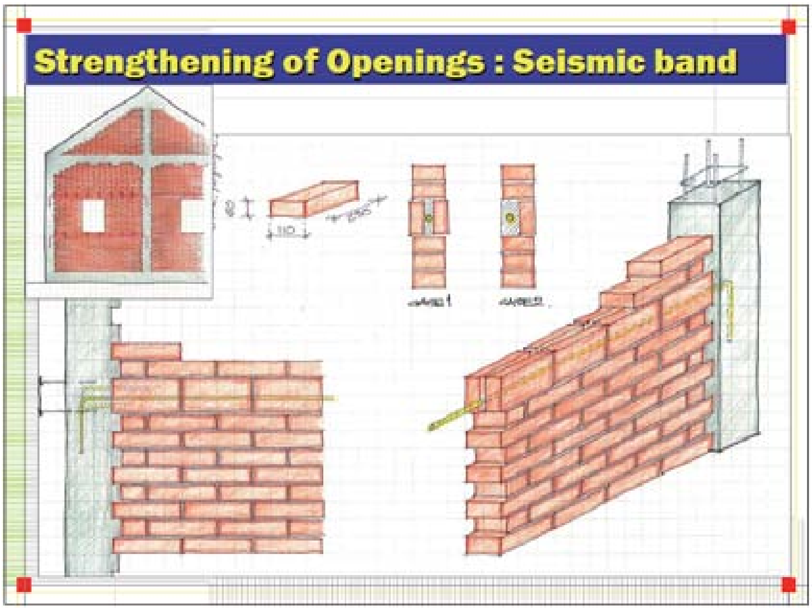

CONCLUSIONS
1) Out of plane flexural strength of brick masonry wall is effectively increased by adding plaster with high content of cement in the mortar used.
2) The wire mesh just increase the wall ductility and prevent cracking due to shringkage on the plaster
3) Typical unplastered brick masonry wall has inadequate out of plane flexural safety

3.4. Proposals for Safer Confined Masonry Construction (Hiroshi IMAI)

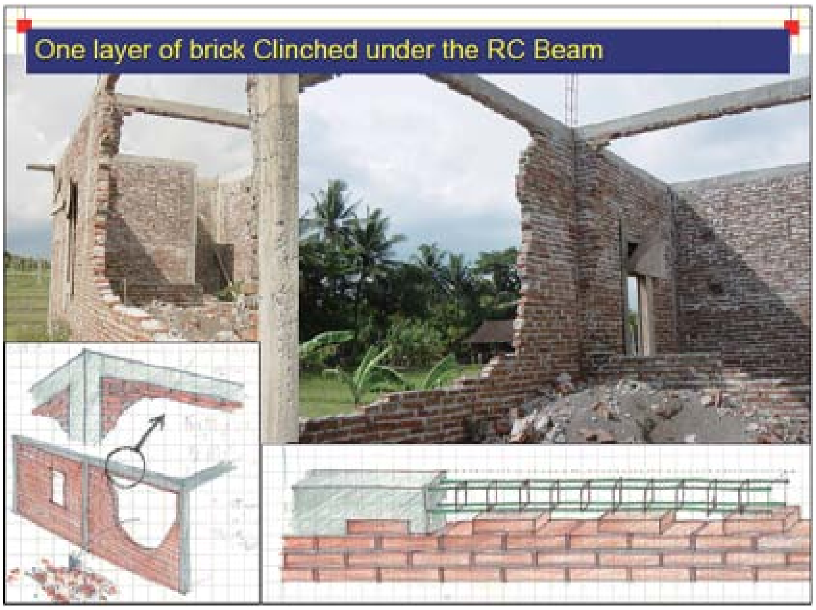
コンファインドメーソンリーの工法改善の提案（独立行政法人建築研究所　今井弘）

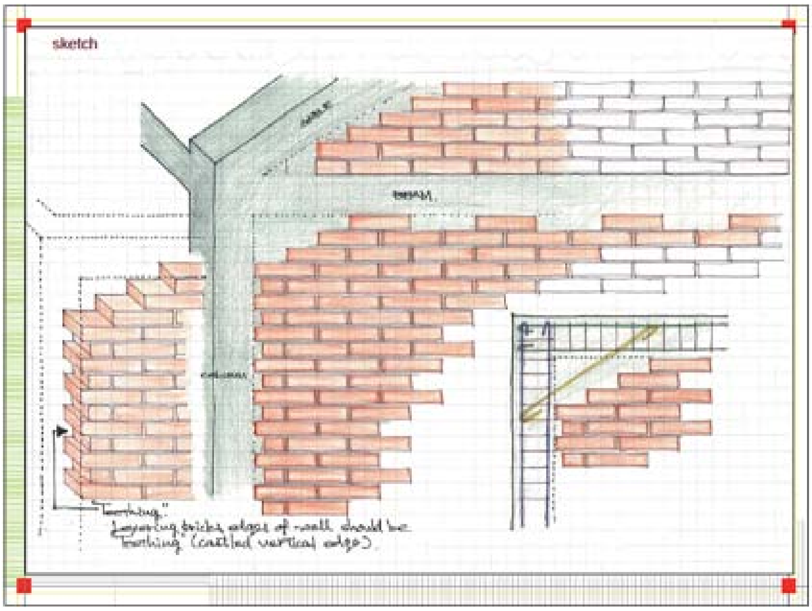


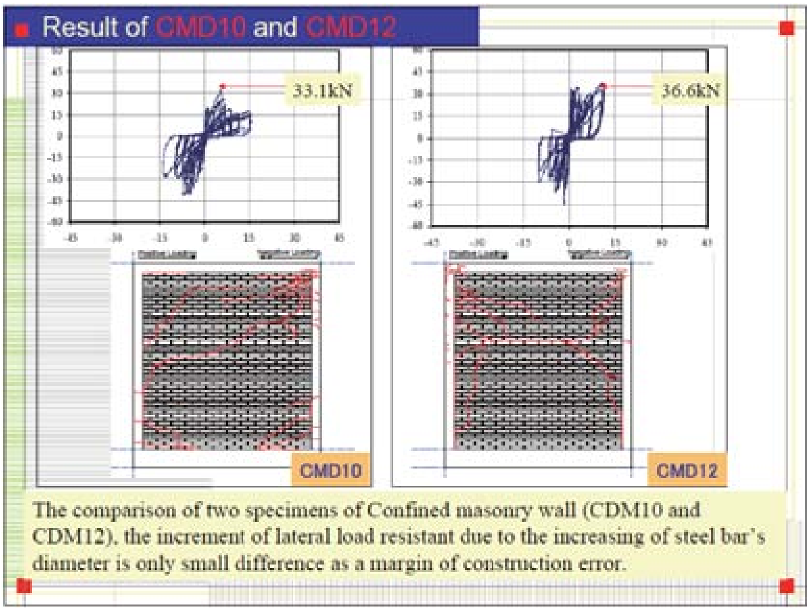

INDONESIA KEY REQUIREMENT
IMPROVEMENT PLAN


Strengthening of Openings : Seismic band


Jacketing


One layer of brick Clinched under the RC Beam


sketch
BEAM
COLUMN
"Toothing."
Layering bricks edges of wall should be toothing (castled vertical edges).


Result of CMD10 and CMD12
33.1kN
36.6kN
CMD10
CMD12
The comparison of two specimens of Confined masonry wall (CDM10 and CDM12), the increment of lateral load resistant due to the increasing of steel bar's diameter is only small difference as a margin of construction error.

Comparison of ultimate shear strengths using Existing equations

EQUATION1: Miha Tomazevic, Earthquake-Resistant Design of Masonry Buildings

$$H_{r,w} = \frac{f_t A_w}{C_1 b}\left[1+\sqrt{C_1\left(1+\frac{N_w}{f_t A_w}\right)+1}\right] \text{ ------ (URM Wall) (4.1.1)}$$

$$H_{r,c} = \frac{f_t A_w}{C_1 b}\left[1+\sqrt{C_1\left(1+\frac{N_w}{f_t A_w}\right)+1}\right] + n0.806 d_n^2 \sqrt{f_{cm} f_y} \text{ ------ (CM Wall) (4.1.2)}$$

EQUATION2: T.Paulay & M.J.N.Priestley, Seismic Design of Reinforced Concrete and Masonry

$$f'_m = \frac{f'_{cb}(f'_{tb}+\alpha f'_j)}{U_u(f'_{tb}+\alpha f'_{cb})} \qquad \alpha = \frac{j}{4.1 h_b} \qquad \lambda = \frac{E_m t \sin 2\theta}{4 E_c I_g h_m} \text{ ------ (URM+CM Wall) (4.2.1)}$$

EQUATION3: Former Chinese Standards (GBJ11-89)

$$V_{m1} = \left(f_v \frac{1}{1.2}\sqrt{1+0.45\frac{\sigma_0}{f_v}}\right) A_w \text{ ------ (URM Wall) (4.3.1)}$$

EQUATION4: Matsumura, A., Shear Strength of Reinforced Masonry walls

$$V_{sc} = \left\{k_c \frac{1}{(h/d)+2}\sqrt{F_m} + 0.3 \cdot \alpha \cdot \sigma_0\right\} t \cdot j \cdot 10^3 \text{ ------ (Shear crack strength) (4.4.1)}$$

$$V_{m2} = \left\{k_u k_p \left[\frac{0.76}{(h/d+0.7)} + 0.012\right]\sqrt{F_m} + 0.18\gamma\delta\sqrt{P_h \cdot {}_s\sigma_y \cdot F_m} + 0.2\sigma_0\right\} t \cdot j \cdot 10^3 \text{ ------ (RHC Wall) (4.4.2)}$$

Calculation results and Discussion

Specimens	Experimental Value(Qmax) (kN)	Shear strength Qmax/Aw (Mpa)	Theoretical Value (kN)					
			Equation 1		Equation 2	Equation 3	Equation 4	
			Eqn. 4.1.1	Eqn. 4.1.2	Eqn. 4.2.1	Eqn. 4.3.1	Eqn. 4.4.1	Eqn. 4.4.2
CMD10	33.1	0.11	38.55	62.99	71.84	33.75	42.15	67.39
CMD12	36.6	0.12	38.55	73.75	71.84	33.75	42.15	67.39

1. The calculation value of Equation 4.1.1 and Equation 4.3.1 for Un-Reinforcement Masonry wall correspond approximately to experimental value for the prediction of ultimate shear strength for Indonesian confined masonry wall.
2. Equation 4.1.1 is based on tensile strength, and Equation 4.3.1 is based on shear strength of the bed joint.
3. In brief of supposable cause, the confining elements contributed to the confinement effect. In the case of this study, the increasing of dimensions and reinforcement quantity above a regular level of the confining elements is not effect significant variation.

47

Conclusion

・Confined masonry of Indonesian type, which thin wall and small dimension of Confinement element, lateral load is more significantly increased by brick wall strength than dimensions and reinforcement quantity of the confining elements.

・The prediction of ultimate shear strength for Indonesian confined masonry wall, The calculation value of Equation 4.1.1 by Miha Tomasevic for Un-reinforcement masonry wall correspond approximately to experimental value.

The experiments (Cyclic Loading test) of proposed detail for Confined Masonry are conducted in Indonesia. Dr. Dyah will explain about experiments.

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3.5. Behavior of Confined Masonry Wall under Cyclic Loading: Experimental Study

コンファインドメーソンリー壁体の繰り返し加力実験の概要

（バンドン工科大学　ディア・クスマストゥティ ／ Dyah KUSUMASTUTI）

A Collaborative Research in Feasible and Affordable Seismic Construction

Behavior of Confined Masonry Wall under Cyclic Loading

Experimental Study

D. Kusumastuti,
K.S. Pribadi,
M. Suarjana,
I.G.W. Wijaya,
and L. Faisal

•Center for Disaster Mitigation Institute of Technology Bandung (Indonesia)
• Research Institute for Human Settlement (Indonesia)
•Building Research Institute (Japan)

Introduction

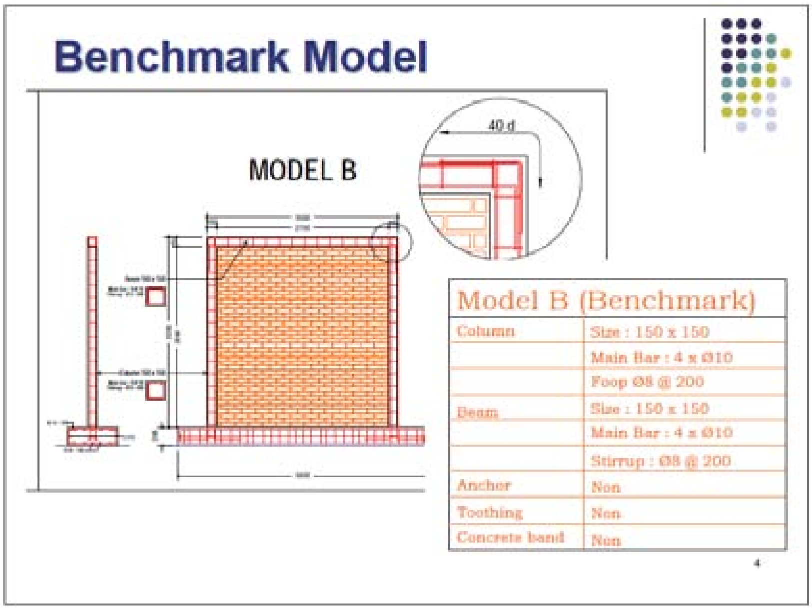
- Typical structural system of Indonesian house: R/C frames with confined masonry walls
- Wide range of level of damage of confined masonry walls under earthquake loads due to variation in:
  - Detailing of beam, column, and beam-column connection
  - Quality of materials
  - Construction techniques
- Possible failure types of confined masonry wall: diagonal cracking, sliding shear, corner crushing, diagonal compression, frame failure, etc
- Needs to evaluate structural behavior of different confined masonry walls under earthquake loads quantitatively

2

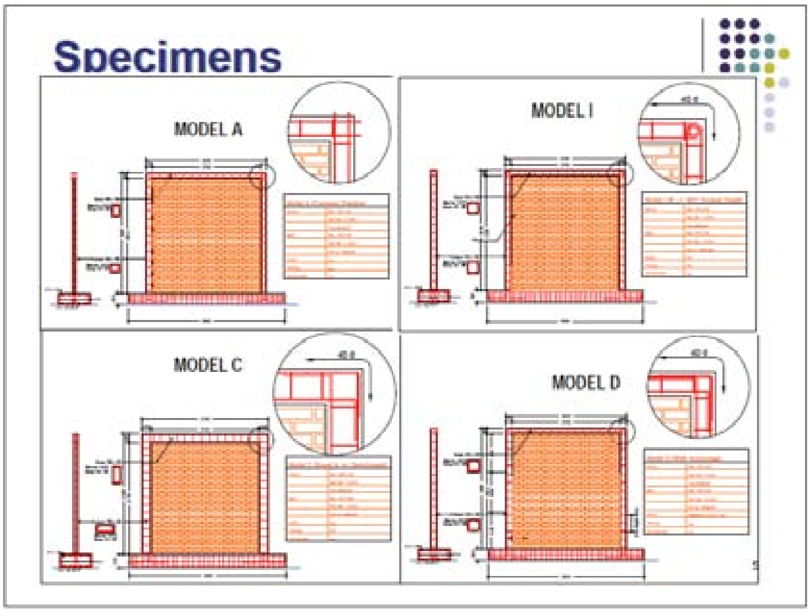
Objective

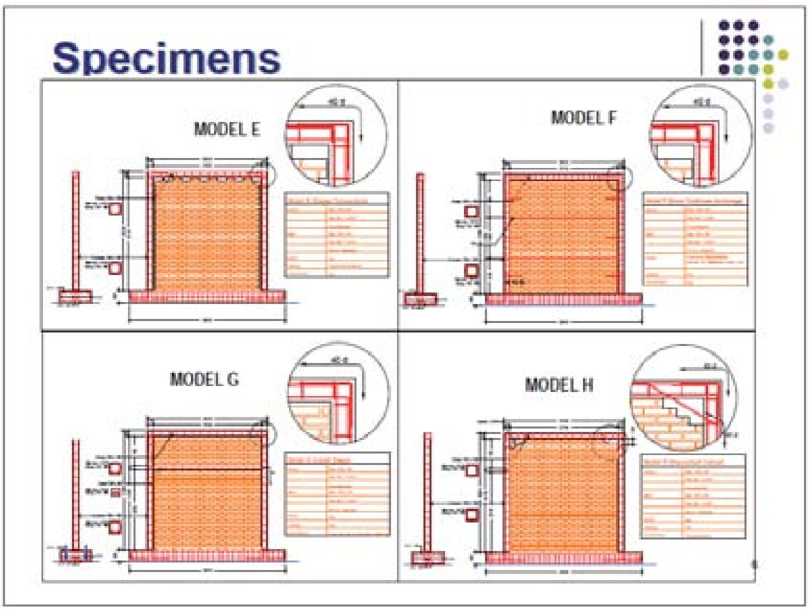
- To evaluate the behavior of various confined masonry wall models under cyclic loading
- To analysis portal confine masonry wall detailing sufficient in resisting earthquake load
- To propose applicable solution to improve the behavior of confined masonry wall under earthquake loading

3



Model B (Benchmark)	
Column	Size : 150 x 150
	Main Bar : 4 x Ø10
	Foop Ø8 @ 200
Beam	Size : 150 x 150
	Main Bar : 4 x Ø10
	Stirrup : Ø8 @ 200
Anchor	Non
Toothing	Non
Concrete band	Non



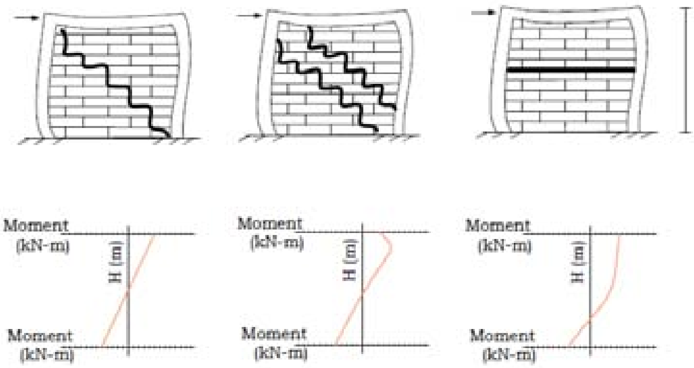


Structural Models

Model	Difference From Model B
A (Common Practice)	- Column and beam size : 100 x 150 - Beam - column joint reinforcement detail without hook
C (Equal A w/ Bencmark)	- Column and beam size : 100 x 225
D (With Anchorage)	- Anchorage Ø8 @6layers brick, length = 40d
E (Zigzag Connection)	- Toothing vertical and horizontal
F (With Anchorage)	- Continues Anchorage Ø8 @ lintel and sell level - Between CA, Ø8 @6layers brick, length = 40d
G (Lintel Beam)	- Concrete band by lintel beam 100 x 90
H (Haunched Corner)	- Concrete band by haunched beam-column corner
I (180° hook)	- Beam - column joint reinforcement detail with 180° hook

7

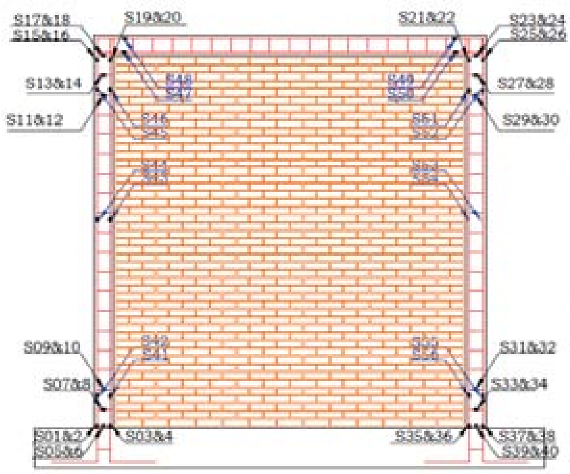
Failure Modes and Moment Diagrams



9

P

Instrumentation

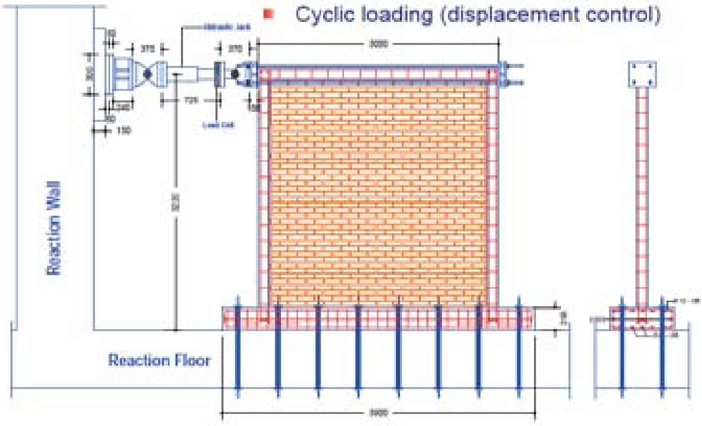


- Strain Gauges (56 each), additional strain gauge for models D, F, G, H
- Load Cell (100 tonf capacity)
- LVDT (stroke 12 cm)

10

Test Setup

- Load Cell 100 tonf capacity
- Cyclic loading (displacement control)



11

Expected Outcomes

- Test results
  - Load vs deformation relationship
  - Hysteretic loop and dissipation energy
  - Damage or failure mode
  - Overall structural behavior of confined masonry walls under cyclic load
- Verification of structural behavior for typical Indonesian housing
- Development of applicable solution to improve the behavior of confined masonry wall under earthquake loading
- Development of retrofitting strategy for existing structures

13

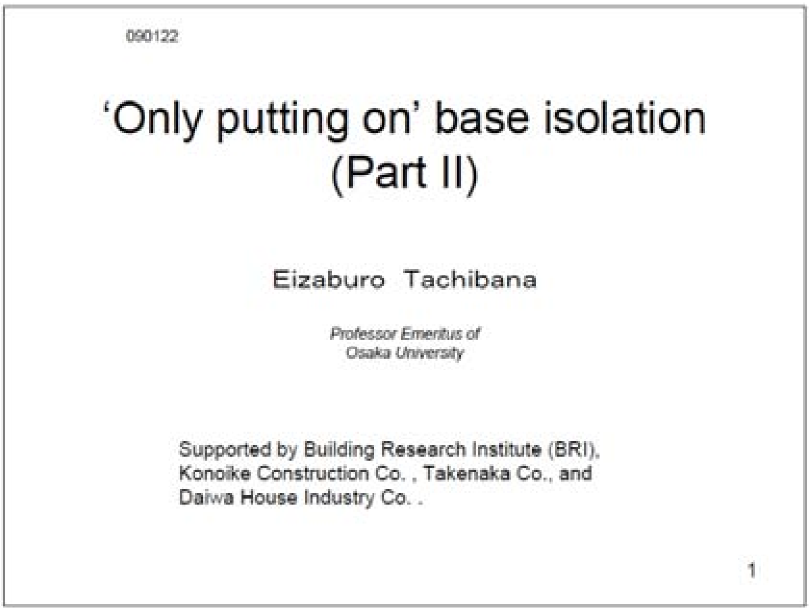
Construction of Specimens

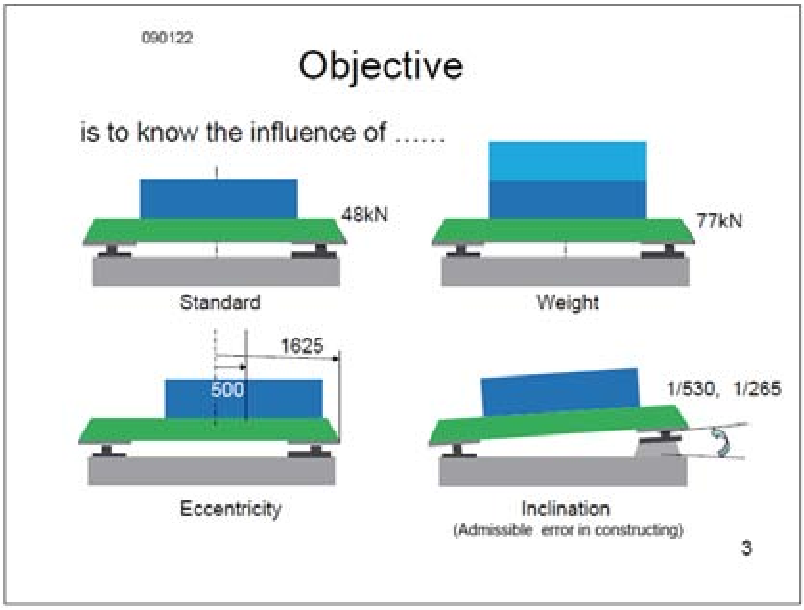
14

3.6. Outline of Experiment on Simple Sliding Seismic Isolation Device of Steel Plate

(Eizaburo TACHIBANA)

金属プレートによる滑り免震実験結果の概要（大阪大学名誉教授　橘英三郎）





090122

Test cases

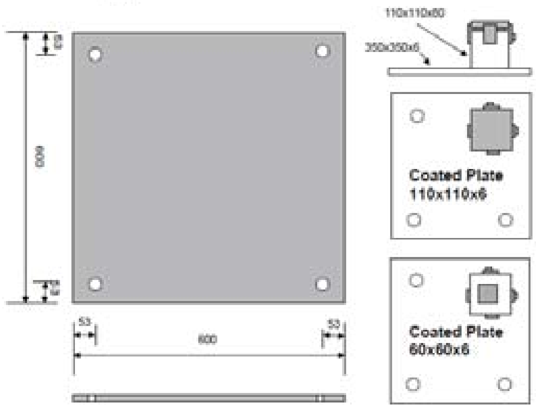
Case	Name	Support Plate (mm)	Weight	Pressure (N/mm²)	Earthquake
I	Standard	110*110	1	0.99	JMA-Kobe
I'	Using the same plates	110*110	1	0.99	JMA-Kobe
II	Contact pressure (1)	60*60	1	3.33	JMA-Kobe
III	Contact pressure (2)	60*60	2	5.38	JMA-Kobe
IV	Eccentricity	110*110	1	0.75,1.23	JMA-Kobe
V	Inclination 1/530	110*110	1	0.99	JMA-Kobe
VI	Inclination 1/265	110*110	1	0.99	JMA-Kobe
VII	Various Input Motion	110*110	1	0.99	Hachinohe
VIII	Sinusoidal Loading	110*110	1	0.99	Sinusoidal

Material SS400,
Coating M1014

4

Upper Plate

Support Block and Coated Plate



Case I,I',IV,V,
VI,VII,VIII

Case II, III

090122

3-dimensional dynamic loading

Case I ~VI:
JMA-Kobe (X-Y-Z, 1995)

Case VII:
Hachinohe (X-Y, 1968) , Hiroo (X-Y-Z, 2003), Ojiya (X-Y-Z, 2004)

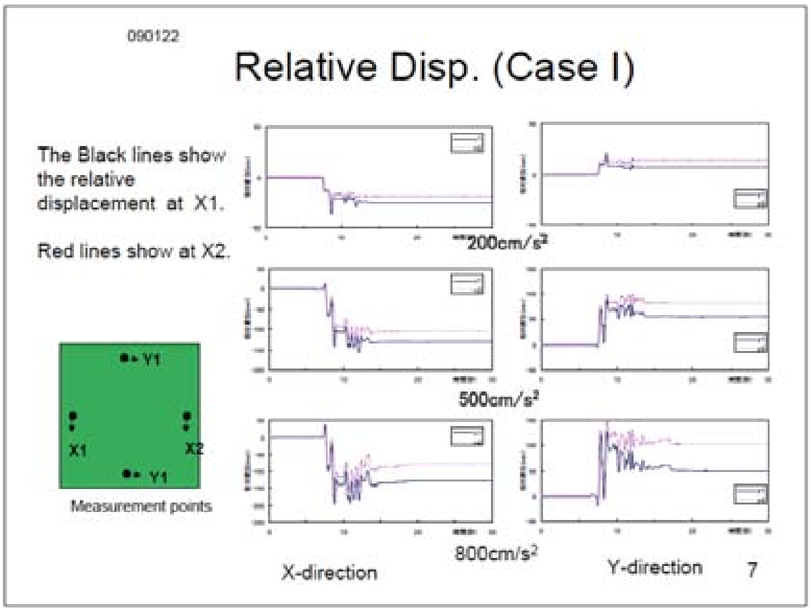
Where X means NS Component.

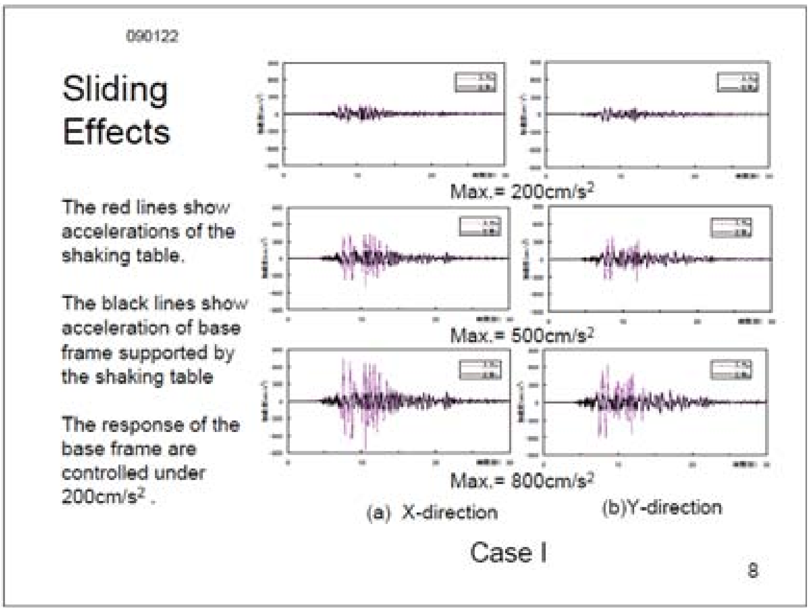
Procedure of loading

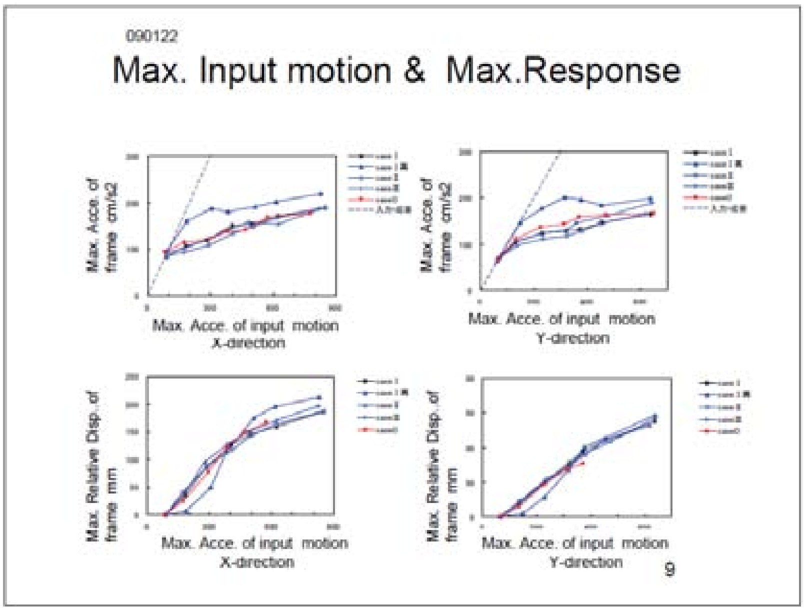
By changing the maximum acceleration of X component, the dynamic loads are given as follows. The other components are determined proportionally.

START ⇨ 100 cm/s² ⇨ 200 cm/s² ⇨ 300 cm/s² ⇨ 400 cm/s² ⇨ 500 cm/s² ⇨ 600 cm/s² ⇨ 800 cm/s² ⇨ END

(For Case VII 200,300,400,500,600 cm/s²)

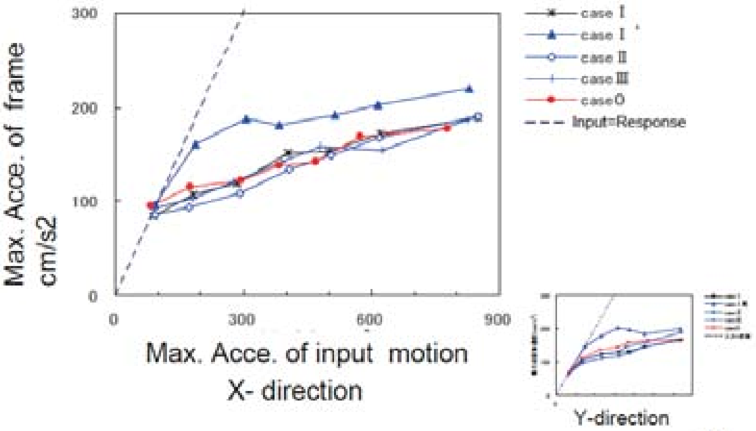

090122
Relative Disp. (Case I)
The Black lines show the relative displacement at X1.
Red lines show at X2.
Y1
X1
X2
Y1
Measurement points
200cm/s2
500cm/s2
800cm/s2
X-direction
Y-direction
7


090122
Sliding Effects
The red lines show accelerations of the shaking table.
The black lines show acceleration of base frame supported by the shaking table
The response of the base frame are controlled under 200cm/s2 .
Max.= 200cm/s2
Max.= 500cm/s2
Max.= 800cm/s2
(a) X-direction
(b)Y-direction
Case I
8


090122
Max. Input motion & Max.Response
Max. Acce. of frame cm/s2
Max. Acce. of input motion X-direction
Max. Acce. of frame cm/s2
Max. Acce. of input motion Y-direction
Max. Relative Disp. of frame mm
Max. Acce. of input motion X-direction
Max. Relative Disp. of frame mm
Max. Acce. of input motion Y-direction
9

090122

Max. Input motion & Max. Response



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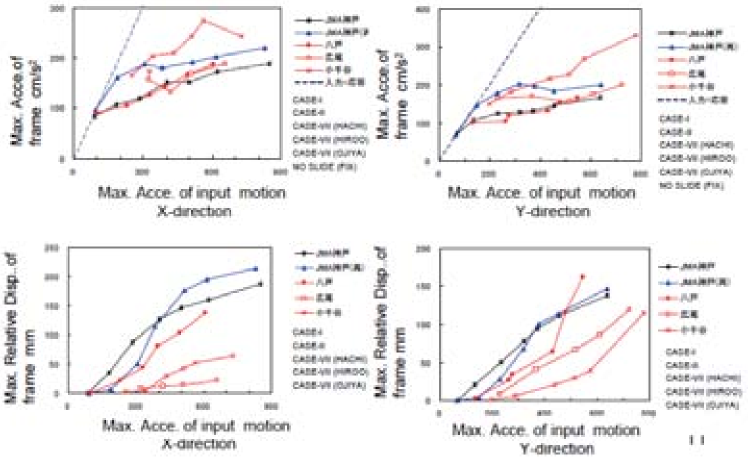
090122

Response to Various Earthquakes



11

090122

Remarks

For the all cases

the maximum acceleration response is about 200 cm/sec^2
and
the maximum relative displacement is about 20cm.

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3.7. Outline of Experiment on Low-cost Roller Seismic Isolation Device (Yuji ISHIYAMA)

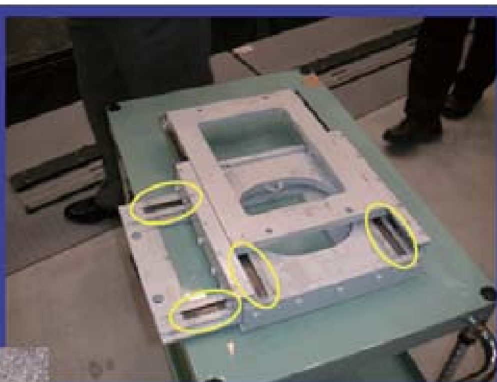
ローコスト転がり免震実験結果の概要（北海道大学名誉教授　石山祐二）

Outline of Experiments on Low-cost Roller Seismic Isolation Device

Yuji Ishiyama, Dr. Eng.
Professor Emeritus, Hokkaido University
NewsT Research Lab.

Project Basic Concept

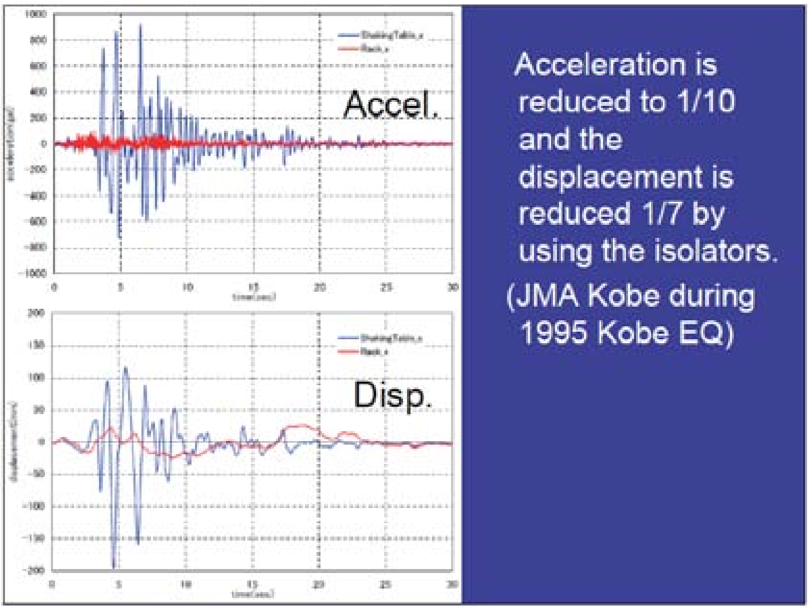
- Compact and light (hand-carried)
- Low cost (using common material – steel)
- Simple maintenance
- Meet varied needs



Basic mechanism

Steel rollers are installed in the rails of two horizontal directions

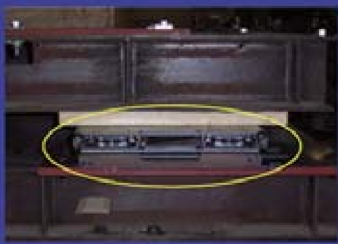

Shaking table tests of a housing model
with prototype isolators


Accel.
Disp.
Acceleration is reduced to 1/10 and the displacement is reduced 1/7 by using the isolators.
(JMA Kobe during 1995 Kobe EQ)


Application to Japanese traditional wooden houses (attachments of isolators to sills)
Application to existing wooden houses

Shaking Table Test

at BRI,Tsukuba Japan
March 2008



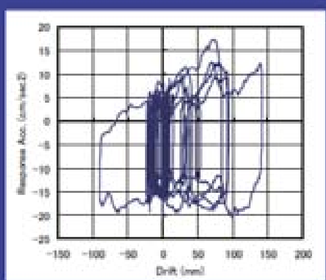
Kobe NS component 10, 25, 35, 50, 65, 75%

Device for Housing Use

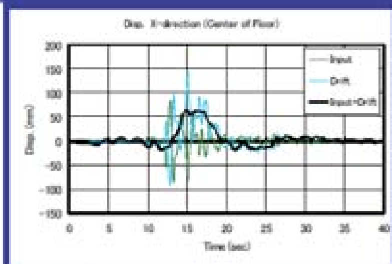
- Compact : 500x500x90mm
- Large drift : ±400mm
- Two horizontal directions
- Light : 90kg
  (Thin steel plate)

Results

(Load 72.2kN for 4 devices)



Acceleration vs. Drift



Time History of Drift

Applications

- Japanese traditional houses
- Non-engineered construction
- Historical monuments
- Computers
- Valuable items, etc.

Application of the isolator to the showcase of Fukuoka City Museum
(horizontal and vertical isolation)

Problems to be solved

Economical floor slabs/frame and foundation to install seismic isolation devices

Thank you
for your attention

Tokyo International Workshop 2009 on
Earthquake Disaster Mitigation for Safer Housing
January 22, 2008

Scrap Tire Pad (STP), low-cost seismic base isolation; static loading and shaking table tests.

Ahmet TURER, METU – Turkey
Nobuyoshi YAMAGUCHI, BRI – Japan
Tatsuo NARAFU, BRI – Japan

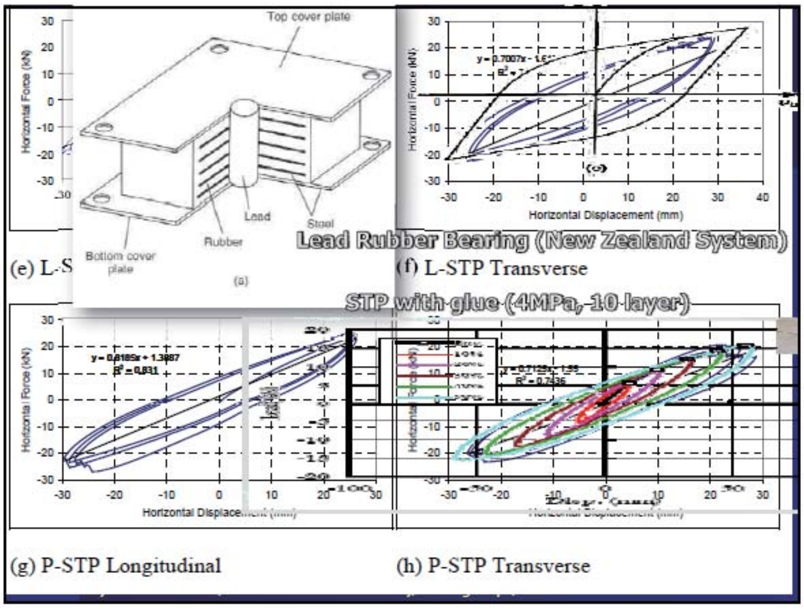


Table 2 Large deformation, reverse cyclic test results

Type	Dimensions[a] (mm)	Direction	Horizontal stiffness (kN/m)	Shear modulus (MPa)	Equivalent viscous damping ratio (ζ%)
G-STP	200 × 180 × 46	Longitudinal	548	0.70	16
G-STP	200 × 180 × 46	Transverse	579	0.74	22
M-STP	200 × 190 × 46	Longitudinal	–	–	–
M-STP	200 × 190 × 46	Transverse	–	–	–
P-STP	200 × 175 × 40	Longitudinal	885	1.01	18
P-STP	200 × 175 × 40	Transverse	969	1.01	18
L-STP	200 × 180 × 50	Longitudinal	859	0.97	21
L-STP	200 × 180 × 50	Transverse	745	1.18	18

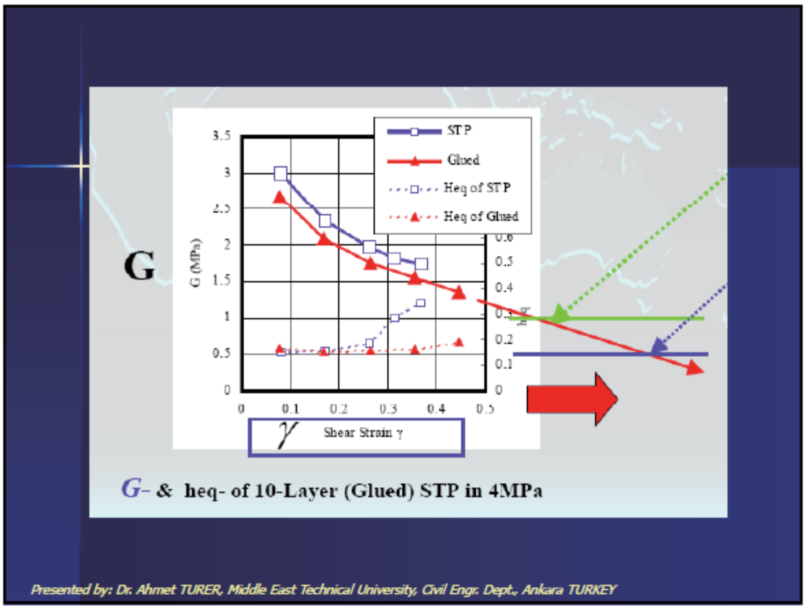
[a] All STPs are composed of four scrap tire layers

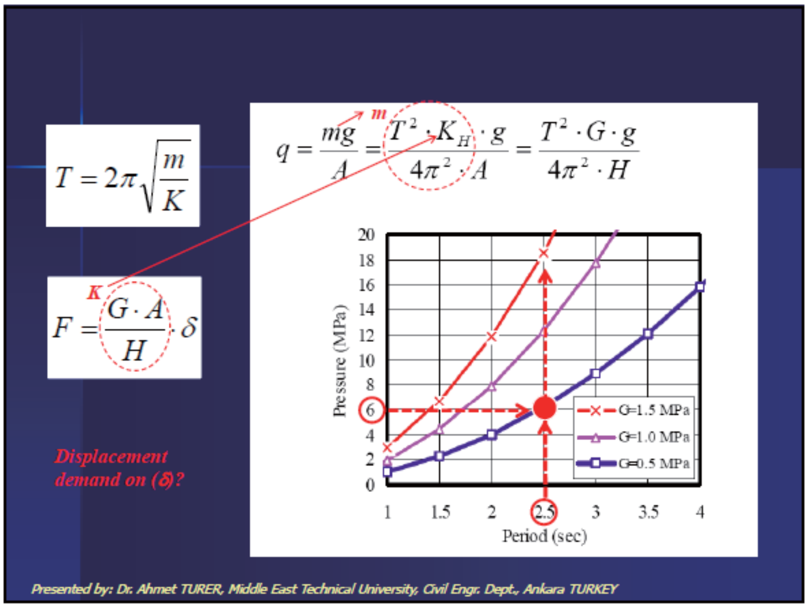
Table 3 Inclined plate test results in longitudinal and transverse directions

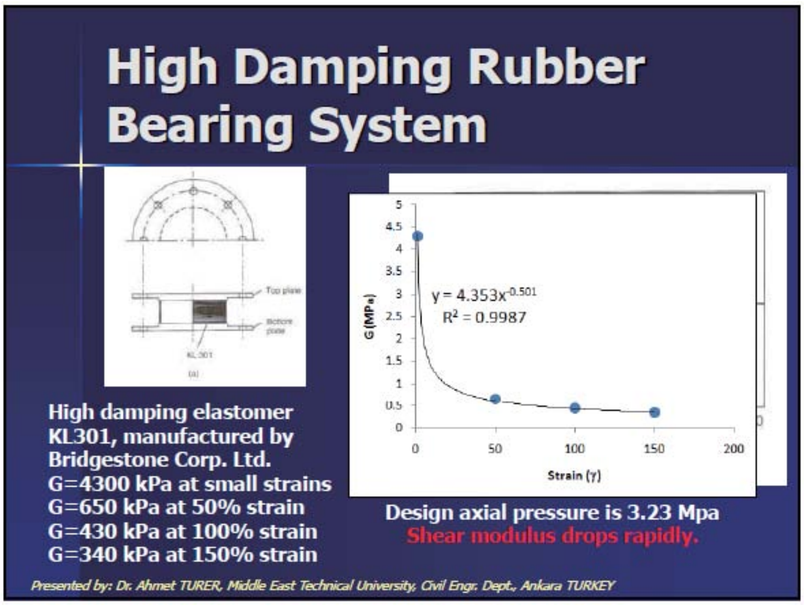
Type	Dimensions[a] (mm)	Direction	Horizontal stiffness (kN/m)	Shear modulus (MPa)
RB	150 × 150 × 40	–	225	0.4
G-STP	200 × 180 × 46	Longitudinal	1,448	1.85
G-STP	200 × 180 × 46	Transverse	1,166	1.49
M-STP	200 × 190 × 46	Longitudinal	1,512	1.83
M-STP	200 × 190 × 46	Transverse	1,470	1.78
P-STP	200 × 175 × 40	Longitudinal	1,234	1.41
P-STP	200 × 175 × 40	Transverse	1,243	1.42
L-STP	200 × 180 × 50	Longitudinal	720	1.00
L-STP	200 × 180 × 50	Transverse	684	0.95

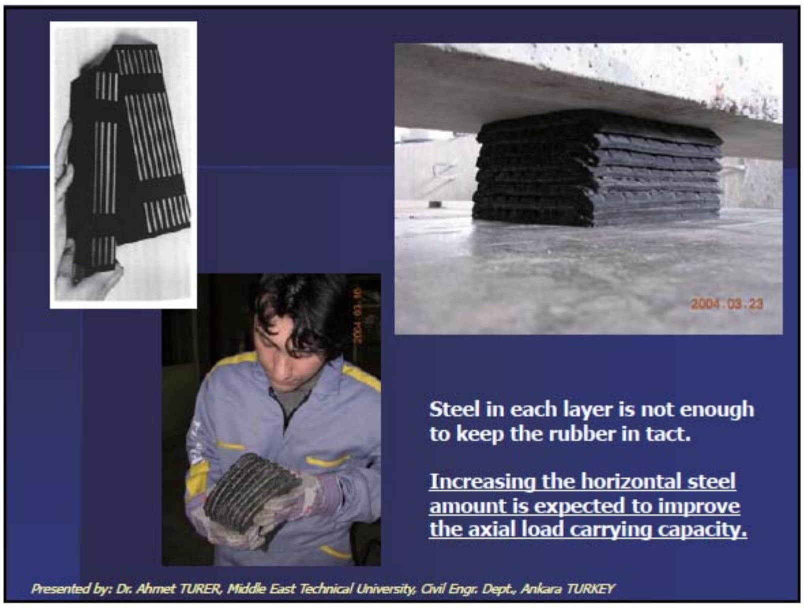
[a] All STPs are composed of four scrap tire layers

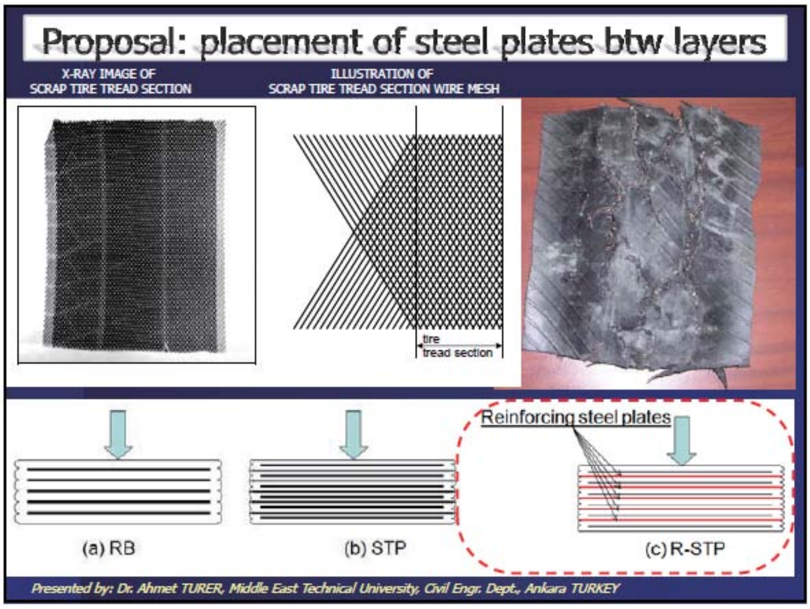
Presented by: Dr. Ahmet TURER, Middle East Technical University, Civil Engr. Dept., Ankara TURKEY

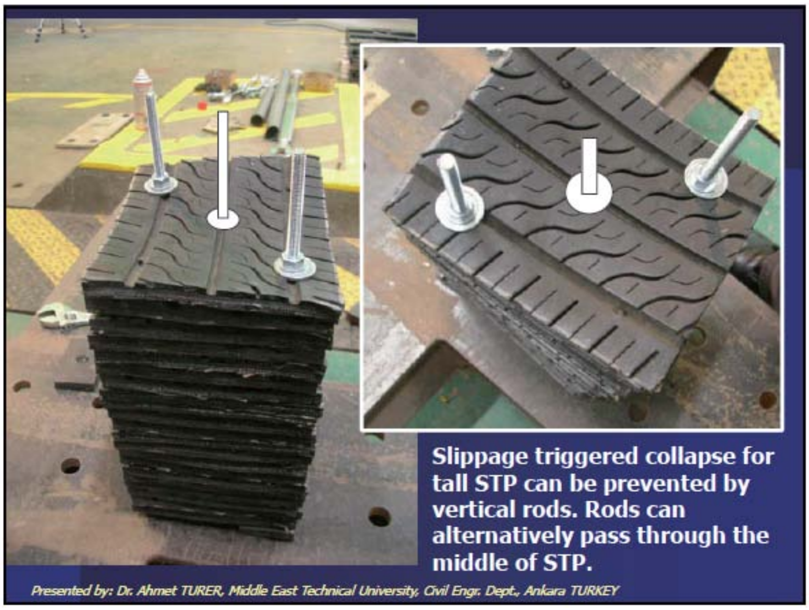

G
STP
Glued
Heq of STP
Heq of Glued
G (MPa)
Shear Strain γ
G- & heq- of 10-Layer (Glued) STP in 4MPa
Presented by: Dr. Ahmet TURER, Middle East Technical University, Civil Engr. Dept., Ankara TURKEY


$T = 2\pi\sqrt{\frac{m}{K}}$
$F = \frac{G \cdot A}{H} \cdot \delta$
K
m
$q = \frac{mg}{A} = \frac{T^2 \cdot K_H \cdot g}{4\pi^2 \cdot A} = \frac{T^2 \cdot G \cdot g}{4\pi^2 \cdot H}$
Pressure (MPa)
Period (sec)
G=1.5 MPa
G=1.0 MPa
G=0.5 MPa
Displacement demand on (δ)?
Presented by: Dr. Ahmet TURER, Middle East Technical University, Civil Engr. Dept., Ankara TURKEY


High Damping Rubber Bearing System
High damping elastomer KL301, manufactured by Bridgestone Corp. Ltd.
G=4300 kPa at small strains
G=650 kPa at 50% strain
G=430 kPa at 100% strain
G=340 kPa at 150% strain
G (MPa)
y = 4.353x^-0.501
R² = 0.9987
Strain (γ)
Design axial pressure is 3.23 Mpa
Shear modulus drops rapidly.
Presented by: Dr. Ahmet TURER, Middle East Technical University, Civil Engr. Dept., Ankara TURKEY


2004.03.23
Steel in each layer is not enough to keep the rubber in tact.
Increasing the horizontal steel amount is expected to improve the axial load carrying capacity.
Presented by: Dr. Ahmet TURER, Middle East Technical University, Civil Engr. Dept., Ankara TURKEY


Proposal: placement of steel plates btw layers
X-RAY IMAGE OF SCRAP TIRE TREAD SECTION
ILLUSTRATION OF SCRAP TIRE TREAD SECTION WIRE MESH
tire tread section
Reinforcing steel plates
(a) RB
(b) STP
(c) R-STP
Presented by: Dr. Ahmet TURER, Middle East Technical University, Civil Engr. Dept., Ankara TURKEY

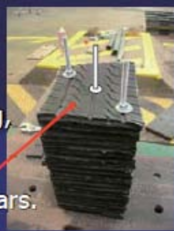

Slippage triggered collapse for tall STP can be prevented by vertical rods. Rods can alternatively pass through the middle of STP.
Presented by: Dr. Ahmet TURER, Middle East Technical University, Civil Engr. Dept., Ankara TURKEY

Conclusions

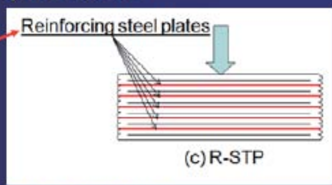
- Slippage in some of the seismic isolators is allowed, because:
  a) dissipates energy and
  b) limits the base shear transferred to the structure.
- Slippage between STP layers may be permitted provided that the stability is maintained.
- Coefficient of friction of STP measured (μ_{STP}=0.15-0.20) means surfaces will not slide until shear exceed V≥(0.15g)×(suspended mass) and sliding will be initiated if base shear (V) is larger than 0.2×(weight)

Presented by: Dr. Ahmet TURER, Middle East Technical University, Civil Engr. Dept., Ankara TURKEY

Conclusions



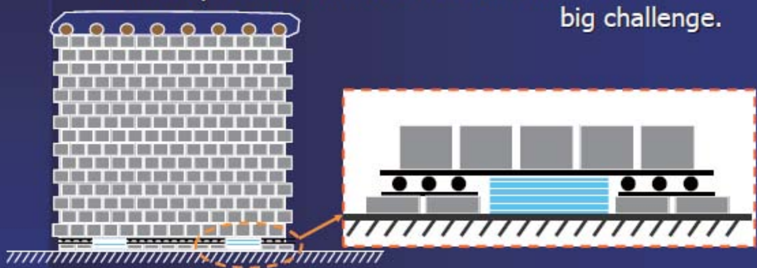
- STP would still function by rolling and/or sliding, even if they would disintegrate.
- Stability can be improved by multiple vertical bars.
- Relatively large Shear Modulus (G) can be easily compensated if vertical design stress can be improved to 18 MPa. Placing horizontal plates (e.g., rough steel plates) between STP layers would enhance the vertical capacity.



Presented by: Dr. Ahmet TURER, Middle East Technical University, Civil Engr. Dept., Ankara TURKEY

Conclusions

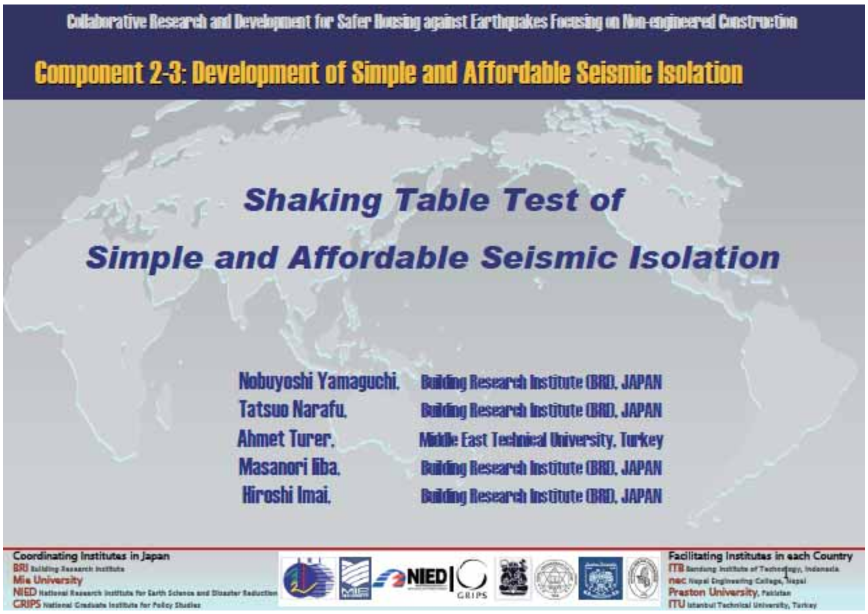
- Additional tests on full scale masonry houses would be necessary to investigate the actual performance of STP and R-STP.
- Foundation-basement requirements of <u>existing</u> masonry houses for base isolation remains to be a big challenge.

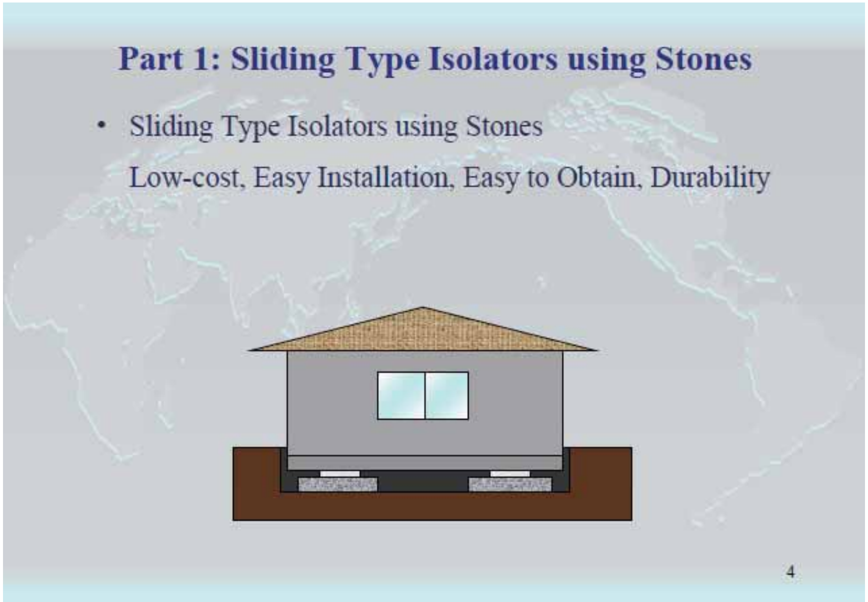


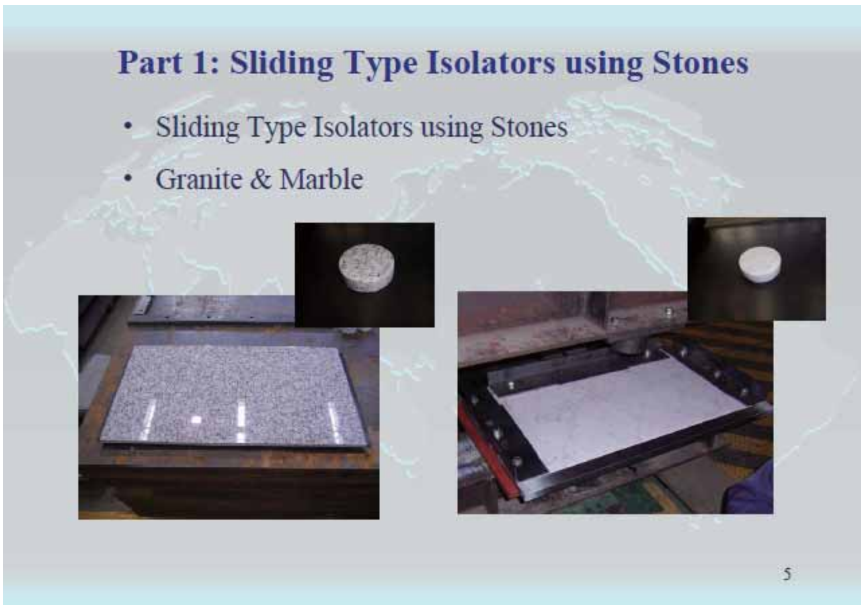
Presented by: Dr. Ahmet TURER, Middle East Technical University, Civil Engr. Dept., Ankara TURKEY

3.9. Outline of Experiment on Simple Sliding Seismic Isolation Device of Stone Plates (Nobuyoshi YAMAGUCHI)

石材の滑り免震技術の実験結果の概要（独立行政法人建築研究所　山口修由）







Part 1: Sliding Type Isolators using Stones

Stones:

Granite from Iran

Marble from Italy

Surface-Finished in China

Surface Roughness

Rmax (mm)	Granite	Marble
Surface(Mirror)	0.02	0.02
Back	0.3	0.05

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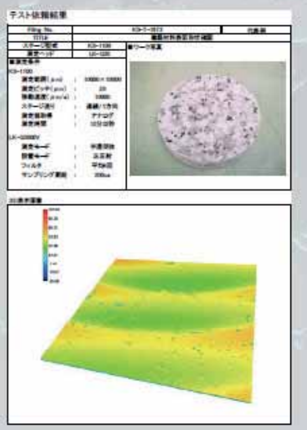
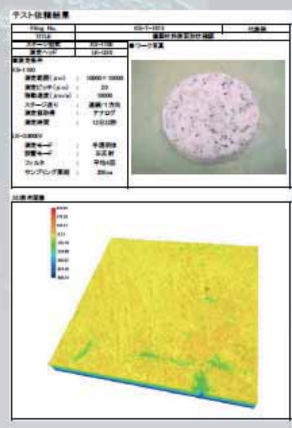
Part 1: Sliding Type Isolators using Stones

Surface **Granite** Back

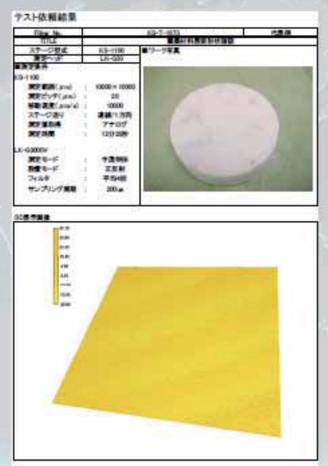


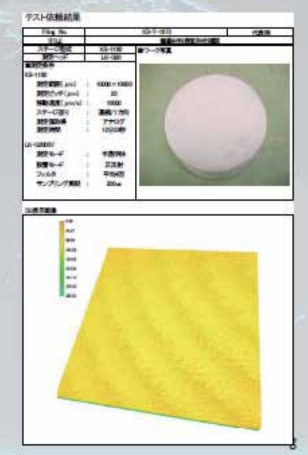


7

Part 1: Sliding Type Isolators using Stones

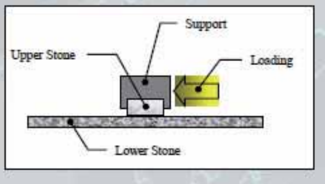
Surface **Marble** Back





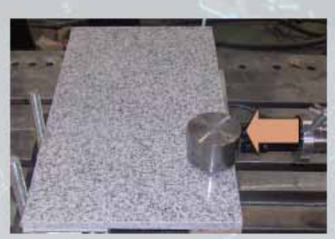
8

Part 1: Sliding Type Isolators using Stones
Shear Loading Test



Pressure: 0.01 N/mm^2

Speed: 1, 10 mm/sec



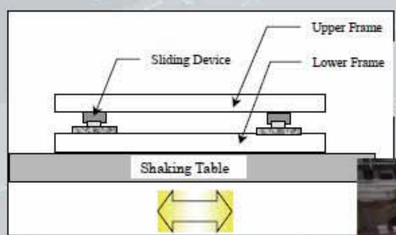
9

Part 1: Sliding Type Isolators using Stones
Friction Coefficients from Shear Loading Test

	Specimens				Friction Coefficient		
	Lower Specimen		Upper Specimen				
No.	Material	Surface	Material	Surface	1mm/sec	10mm/sec	Ave
A	Granite	mirror	SUS410		0.14	0.17	0.16
B	Granite	mirror	Fluorine Resin		0.18	0.19	0.18
C	Granite	mirror	Granite	back	0.17	0.22	0.19
D	Marble	mirror	Marble	mirror	0.21	0.20	0.21
E	Marble	mirror	Granite	back	0.24	0.26	0.25
F	Granite	mirror	Granite	mirror	0.22	0.31	0.26
G	Marble	mirror	Marble	back	0.29	0.27	0.28
H	Marble	mirror	Granite	mirror	0.30	0.30	0.30
I	Granite	mirror	Marble	back	0.27	0.36	0.31
J	Granite	mirror	Marble	mirror	0.35	0.37	0.36

10

Part 1: Sliding Type Isolators using Stones
Shaking Table Test



Input motion for Shaking Table

10, 25, 35, 50, 65, 75% of JMA Kobe NS

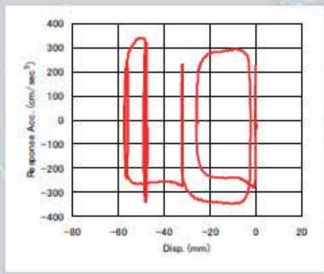
Pressure: 0.55N/mm^2

11

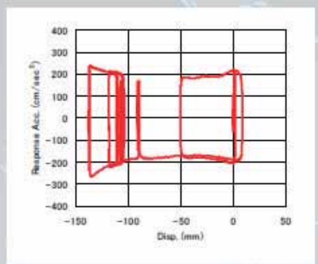
Part 1: Sliding Type Isolators using Stones
Shaking Table Test

Input motion for Shaking Table

75% of JMA Kobe NS



No.C **Granite**(Mirror)-**Granite**(Back)



No.J **Granite**(Mirror)-**Marble**(Mirror)

12

Part 1: Sliding Type Isolators using Stones
Shaking Table Test

Maximum Acc. in Shaking Table Test (Kobe NS 75%)

No.	Specimen				Maximum Acc.	Acc. Reduction
	Lower		Upper			
	Material	Surface	Material	Surface	G	Rate
J	Granite	Mirror	Marble	Mirror	0.257	0.53
B	Granite	Mirror	Fluorine. Resin		0.276	0.58
G	Marble	Mirror	Marble	Back	0.276	0.59
E	Marble	Mirror	Granite	Back	0.286	0.59
D	Marble	Mirror	Marble	Mirror	0.308	0.67
A	Granite	Mirror	SUS410		0.335	0.69
C	Granite	Mirror	Granite	Back	0.351	0.75
F	Granite	Mirror	Granite	Mirror	0.436	0.90

13

Conclusions on Sliding Isolators

- From shaking table test of sliding isolators using stones, mirror finished Granite and Marble was found to be the most effective combination of stones for sliding type base isolation systems.
- Response accelerations of these isolators were constrained less than around 0.2G. This will be valuable finding for the development of simple and affordable seismic isolation.

32

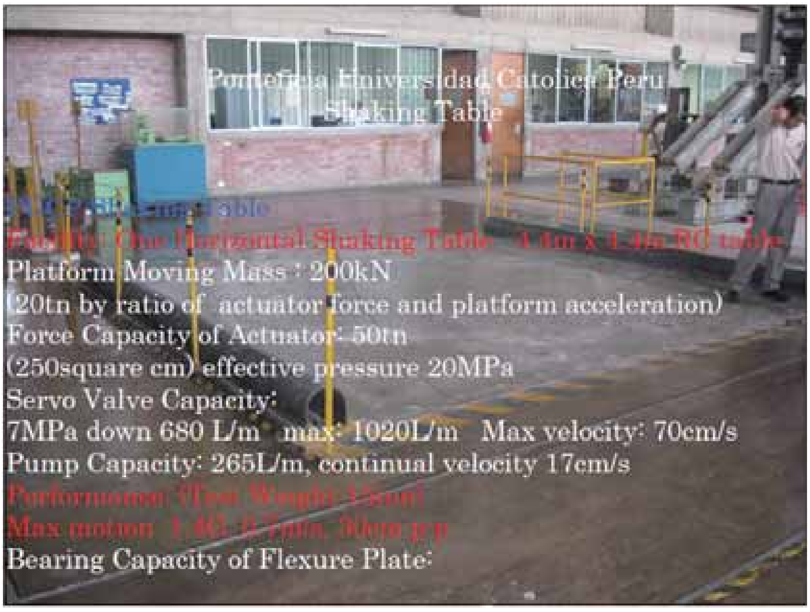
3.10. Outline of Experiment on Simple Sliding Seismic Isolation Device of Geo Textile (Akio ABE)

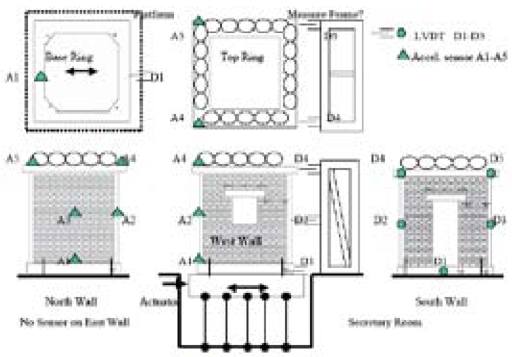
合成繊維シートによる滑り免震技術の実験結果の概要（東京ソイルリサーチ　阿部秋男）

Outline of Experiment on Simple Sliding Seismic Isolation Device of Geo-Textile

Dr. Akio Abe
Tokyo Soil Research Co., Ltd.

Experiment in PUCP





Sensor Distribution for Three Models

Test Model A	Confined Masonry
Test Model B	Confined Masonry with Lintel Beams
Test Model C	Confined Masonry With Wire Mesh and Mortal No bolt connection with table, and Bolt connection with table

Top ring :outside3.49m x 3.49m,inside2.29m x 2.29m,
height0.2m weight 3.49ton
Wall: height 2.80m, width3.00m, thickness0.11m
Opening: 0.955m x 0.955m for east and west wall,
0.935m x 2.040m for south wall
Column : 13cm x 13cm D10 x 4
Lintel : 1.3cm x 1.55m x 0.12m
Base Ring: outside 3.19m x 3.19m, inside 2.59m x 2.59m
height 0.3m weight 1.38ton
Brick: 215mm x 110mm x 65mm,
up and downside thickness 30mm
side mortal thickness 25mm

Model A, B total structure weight 13ton + sandbag 2ton
Model C 13.5ton+ sandbag 1.5ton
(Ground Pressure 42kPa)

Low friction sheets

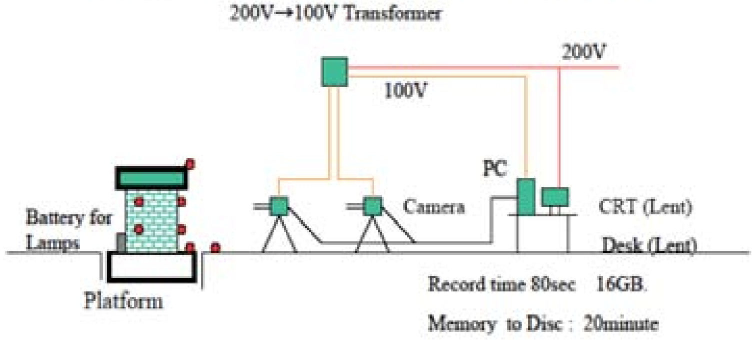
A kind of geo-textile sheet and silicone coated plastic sheet was placed

Model C

Confined
Masonry
with Wire Mesh

Test Weight 15t

Image Processing Measurement System



Roof Acc. Max. 300 gal

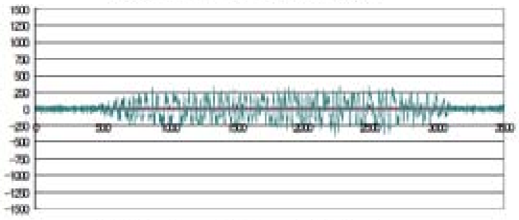
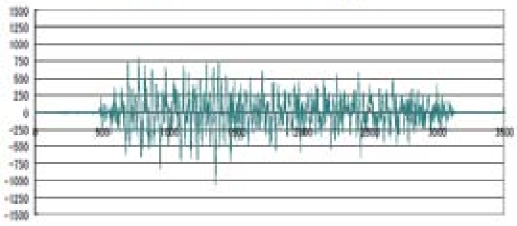


Table Acc. Max. 1100 gal



Result

- Acc. response of roof was about 1/3 of table acc.
- There were no damages occurred for specimen (Damages occurred in fixed case)

Tokyo International Workshop 2008 on Earthquake Disaster Mitigation for Safer Housing

Component 1-1: Contrivance for Seismic Risk Recognition by Communities

An alternative tools for seismic vulnerability assessment by using Google Earth and Free GIS/Database

Toshiaki Yokoi
Chief Research Scientist
IISEE, BRI, Japan

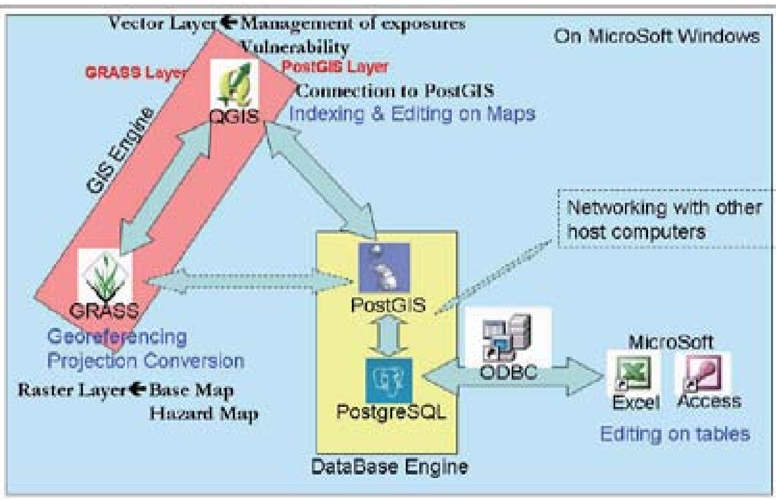
FREE GIS PLUS DATABASE SYSTEM

Free distribution
Cost Reduction
Wider dissemination

Self Risk Mapping on GIS
for CBDM
for education
for beginners

On Windows.
(Selected free software is available for multi-platform)

However,
"Free"dom requires a lot of guts!



System Design by combining GRASS, QGIS and PostgreSQL with PostGIS. PostgreSQL is connected to MicroSoft Excel / Access via ODBC of MicroSoft Windows.

Output till 14WCEE: Instruction Manual.

Installing and Setting up Software:

1)How to install GRASS6.2.2 together with Cygwin and FWTools136 and VCE00-2.0.0-win32

2)How to install qgis0.8.1,

3)How to install PostgreSQL-8.1.4 with PostGIS as a service.

4) How to set Open DataBase Connectivity of MicroSoft Windows.

Installation procedure is a mess!

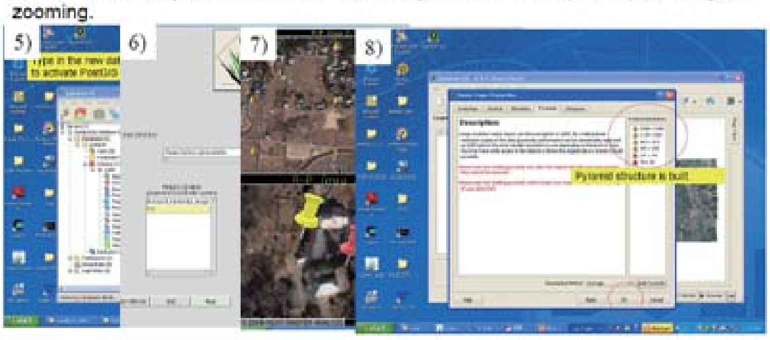
Preparation for tasks on GIS:

5) How to create a new database on PostgreSQL using pgAdminIII,

6) How to create a new LOCATION-MAPSET (working space) for latitude – longitude system on GRASS ,

7) How to geo-reference, rectify and merge satellite images using GRASS semi-manually and convert it from latitude-longitude system to other projection system

8) How to make Pyramid structure of raster layer on QGIS to speed up panning and zooming.

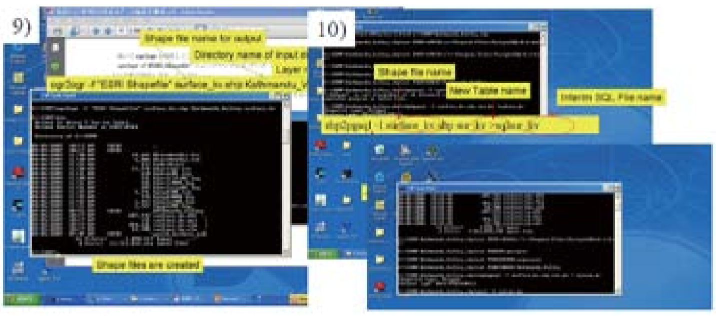


Preparation procedure is another mess! Especially 7).

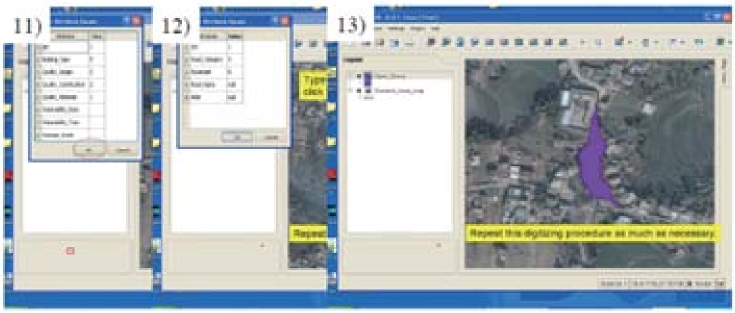
Tasks for importing existent GIS data:

9) How to convert Map Info Tab to Shape file,

10) How to load Shape file into PostgreSQL through PostGIS,

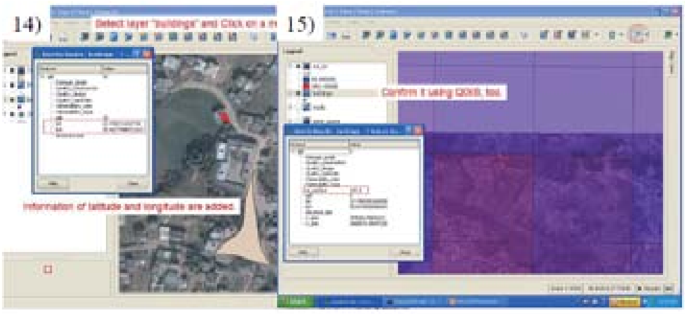


Tasks for creating new GIS data:
11) How to create vector layer and capture Point Data and give attribute values on QGIS and store them in PostgreSQL,
12) How to create vector layer and capture Line data and give attribute values on QGIS and store them in PostgreSQL,
13) How to create vector layer and capture Polygon data and give attribute values on QGIS and store them in PostgreSQL,

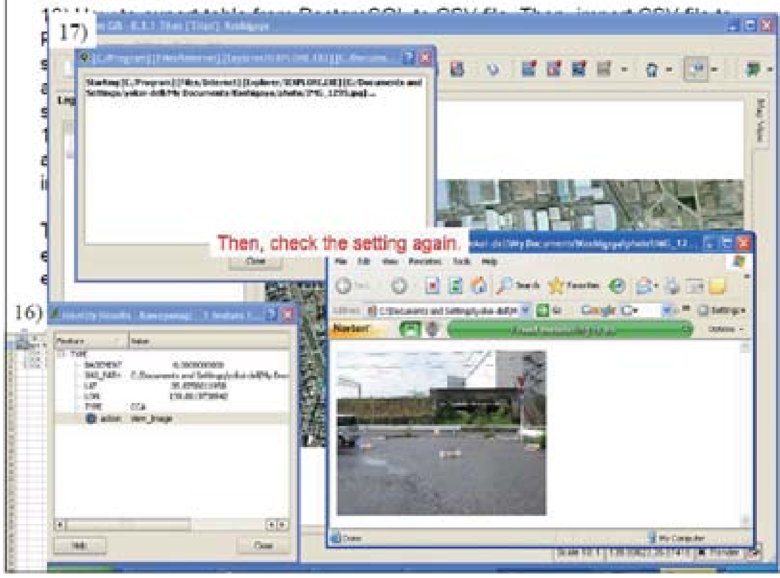


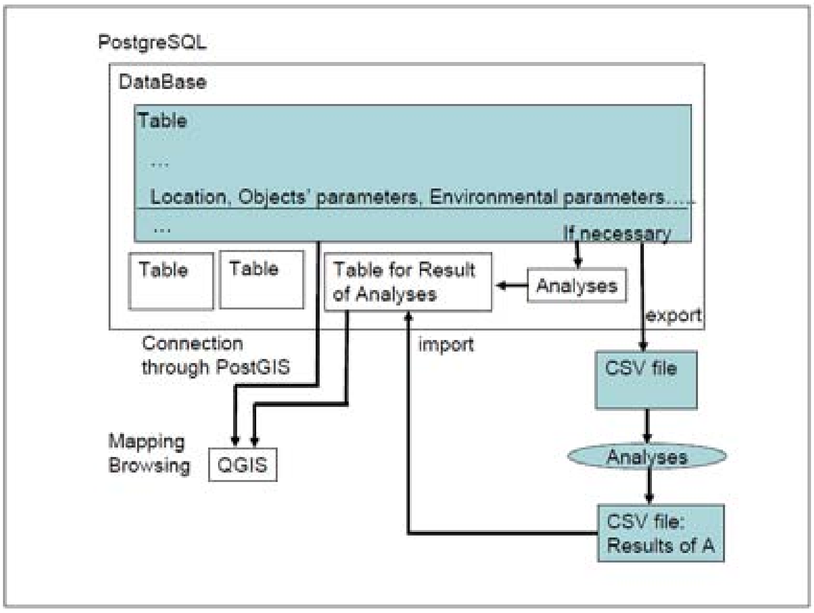
Tasks for data input are simple and easy.

Task for managing information in Tables of PostgreSQL:
14) How to extract the coordinates values from the geometry data and store them in PostgreSQL (they are necessary if used in data processing afterward because the geometry data can not be read directly without this process),
15) How to extract attribute values of other vector/raster layers at the location of Point data and store them in the table of PostgreSQL.



Miscellaneous tasks:





Complaint:

Software is too big in total
(1DVD(software) + 1CD(instruction))
(Including the full set of Cygwin).

Procedures are too complicated.
(confusion of tasks of administrator with those of users)
(Including many Command line operation of PostgreSQL)
←Allergy to programming

Instruction is too long.
(Explaining GUI operation step by step): Inevitable.

Improvement (**going on but should be completed within JFY2008**)**:**

Reduction of size
(1CD for the software+instruction)
(Necessary part of Cygwin for GRASS) **800Mb→200Mb**

Simplifying Procedures.
(separation of tasks of users from those of administrator)
(using batch files of PostgreSQL in stead of command line operation)

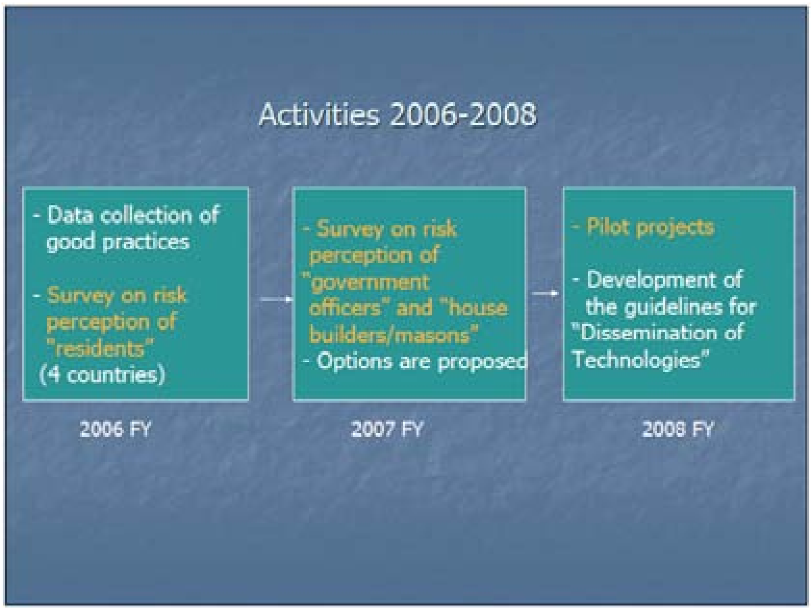
Reduction of Instruction length.
(Explaining GUI operation step by step, but only necessary ones)

Version up

- **GRASS 6.2.2→6.2.3**
- **PostgreSQL 8.1.4→8.2.6**
- **QGIS 0.8.1→0.9.1**

4.2. Outline of R&D Activities of Topic 3, Strategies for Dissemination of Technologies (Kenji OKAZAKI)

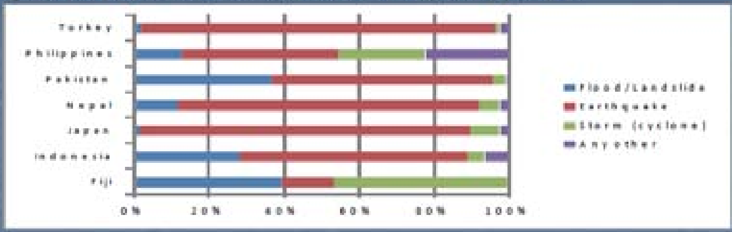
技術の普及のためのパイロットプロジェクトの概要（政策研究大学院大学　岡崎健二）



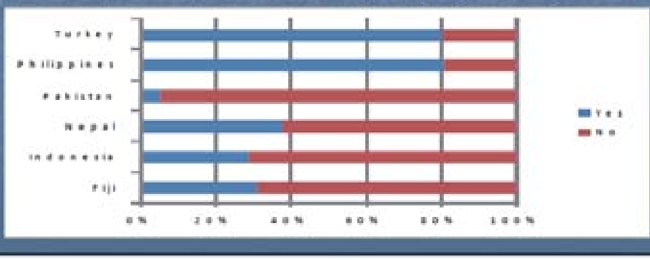
Countries where the survey on risk perception was conducted in 2007 - 2008

	GRIPS/BRI Research	Collaborative Network
Residents	Fiji (CATD) Philippines (PGS) Japan (Tsukuba Univ.)	Indonesia (ITB) Nepal (NSET-Nepal) Pakistan (Preston Univ.) Turkey (ITU)
Government Officers	Fiji (CATD) Philippines (PGS) India (IITB)	Indonesia (ITB) Nepal (NSET-Nepal) Pakistan (Preston Univ.) Turkey (ITU)
Builders/maosons	Fiji (CATD) Philippines (PGS) India (IITB)	Indonesia (ITB) Nepal (NSET-Nepal) Pakistan (Preston Univ.) Turkey (ITU)

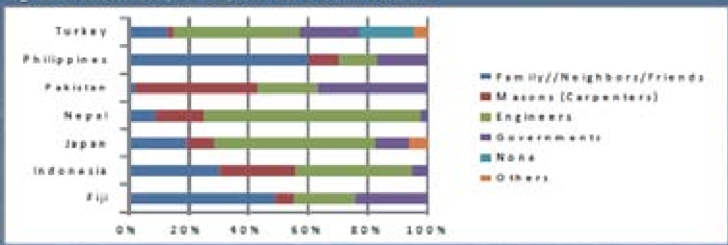
(Residents)
Q. 9 What kind of disaster do you think will most affect your life?



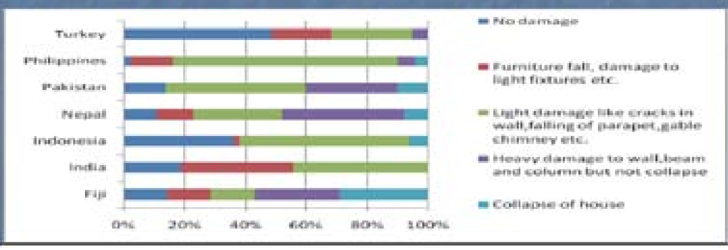
(Residents)
Q. 14. Do you think your house is strong enough against a big earthquake?



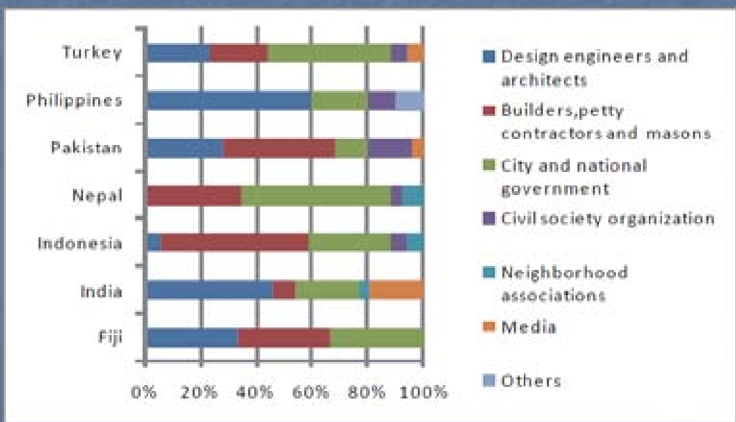
(Residents)
Q. 15 Whom do you rely on for a safer house?



(house builders/head masons)
Q6. How do you think a big earthquake will affect the houses you constructed ?



(Local government officers)
Q. 25 Which stakeholders or members/group can contribute most towards improvement of building safety in your city ?



Implication for policy development

The risk perception of the stake holders should be reflected to develop policies and strategies for earthquake disaster reduction

- Consideration should be given to the ability and willingness of residents to invest for housing safety.
- Some people understand that their houses are not safe against earthquakes, and are willing to improve housing safety. They should be targeted as the first step.
- Ideas as to who should take responsibility for house destruction differ from country to country. Policies for housing safety should target them.

- Many masons/builders do not know the Building Codes. To learn the Codes and enhance the feeling of moral responsibility of masons, trainings/education would be very effective.
- Many people do not care or are unwilling to abide by the Building Codes. Education at schools and communities would be effective to change their attitude.
- Many people tend to overestimate the cost of retrofitting. Dissemination of information on practical and affordable technologies is important.
- It should be considered "whom people rely on for a safer house" as the key players because people would trust some experts but would not trust some other experts.

Pilot Projects in 2008 in Indonesia, Nepal, Pakistan, and Turkey

- Objective

  To apply some methods/strategies to disseminate technologies to communities and evaluate how they are effective.

- Counterpart institutes decided what should be done as a pilot project.
- Financial support (approx. US$ 4,000) were provided to each implementing institution.
- Evaluation surveys were conducted twice, "before" and "after" the pilot project, to measure the effectiveness

Activities in 2008FY

- April - July 2008
  Planning of the pilot project
- July – October 2008
  Implementation the pilot project
- 28-29 November 2008
  International Symposium to share the outcome of the pilot projects as well as the risk perception surveys.
- March 2009
  Final report (Outcome of the pilot projects and Guidelines for technology Dissemination)

Pilot Projects

- Indonesia
  "Improving Method for Teaching Earthquake Hazard to School Children in Bandung"
  Development of a method for effective and simple teaching of earthquake knowledge for school children.

- Nepal
  "Housewives trainings to disseminate the technologies for safer housing"
  Dissemination of technology to the house-wives who look most of the construction works during building construction.

Pilot Projects

- Pakistan
  "Shake table demonstration and training of masons"
  Demonstrations of the shaking table for community activists and all other stakeholders at two different localities. Mason trainings to transfer appropriate and practical technologies .

- Turkey
  "Dissemination of technologies in rural areas"
  Dissemination of technologies to the people in rural areas, where mostly personal constructions are seen such as traditional adobe-mud or brick housing and the level of education and awareness is lower than urban areas.

4.3. Outline of Pilot Project in Indonesia (Krishna PRIBADI)

インドネシアのパイロットプロジェクトの概要（バンドン工科大学　クリシュナ・プリバディ）

"Improving Method for Teaching Earthquake Hazard for School Children in Bandung"

January 21-22 2008

Tokyo International Workshop 2009

GRIPS – CDM ITB

GRIPS – CDM ITB

Project Design

- The school teachers are expected to be able to integrate the method with the current school curriculum program, by improving delivery method of natural science, geography and physical education subjects
- **Pilot Project Locations** : SDN Cirateun and SDN Padasuka 2 (elementary) schools located in Bandung

SDN Cirateun

SDN Padasuka 2

Activities

No.	Activity	Result	Time Frame
1.	Preparation works, coordination with schools	Conducted with two pilot project schools. Contact persons are the school principals.	During the month of August 2008
2.	Preparation of teaching materials and aids	Prepared teacher's guidebook as a method of teaching earthquake disaster education.	During the month of August – September 2008
3.	Preparation of evaluation method	Prepared evaluation method for teacher, student and school community (parents)	September- October 2008
4.	Pre-evaluation for school teachers	Visited the two elementary school to interview the principal and teachers, conducted pre-evaluation for 18 school teacher	October 2008

Activities

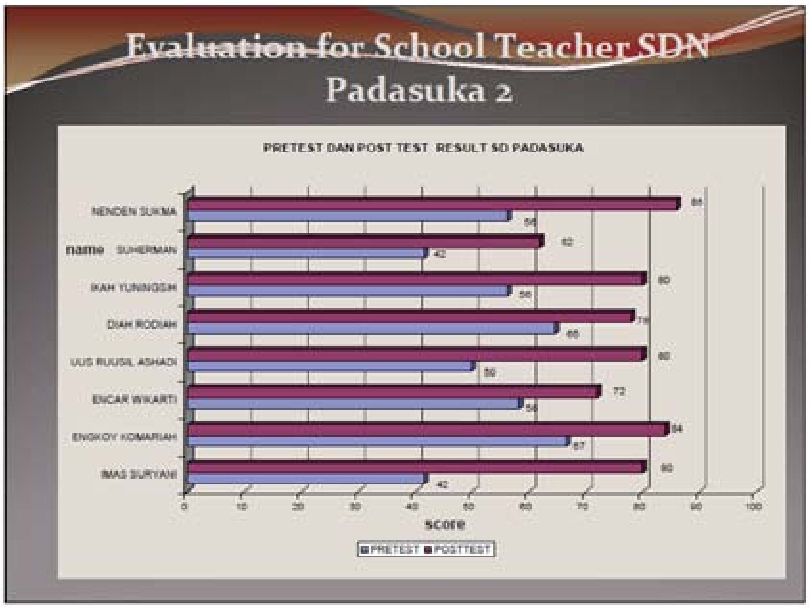
No.	Activity	Result	Time Frame
5.	Training of school teachers	Conducted teacher training on elementary school earthquake preparedness education.	27-28 October 2008
6.	Post-evaluation of school teachers and pre-evaluation of school children	Conducted teacher post evaluation and training on elementary school earthquake preparedness education. Also visited the schools to carryout pre-evaluation of school children	12 November 2008
7.	Implementation of teaching method for school children	Visit the two pilot project school and observe the classroom activity, where teachers convey the earthquake preparedness education.	19 November 2008
8.	Post-evaluation of school children	Conducted development post test material and the implementation of post evaluation for students.	29 November 2008
9.	Assessment of School Community (parents)	Conducted development evaluation material and the implementation for parents	22 November 2008 (Cirateun) 6 December 2008 (Padasuka)
10.	Final reporting and presentations	Currently conducted	December 2008

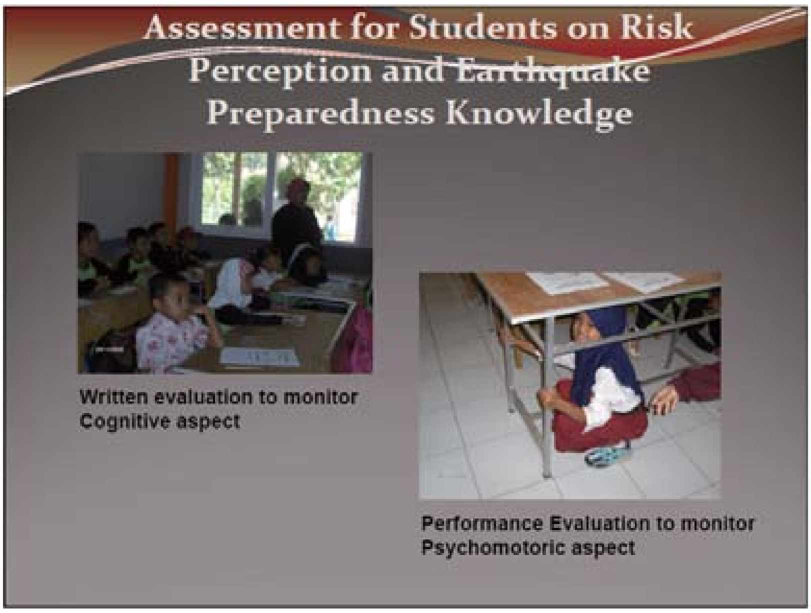
Implementation: Teaching Earthquake Hazard to School Children

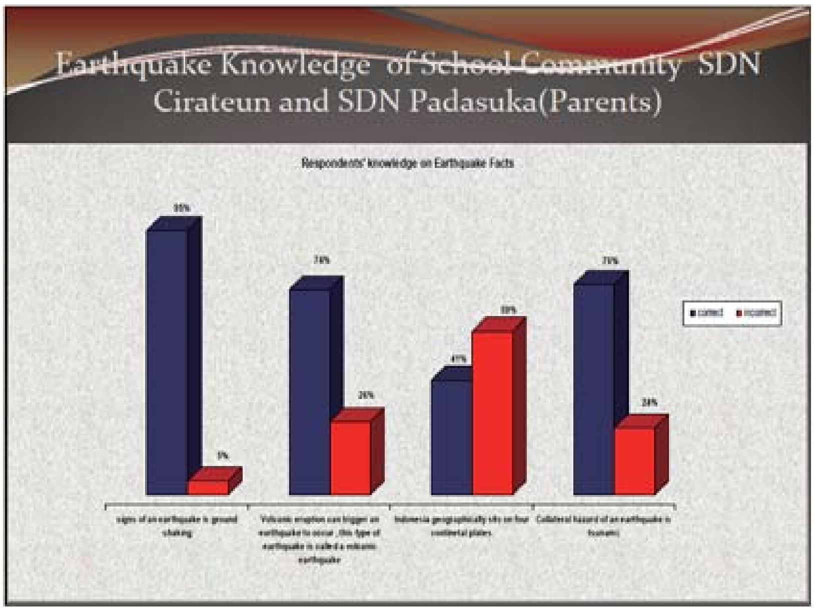
Implementation of Earthquake Disaster Preparedness Education in School

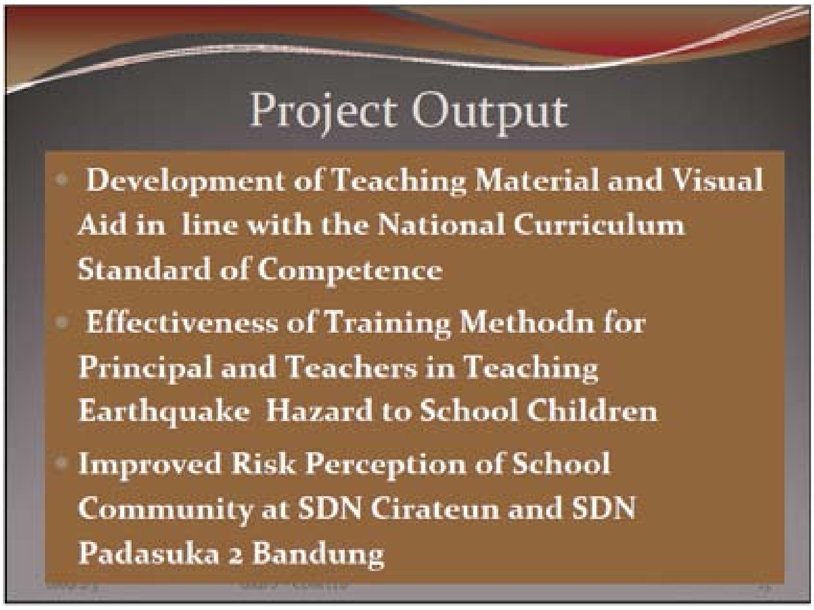
- **Integrate earthquake disaster knowledge into current curriculum**
- **Conduct Earthquake Drill as the School routine program**

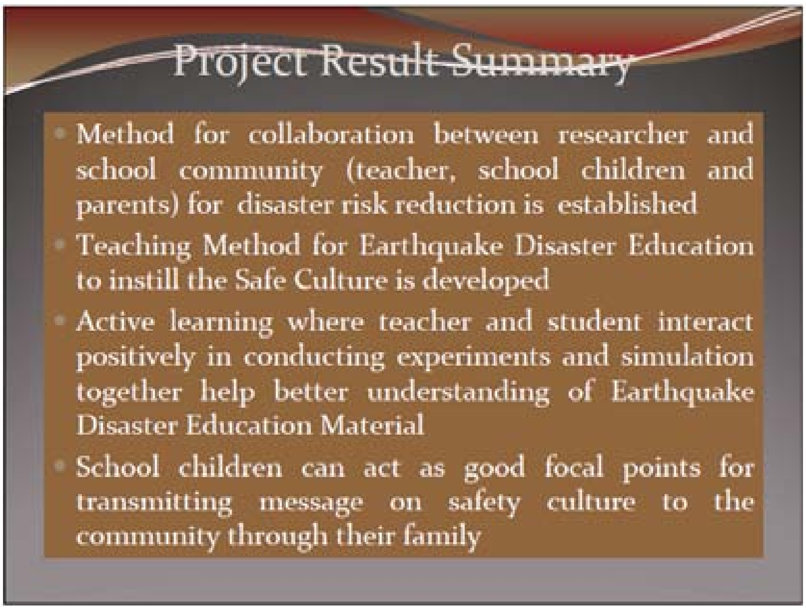
Implementation: Earthquake Drill


Evaluation for School Teacher SDN Padasuka 2
PRETEST DAN POST TEST RESULT SD PADASUKA
name
NENDEN SUKMA
SUHERMAN
IKAH YUNINGSIH
DIAH RODIAH
UUS RUUSIL ASHADI
ENCAR WIKARTI
ENGKOY KOMARIAH
IMAS SURYANI
0
10
20
30
40
50
60
70
80
90
100
score
PRETEST
POSTTEST


Assessment for Students on Risk Perception and Earthquake Preparedness Knowledge
Written evaluation to monitor Cognitive aspect
Performance Evaluation to monitor Psychomotoric aspect


Earthquake Knowledge of School Community SDN Cirateun and SDN Padasuka(Parents)
Respondents' knowledge on Earthquake Facts


Project Output
Development of Teaching Material and Visual Aid in line with the National Curriculum Standard of Competence
Effectiveness of Training Methodn for Principal and Teachers in Teaching Earthquake Hazard to School Children
Improved Risk Perception of School Community at SDN Cirateun and SDN Padasuka 2 Bandung


Project Result Summary
Method for collaboration between researcher and school community (teacher, school children and parents) for disaster risk reduction is established
Teaching Method for Earthquake Disaster Education to instill the Safe Culture is developed
Active learning where teacher and student interact positively in conducting experiments and simulation together help better understanding of Earthquake Disaster Education Material
School children can act as good focal points for transmitting message on safety culture to the community through their family


Recommendation
Ensure that school community continue to implement the Earthquake Disaster Education in the School Activities through building Local Education Office Policy.
Disseminate the result to other schools to help develop school curriculum for safer culture education in Indonesia
Develop further various user friendly Teaching Media for other types of hazard in order to have better teaching method for multi-hazard safety culture

4.4. Outline of Pilot Project in Nepal (Ram KANDEL)

ネパールのパイロットプロジェクトの概要（NSET　ラム・カンデル）

Dissemination of Earthquake Resistant construction Technology

Pilot project- Nepal

Housewives Training on Earthquake Resistant construction Technology

NSET

Amod M. Dixit

Ram Chandra Kandel , NSET

Participants

Potential house owners who have registered their application in the Building permit Section

- 60 Participants including Volunteers from 17 Ward DMC on first day awareness program
- 38 Regular participants on 3 Days Training

Objective of the Training

- Dissemination of Earthquake resistant construction technology to community specially the house wives who is looking after the construction process on each individual house construction.

Training Method

·Interactive Lecture On training hall

·Model watching and learning details

Training Method

·Visit at construction site

·Practice of Non structural safety options

What next

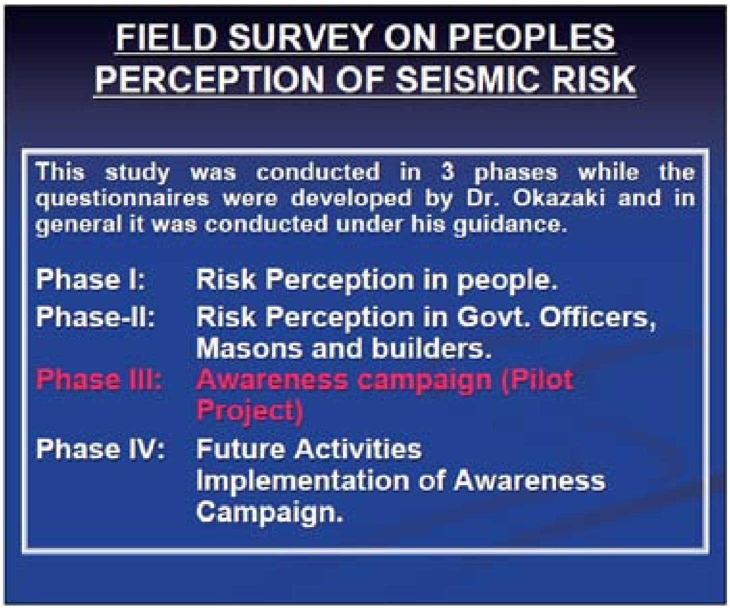
- Women's are demanding more Trainings to each wards so that the Earthquake resistant construction technology can be transferred to community and make this as a culture
- Massive training of masons and local builders are more demanding for non engineered houses and for engineered houses more training for designers and supervisors.

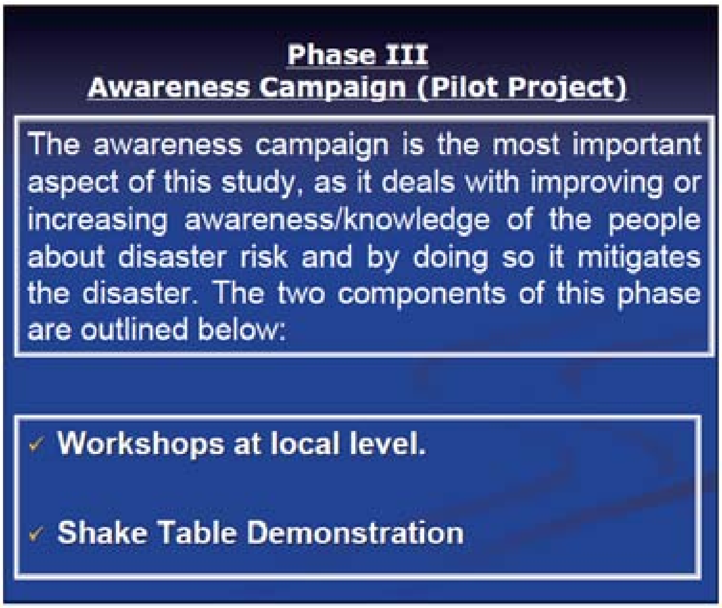
What next

- To evaluate the training effect there is strong need of back up to the women's by visiting their construction sites and get their feed back on construction of Earthquake safe houses
- Publication of suitable booklets and Manuals on structural and non structural safety and distribution through mass media.

4.5. Outline of Pilot Project in Pakistan (Najib AHMED)

パキスタンのパイロットプロジェクトの概要(プレストン大学　ナジブ・アーマド)





Participants of Mason Training Workshop

Participants being shown re-bar stirrups

Map of Pakistan

Main Characteristics of the Surveyed Locality

- This village is Toward South West 65 Km from Rawalpindi.
- People of the village felt minor earthquake jolts time and again, people do not have any experience of severe disaster just like October, 2005 earthquake.
- This village is an old town with traditional people having various occupations.
- This village has traditional town houses adjacent to each other.

What kind of media tools you consider best for conveying message to the community with regard to safe houses?

Options	Before Demonstration	After Demonstration	Conceptual Variation
1) Through Electronic media	34%	10%	24%
2) Through print media	10%	2%	8%
3) Through (Private institutions and NGOs)	24%	4%	20%
4) Through group discussion	25%	8%	17%
5) Through government instructions	4%	2%	2%
6)Through Practical Demonstrations like Shaking Table	3%	74%	71%

What is your opinion about simple masonry structure building is it safe against any kind of earthquake?

Options	Before Demonstration	After Demonstration	Conceptual Variation
Yes	78%	2%	%
No	22%	98%	%

What is your opinion about simple masonry structure building is it safe against any kind of earthquake?

	Before		After	Conceptual
Yes	78%		2%	0%
No	22%		98%	0%

- People at large have very little information and technique to make their houses safe and resistant against earthquake.
- The most interesting feature of this research appears in the house construction cost factor as there was visible shift among respondent conception about bearing extra cost for constructing safer houses .

- The best proposal for long run in Pakistan for safer houses includes large scale community activist training , technical support both from government and private sector, and a major focus and emphases is on quality material for safe houses.
- Major portion of respondent prefer government loans, They want government soft loans to meet their needs and demand with regard to construction of safe house, some in habitual demanding government loan or aid from any new face. This also reflects socio economic dependency of the people on government .

BUILDING RESEARCH INSTITUTE　GRIPS NATIONAL GRADUATE INSTITUTE FOR POLICY STUDIES　UNCRD United Nations Centre for Regional Development

Dissemination of Earthquake Technologies for Safety of Buildings in Turkey Pilot Project

Tokyo International Workshop 2009 on Earthquake Disaster Mitigation for Safer Housing

Yilma KARATUNA
Assoc. Prof. Dr. Alper ILKI

22 January 2009, Istanbul

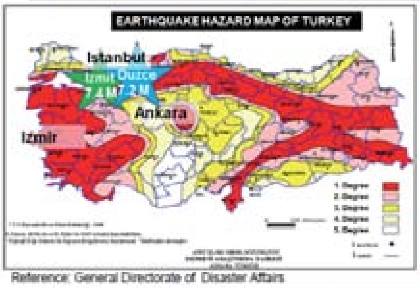
1. Aim of the Study

- Raise general EQ safe housing awareness of the community (low education level)
- Disseminate EQ safe construction and retrofitting technologies among public
- Rural EQ zones of Turkey

2. Steps of the Pilot Project

- Determination of the target group
- Preparation of the booklets and visual presentations
- On-site visits – delivering of booklets – presentations about EQ safer housing

3. Seismicity of Turkey



Reference: General Directorate of Disaster Affairs

Izmit - Golcuk Earthquake
Date: 17 August 1999
Magnitude: 7.4
Casualties: 17.840
Injuries: 43.953
Collapsed/Heavy Damaged Buildings: 16.649

Duzce Earthquake
Date: 12 November 1999
Magnitude: 7.2
Casualties: 845
Injuries: 4.948
Collapsed/Heavy Damaged Buildings: 15.389

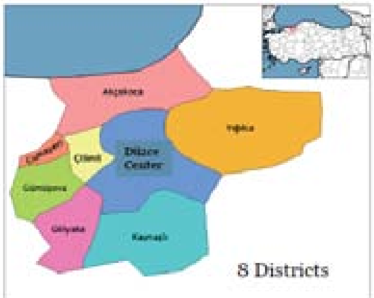
4. Pilot Project Site

- Determination of the pilot project and target group
  - Earthquake suffered
  - Rural typology

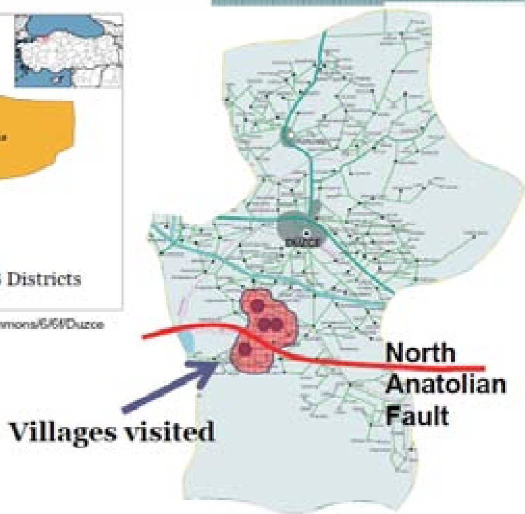
DUZCE (Villages)
- 7.2 M
- Population:
157.894 – City
165.434 – Rural

http://tr.wikipedia.org/wiki/Duzce_(il)

http://turkiye-haritasi.turkiyedertani.com/images/turkiye_yonetim_haritasi_2006.jpg



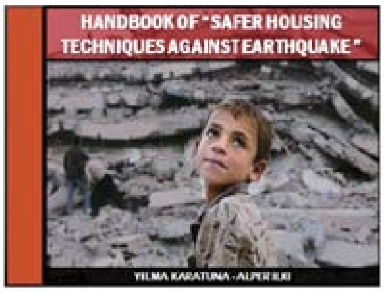
http://upload.wikimedia.org/wikipedia/commons/6/6f/Duzce_districts.png



http://www.duzce.pol.tr/resimler/duzce_belediye.gif

5. Education Material

- Preparation of the booklets and visual presentations

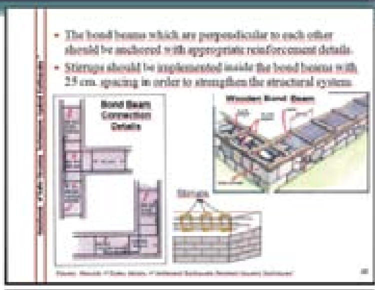


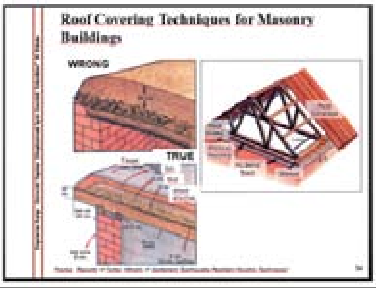
- In order to provide permeanent knowledge for the rural community of Turkey in our pilot project, handbooks about EQ safe housing techniques

- **Handbook of "Safer Housing Techniques Against Earthquakes"** include the following parts:

1. General Information About Earthquakes
2. Turkey & Earthquakes
3. Actions Against Earthquakes
4. Earthquake Safety in Reinforced Concrete Buildings
5. Earthquake Safety in Masonry Buildings
6. Non-Structural Mitigation Measures
7. General Evaluation and Results
8. References

- The handbook is prepared due to the latest (2007) Building Code of Turkey, and includes visual explanations.



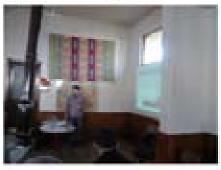
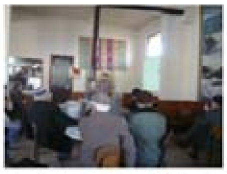


6. On-site Presentations

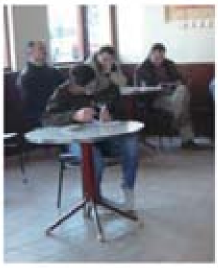
- 4 villages of Duzce were visited in the scope of pilot project of Turkey:
  - Konakli
  - Develibesni
  - Duraklar
  - Aydinpinar

http://www.duzce.pol.tr/resimler/duzce_belediye.gif

- MS Powerpoint presentations were applied in the villages.


- **Handbook of "Safer Housing Techniques Against Earthquakes"** is distributed to the rural community.

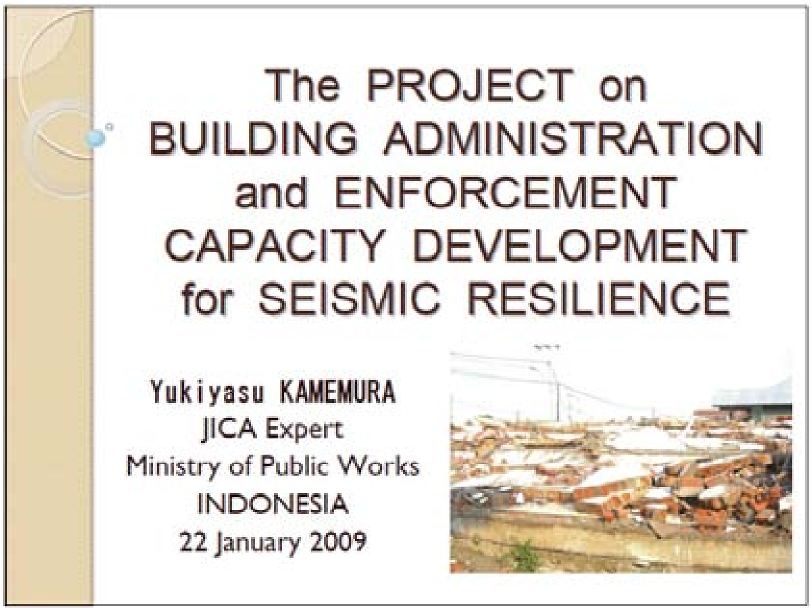



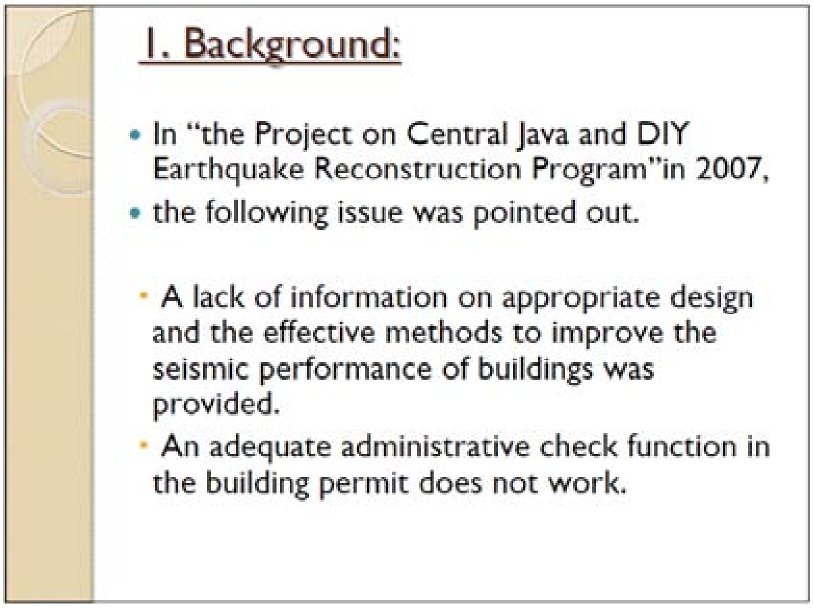
7. Conclusions

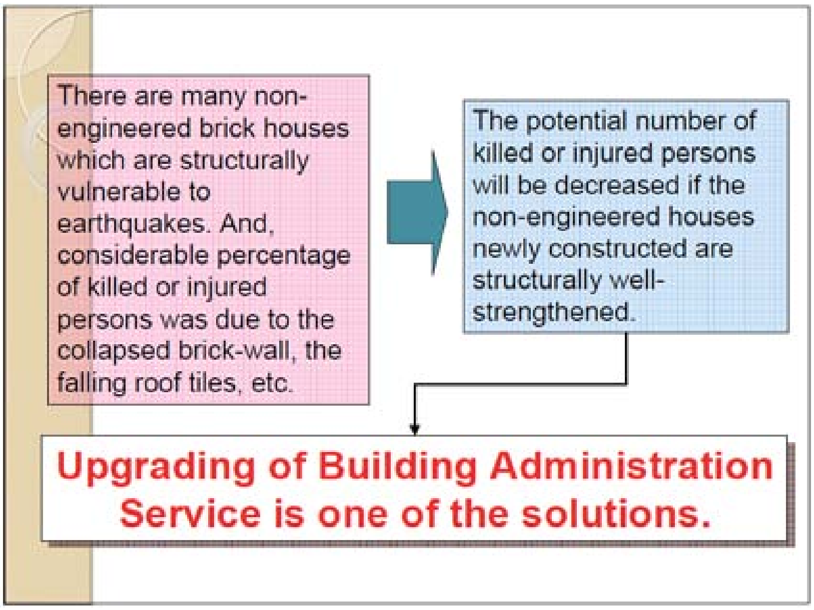
- EQ housing safety education programme on the rural settlements of Turkey pilot project is nominee to be consistent awareness/public informing programme with its visual presentations and tangible handbooks distributed.
- Our pilot project is a small but important step for the dissemination of EQ safe housing safety technologies to the community by being applied in the rural areas where those areas are ignored by the governmental level.

- After the education programme, it is observed that people are desirous to participate in such education programmes.
- The participants complain about the expensiveness of retrofitting process and they point the need of providing a strict and reliable building inspection system with also applying the obligatory earthquake insurance programme in Turkey.
- Most of the rural community is ready to be a part of EQ safer housing programme.

4.7. Introduction of JICA Project on Building Administration and Enforcement Capacity Development for Seismic Resilience / インドネシアにおける建築物耐震性向上のための建築行政執行能力向上プロジェクトの概要（JICA 長期専門家　亀村幸泰 / Yukiyasu KAMEMURA）







2. Project Purpose:

- Establishment and improvement of the building regulation and its enforcement procedures
- Development of the building administration and enforcement institutional capabilities
- Raising public awareness on housing safety among communities

- This project conducts the building administrative improvement
  - Improvement of Practical Building Permit Administration Process at Regency
  - Strengthening of Document Management

- Improving th... performance of non-engineered houses in Indonesia.

3. Output:

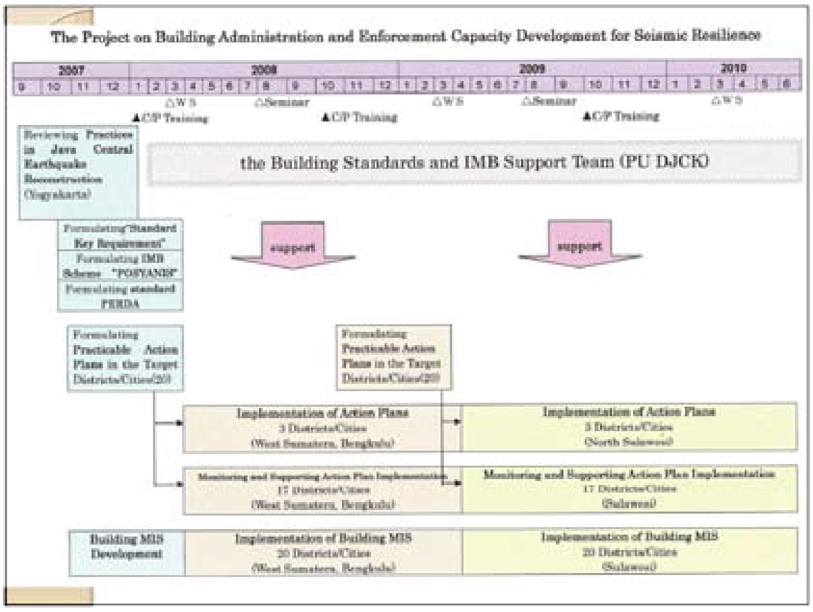
1 Reviewing Practices in Java Central Earthquake Reconstruction

2 Formulating Practicable Action Plans for the improvement of Building Standards and Building Permit Scheme in the Target Districts/Cities

3 Implementation of Action Plans
(Three Priority Target Districts/Cities, 2nd and 3rd year)

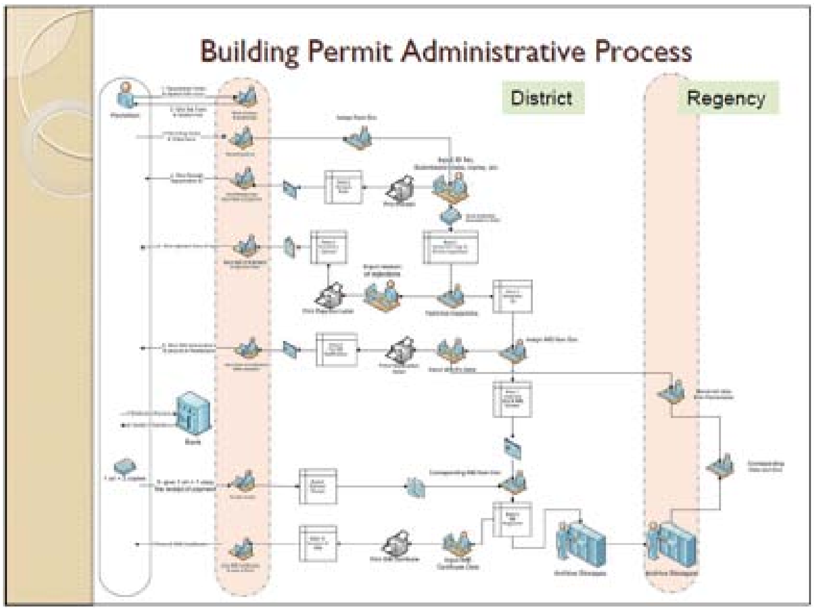
4 Monitoring and Supporting Action Plan Implementation
(other Target Districts/Cities, 2nd and 3rd year)

5 Building Management Information System Development



■Improvement of Practical Building Permit Administration Process at Regency
■Strengthening of Document Management

- Legal Actions
  - Legislation, Decree, etc. for Building Permit
  - Formulating the Key Requirement for the communities, workers and administrative officials
- Organizational Actions
  - Roles of Regency and District
- Capacity Development
  - Training Program for Building Permit Administrative Process and MIS Software in relation to Document Management, etc.
- Public Awareness
  - Dissemination of Building Permit System

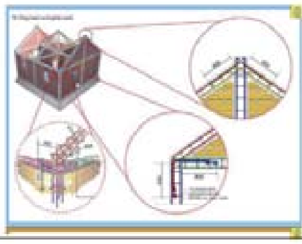


Key Requirements for Safer Housing

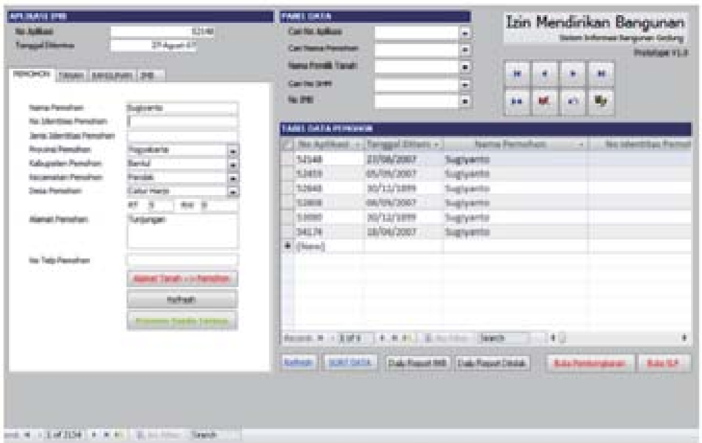
1. Quality of Materials

2. Structural Section of Main Members

3. Connection of Structural Members



Management Information System Software
Building Permit Form



←Computer Screen of MIS Software

Pictures taken at office of Pleret District, Bantul Regency→

3. ANNEX
参考資料

Tokyo International Workshop 2009 on Earthquake Disaster Mitigation for Safer Housing

1. Background and Objectives

Mitigation of earthquake disasters is one of the keenest issues common in earthquake prone areas. Four Japanese institutes, which organize this workshop listed in Item 2, launched a new research and development project entitled "Collaborative Research and Development Project for Disaster Mitigation on Network of Research Institutes in Earthquake Prone Areas in Asia" on seven research components under three essential research topics stated below in collaboration with research institutes in Indonesia, Nepal, Pakistan, and Turkey with financial support of Ministry of Education, Culture, Sports, Science and Technology (MEXT).

Tokyo International Workshop 2009 is organized to share the research and development outputs with participants from five countries connected by the video conference network and from all over the world through the web streaming services of the World Bank. We would like to have comments for finalizing the three-year research and development project and future activities as it finishes at the end of coming March.

<Research topics and Components>

Topic 1 Risk management system

- Component 1-1 Contrivance for seismic risk recognition by communities
- Component 1-2 Compilation of available information/data on seismic risks

Topic 2 Feasible and affordable seismic construction

- Component 2-1 Research with full scale shaking table experiments
- Component 2-2 Bridge between engineering and construction practices
- Component 2-3 Development of simple and affordable seismic isolation

Topic 3 Strategies for dissemination of technologies

- Component 3-1 Strategies for dissemination of technologies to communities
- Component 3-2 Compilation of manuals/guidelines/leaflets on safer constructions

> The organizing institutes held workshops in f/y 2006 and 2007. You can see the outline of them on the web site of BRI at
> http://www.kenken.go.jp./english/information/information/event/tokyo-2008/index-e.htm
> http://www.kenken.go.jp./english/information/information/event/ws2008/index-e.htm
> http://www.kenken.go.jp./english/information/information/event/tokyo-2007/index.htm
> http://www.kenken.go.jp./english/information/information/event/tokyo-2006/index.htm

2. Organizers

Building Research Institute (BRI)

National Research Institute for Earth Science and Disaster Prevention (NIED)

National Graduate Institute for Policy Studies (GRIPS)

Mie University

3． Supporting organizations

World Bank Tokyo Development Learning Center (TDLC)

United Nations Center for Regional Development (UNCRD)

Inter-agency Secretariat for International Strategy for Disaster Reduction (UN/ISDR)

United Nations Educational, Scientific and Cultural Organization (UNESCO)

In cooperation with following research institutes in Asian countries

Indonesia: Bandung Institute of Technology (ITB)
Gadjah Mada University (UGM)
Research Institute for Human Settlement, Ministry of Public Works (RIHS)

Nepal: Nepal Engineering College (nec)
National Society for Earthquake Technology-Neal (NSET)

Pakistan: Preston University
North West Frontier Province (NWFP) University of Engineering & Technology Peshawar

Turkey: Istanbul Technical University (ITU)
Middle East Technical University (METU)
Earthquake Research Department, Ministry of Public Works and Settlement

4． Date (Japan Time)

January 21(Wed), 2009 4PM – 8:20 (four hours and twenty minutes)
22 (Thu), 2009 4PM - 9PM (five hours)

5. Venues and schedule

The workshop is to be held on the network of Video Conference System of the World Bank, which connects five countries as below.

Tokyo, Japan (Main Venue)

World Bank Tokyo Development Learning Center (TDLC)
10F, Fukoku Seimei Bldg. 2-2-2, Uchisaiwai-cho, Chiyoda-ku, Tokyo, 100-0011
Tel: +81-3-3597-1333
Map: attached
Map URL: http://www.jointokyo.org/en/location/
Contact person: Terumi Hayashi (thayashi@worldbank.org)

Workshop <Japan time> Jan. 21 16:00 - 20:20
22 16:00 - 21:00

WEB Streaming Services

You can access to the workshop from anywhere in the world with your PC. The address of the web site for WEB Streaming Services will be delivered to you several days before the workshop. People who would like to join, please register your name, e-mal address and other information by sending **Registration Form** attached to this announcement so as to let us send the address to you.

Tsukuba, Japan (Sub Venue)

Building Research Institute (BRI)

1 Tachihara, Tsukuba city, Ibaraki, 305-0802

MapURL: http://www.kenken.go.jp./english/information/information/transport/access.html

Map: attached

Contact person: Taiki Saito (tsaito@kenken.go.jp) Tel: +81-29-864-6751

Workshop <Japan time> Jan. 21 16:00 - 20:20

22 16:00 - 21:00

Jakarta, Indonesia (Sub Venue)

JICA INDONESIA OFFICE

SENTRAL SENAYAN II, 14th Floor, JI. Asia Afrika No. 8

Gelora Bung Karno-Senayan, Central Jakarta 10270 INDONESIA

Phone: 62-21-57952112 / Fax: 62-21-57952116

Bandung, Indonesia (Sub Venue)

Bandung Institute of Technology

Jl. Tamansari 64 Bandung 40116, Indonesia

Computer Lab (Com Lab) Building

Tel: +62-22-2500-935

Map: attached

Contact person: Ms. Harukunti (harkunti@kppmb.itb.ac.id)

Yogyakarta, Indonesia (Sub Venue)

Gadjah Mada University

Address: Bulaksumur, Yogyakarta, 55281, Indonesia

Tel: +62-274-562011, 588688

Website: http://www.ugm.ac.id

ContactPerson: Mr. Bambang Nurcahyo Prastowo

(E-mail:prastowo@ugm.ac.id)

Workshop <Local time> Jan. 21 14:00 - 18:20

22 14:00 - 19:00

Kathmandu, Nepal (Sub Venue)

JICA NEPAL OFFICE

Block B, Karmachari Sanchaya Kosh Building, Hariharbhavan, Lalitpur, NEPAL (P. O. Box 450, Kathmandu, NEPAL)

Phone: +977-1-5010310 / Fax: +977-1-5010284

Workshop <Local time> Jan. 21 12:45 - 17:05

22 12:45 - 17:45

Islamabad, Pakistan (Sub Venue)

JICA Pakistan Office

Address: COMSATS Building, 3rd Floor, Shahrah-e-Jamhuriat, G-5/2, Islamabad, Pakistan

Tel: +92-51-2829473-8

Map: attached

Contact Person: Mr. Nobuhiro KAWATANI

(E-mail: Kawatani.Nobuhiro@jica.go.jp)

Peshawar, Pakistan (Sub Venue)

North West Frontier Province (NWFP) University of Engineering and Technology Peshawar

Peshawar University Campus Road No. 2 (P.O.Box 814)

Peshawar, Pakistan

Tel: +92-521-842173 Map: attached

Contact Person: Dr. M. Inayatullah Babar (babar@nwfpuet.edu.pk)

Tel: +92- Ph ++92-3219076151/++92-3219122761

Workshop <Local time> Jan. 21 12:00 - 16:20

22 12:00 - 17:00

Istanbul, Turkey (Sub Venue)

Bilgi University Istanbul, Turkey

Contact person: Mr. Akif SINMAZ (E-mail: akifs@bilgi.edu.tr)

Tel: +90-212-311-5201

Ankara, Turkey (Sub Venue)

JICA Turkey Office

Ugur Mumcu Caddesi, 88/6 B Block

Gaziosmanpasa 06700, Ankara, Turkey

Mailing Address: P.K. 117, Kavaklidere 06692, Ankara, Turkey

Tel: + 90-312-447 2530-31-32 Fax: +90-312-447 2534

Map: attached

Workshop <Local time> Jan. 21 9:00 - 13:20

22 9:00 – 14:00

6. Agenda

January 21

Session 1 16:00 - 18:25 Outputs from Outside on Mitigation of Disasters

Session 2 18:40 - 20:20 Outputs from Outside and Summary of Activities of R&D Project in 2008

Session/Time	Title of Presentations	Facilitator/Presenter	Position, Institute
Session 1	Facilitator	Dr. Tatsuo NARAFU	Senior Coordinator for International Cooperation, Building Research Institute (BRI)
16:00	Confirmation of connection of the venues, inauguration	Dr. Tatsuo NARAFU	
16:05	Outline of Pilot Project for Dissemination of Technology in Reconstruction from Pisco Earthquake 2007	Mr. Ichiro KOBAYASHI	Project Manager, Oriental Consultants Company
16:35	Proposal of a Strategy to Mitigate Earthquake Disasters	Dr. Kimiro MEGURO	Professor, Tokyo University
17:05	Q&A		
17:20	Background and purpose of presentations on EEW and Emergency Relief	Dr. Tatsuo NARAFU	Senior Coordinator for International Cooperation, Building Research Institute (BRI)
17:30	Introduction of Earthquake Early Warning System (EEW) operated in Japan	Dr. Shigeki HORIUCHI	Research Councilor, National Research Institute for Earth Science and Disaster Prevention (NIED)
17:50	Introduction of Stand Alone Type of Earthquake Early Warning System (EEW)	Dr. Shunroku YAMAMOTO	Senior Researcher, Railway Technical Research Institute (RTRI)
18:10	Q&A		
18:25	Break		
Session 2	Facilitator	Dr. Toshiaki YOKOI	Chief Research Scientist, Building Research Institute (BRI)
18:40	Outline of Emergency Relief Activities by Japan Relief Team	Mr. Tatsuya KOYAMA	Advisor for Emergency Relief Division, Japan International Cooperation Agency (JICA)

19:00	Outline of Activities relating Emergency Rescue in Nepal such as Program for Enhancement of Emergency Response (PEER)	Mr. Amod DIXIT	General Secretary, National Society for Earthquake Technology - Nepal (NSET)
19:15	Summary of R&D Activities of Collaborative R&D Project in 2008	Dr. Tatsuo NARAFU	Senior Coordinator for International Cooperation, Building Research Institute (BRI)
19:25	Proposal of Activities for Next Step, Revision of Technical Guideline for Non-engineered Construction by IAEE	Dr. Yuji ISHIYAMA	Professor Emeritus, Hokkaido University
19:35	Establishment of a New Task Group (TG75) for Research on Non-engineered construction in CIB	Dr. Kenji OKAZAKI	Professor, National Graduate Institute for Policy Studies (GRIPS)
19:45	Q&A and Discussion on future activities		
20:20	Closing		

January 22

Session 3 16:00 - 18:40 R&D Activities on Topic 2 (Feasible and Affordable Seismic Construction)

Session 4 18:55 - 21:00 R&D Activities on Topic 1 (Risk Management System) and Topic 3 (Strategies for Dissemination of Technologies)

Session/Time	Title of Presentations	Facilitator/Presenter	Position, Institute
Session 3	Facilitator	Dr. Kenji OKAZAKI	Professor, National Graduate Institute for Policy Studies (GRIPS)
16:00	Confirmation of connection of the venues, inauguration	Dr. Kenji OKAZAKI	
16:05	Outline of Shaking Table Experiments of Full Scale Specimens in Peru in December 2008	Dr. Toshikazu HANAZATO	Professor, Mie University
16:25	Outline of Comparative Strength Test of Cement from Indonesia, Iran, Peru and Japan	Dr. Tatsuo NARAFU	Senior Coordinator for International Cooperation, Building Research Institute (BRI)
16:35	Introduction of Research Activities in Gadjah Mada	Dr. Iman Satyarno	Lecturer, Gadjah Mada University

	University		
16:55	Proposals for Safer Confined Masonry Construction	Mr. Hiroshi IMAI	Research Specialist, Building Research Institute (BRI)
17:10	Behavior of Confined Masonry Wall under Cyclic Loading: Experimental Study	Dr. Dyah KUSUMASTUTI	Institute Technology Bandung (ITB)
17:20	Q&A		
17:35	Outline of Experiment on Simple Sliding Seismic Isolation Device of Steel Plate	Dr. Eizaburo TACHIBANA	Professor Emeritus, Osaka University
17:45	Outline of Experiment on Low-cost Roller Seismic Isolation Device	Dr. Yuji ISHIYAMA	Professor Emeritus, Hokkaido University
17:55	Outline of Experiment on Low-cost Seismic Isolation Device of Scrap Tire Pads	Dr. Ahmet TURER	Associate Professor, Middle East Technical University (METU)
18:05	Outline of Experiment on Simple Sliding Seismic Isolation Device of Stone Plates	Mr. Nobuyoshi YAMAGUCHI	Senior Researcher, Building Research Institute (BRI)
18:15	Outline of Experiment on Simple Sliding Seismic Isolation Device of Geo Textile	Dr. Akio ABE	Director of Research Laboratory, Tokyo Soil Research
18:25	Q&A		
18:40	Break		
Session 4	Facilitator	Dr. Toshikazu HANAZATO	Professor, Mie University
18:55	Outline of R&D Activities of Topic 1, Risk Management System	Dr. Toshiaki YOKOI	Chief Research Scientist, Building Research Institute (BRI)
19:15	Q&A		
19:35	Outline of R&D Activities of Topic 3, Strategies for Dissemination of Technologies	Dr. Kenji OKAZAKI	Professor, National Graduate Institute for Policy Studies (GRIPS)

19:50 20:00 20:10 20:20 20:30 20:45	Outline of Pilot Project in Indonesia Outline of Pilot Project in Nepal Outline of Pilot Project in Pakistan Outline of Pilot Project in Turkey Introduction of JICA Project on Building Administration and Enforcement Capacity Development for Seismic Resilience Q&A and Discussion	Dr. Krishna PRIBADI Mr. Ram KANDEL Mr. Najib AHMAD Dr. Alper ILKI Mr. Yukiyasu KAMEMURA	Institute Technology Bandung (ITB) NSET-Nepal Project Manager, Preston University Istanbul Technical University (ITU) JICA Long Term Expert in Indonesia
21:00	Closing		

7. Language English

8. Web streaming service

The organizers will provide web streaming services so that people in remote areas also could join Workshop through internet services with his/her own PC. People who would like to participate in WS by web streaming services, please register in the same way as actual venues according to the instruction in Item 9. The address of web site will be informed several days before WS.

9. Registration for participation

Registration for participation to Workshop should be made by sending Registration Form by e-mail or facsimile to Building Research Institute at following addresses before January 18, 2009.

E-mail address: tokyo-2009@kenken.go.jp
Facsimile: +81-29-864-2989
Telephone: +81-29-864-6641 (Ms. Arakane or Mr. Imai)

10. Attached Materials

Registration Form and Example

Location Maps: Main Venue (Tokyo Development Learning Center)
Sub Venue in Japan (Building Research Institute)
Sub Venues in Indonesia (JICA Indonesia Office, Bandung Institute of Technology)
Sub Venue in Nepal (JICA Nepal Office)
Sub Venues in Pakistan (JICA Pakistan Office, North West Frontier Province (NWFP) University of Engineering and Technology Peshawar)
Sub Venue in Turkey (JICA Turkey Office)

Registration Form

Tokyo International Workshop 2009 on Earthquake Disaster Mitigation for Safer Housing

1. Title Dr. Mr. Ms. Others ( )
2. Family name
3. First Name
4. Institution
5. Department, divisions
6. Contact e-mail address
7. Contact Postal Address
8. Contact Number of Telephone and Facsimile
9. City, postal code and Country
10. Choose your participation date and mode (venue or web streaming) by deleting unnecessary words

*date of your participation January 21, 22

*participation at the venue of (Tokyo, Tsukuba, Jakarta, Bandung, Yogyakarta, Kathmandu, Islamabad, Peshawar, Istanbul or Ankara)

*WEB Streaming Services

E-mail address: tokyo-2009@kenken.go.jp
Facsimile: +81-29-864-2989
Telephone: +81-29-864-6641 (Ms. Arakane or Mr. Imai)

Example

Registration Form

Tokyo International Workshop 2009 on Earthquake Disaster Mitigation for Safer Housing

1. Title Dr.

2. Family name Kenken

3. First Name Ichiro

4. Institution Building Research Institute (BRI)

5. Department, divisions
   International Institute of Seismology and Earthquake Engineering (IISEE)

6. Contact e-mail address tokyo-2009@kenken.go.jp

7. Contact Postal Address 1 Tachihara, Tsukuba-city

8. Contact Number of Telephone and Facsimile
   Telephone: +81-29-864-6641, Facsimile: +81-29-864-2989

9. City, postal code and Country Tsukuba-city, 305-0802, Japan

10. Choose your participation date and mode (venue or web streaming) by deleting unnecessary words

*date of your participation January 21, ~~22~~

*participation at the venue of (Tokyo,)

E-mail address: tokyo-2009@kenken.go.jp
Facsimile: +81-29-864-2989
Telephone: +81-29-864-6641 (Ms. Arakane or Mr. Imai)

地震防災のための東京国際ワークショップ２００９
＜住宅の被害軽減を目指して＞

１．背景、目的

中国四川省地震（2008 年）、ペルー太平洋岸地震（2007 年）、ジャワ島中部地震（2006 年）、パキスタン北部地震（2005 年）、スマトラ沖地震（2004 年）などの悲惨な被害からも明らかなように、地震被害の軽減は地震地域共通の喫緊の課題である。このため、本ワークショップを主催する４研究機関は、インドネシア、ネパール、パキスタン、トルコの地震国４ヶ国の研究機関と共同して、2006 年度より、下記の３テーマ、７活動計画（コンポーネント）を内容とする「地震防災に関するネットワーク型共同研究」に、文部科学省科学技術振興調整費を得て取り組んできた。

東京国際ワークショップ２００９は、3 テーマについてのこれまでの取り組みの成果の共有を目的として、５ヶ国の会場をビデオ会議システムにより繋ぎ、ウエブ・ストリーミングにより世界各地からアクセスを得ながら、広範な地域、分野の方々の参加を得て開催するものである。本年度は 3 カ年の活動の最終年度となることから、今後の展開についての意見交換も行う。

＜研究開発テーマ及び活動計画（コンポーネント）一覧＞

テーマ１　建物のリスク管理システム

　１－１　コミュニティによる地震リスク認識のメカニズムを内蔵するリスク管理システム

　１－２　地震リスクに関する資料、データの収集、整理

テーマ２　実践的な耐震工法の研究開発

　２－１　実践的な耐震工法のための実験研究

　２－２　工学と建設工事との間のブリッジ構築

　２－３　簡易でローコストの免震技術開発

テーマ３　技術の社会への定着方策

　３－１　技術のコミュニティへの普及方策

　３－２　技術普及のためのガイドブック、パンフレットなどの収集、整理

2006、2007 年度において、当該研究開発プロジェクトの一環としてビデオ会議システムを活用した国際ワークショップを開催した。その概要は、建築研究所ホームページの下記で公表されている。

http://www.kenken.go.jp./japanese/information/information/event/ws2008/index-j.htm

http://www.kenken.go.jp./japanese/information/information/event/tokyo-2008/index-j.htm

http://www.kenken.go.jp./japanese/information/information/event/tokyo-2006/index.htm

http://www.kenken.go.jp./japanese/information/information/event/tokyo-2007/index.htm

２．主催

独立行政法人建築研究所

独立行政法人防災科学技術研究所

政策研究大学院大学

三重大学

３．協力、連携機関

＜協力＞

世界銀行東京開発ラーニングセンター（ＴＤＬＣ）

国連地域開発センター（UNCRD）

国連国際防災戦略事務局（UN/ISDR）

国連教育科学文化機関（UNESCO）

＜連携機関＞

インドネシア：バンドン工科大学、ガジャマダ大学、公共事業省人間居住研究所

ネパール：　ネパール工科大学、ネパール国立地震工学協会（NSET）

パキスタン：　プレストン大学、ペシャワール工科大学

トルコ：　イスタンブール工科大学、中東工科大学、公共事業省地震研究部

４．開催日時（日本時間）

２００９年１月２１日（水）　**午後 4 時　－　8 時 20 分**(4 時間 20 分)

1 月 22 日（木）　**午後 4 時　－　9 時**（5 時間）

５．会場・時間

下記の５ヶ国を世界銀行グローバル・ディスタンス・ラーニング・ネットワークのビデオ会議システムで繋いで実施する。

主会場：世界銀行東京開発ラーニングセンター（東京都千代田区内幸町、富国生命ビル）

＜別添地図参照＞

国内サブ会場：建築研究所（つくば市）

海外サブ会場：インドネシア（ジャカルタ、バンドン、ジョグジャカルタ）

ネパール（カトマンズ）

パキスタン（イスラマバード、ペシャワール）

トルコ（イスタンブール、アンカラ）

６．ウエブ・ストリーミング・サービス

世界各地からのインターネット接続により、ワークショップの視聴が可能です。

希望される方は、下記 10 により**申し込み登録**してください。**開催日の数日前**に、メールにて**アドレスを連絡**させていただきます。

７．議事次第（日本時間）

1月21日(水)　第1部　午後4時　－　午後6時25分

地震被害軽減のアプローチについての外部からのインプット

第2部　午後6時40分　－　午後8時20分

外部からのインプットと2008年度の活動概要紹介

時間	タイトル	発表者等
第1部	地震被害軽減のアプローチについての外部からのインプット	
16:00	ファシリテーター 各会場の接続確認、開会、WSの構成の説明	独立行政法人建築研究所 国際協力審議役　楢府 龍雄
16:05	ピスコ地震復興事業における耐震技術普及の取り組み	オリエンタルコンサルタンツ プロジェクト部長　小林 一郎
16:35	開発途上国の地震被害軽減のための技術的・制度的アプローチ	東京大学　教授 目黒 公郎
17:05	質疑応答、コメント	
17:20	人的被害軽減に活用可能性を有する技術について（早期地震警報及び緊急援助活動）	独立行政法人建築研究所 国際協力審議役　楢府 龍雄
17:30	日本の早期地震警報の概要	独立行政法人防災科学技術研究所 研究参事　堀内茂木
17:50	スタンドアローン型早期地震警報の概要	財団法人鉄道総合技術研究所 主任研究員　山本俊六
18:10	質疑応答、コメント	
18:25	休憩	
第2部	外部からのインプットと2008年度の活動概要紹介	
	ファシリテーター	独立行政法人建築研究所 上席研究員　横井 俊明
18:40	日本の緊急援助隊活動の概要	JICA国際緊急援助隊事務局 企画役　小山達也
19:00	ネパールにおける緊急援助活動に関連する活動の紹介	ネパール地震工学協会 アモッド･ディキシット(ネパールより)
19:15	2008年度活動の紹介	独立行政法人建築研究所 国際協力審議役　楢府 龍雄
19:25	IAEE のノンエンジニアド構造物ガイドラインの改訂の提案	北海道大学　名誉教授 石山 祐二
19:35	CIBの新たなTGの設立	政策研究大学院大学　教授 岡崎 健二
19:45	質疑応答、コメント、今後の活動についての意見交換	
20:20	閉会	

1月22日(木)　第3部　午後4時　－　午後6時40分

テーマ2（実践的な耐震工法の研究開発）の活動紹介

第4部　午後6時55分　－　午後9時

テーマ1「リスク管理システム」及びテーマ3「技術の社会への定着」の活動紹介

時間	タイトル	発表者等
第3部	テーマ2「実践的な耐震工法」の活動紹介	
16:00	ファシリテーター 各会場の接続確認、開会、WSの構成の説明	政策研究大学院大学　教授 岡崎　健二
16:05	実大試験体振動台実験の概要	三重大学　教授 花里利一
16:25	4カ国（インドネシア、イラン、ペルー、日本）のセメントについての比較実験の概要	独立行政法人建築研究所 国際協力審議役　楢府　龍雄
16:35	インドネシア、ガジャマダ大学の取り組み	ガジャマダ大学 イマン・サトゥヤルト（インドネシアより）
16:55	コンファインドメーソンリーの工法改善の提案	独立行政法人建築研究所 専門研究員　今井　弘
17:10	コンファインドメーソンリー壁体の繰り返し加力実験の概要	バンドン工科大学 ディア・クスマストゥティ（インドネシアより）
17:20	質疑応答、コメント	
17:35	金属プレートによる滑り免震実験結果の概要	大阪大学　名誉教授 橘英三郎
17:45	ローコスト転がり免震実験結果の概要	北海道大学　名誉教授 石山　祐二
17:55	スクラップタイヤ活用による免震技術の実験結果の概要	中東工科大学　准教授 アフメット・トゥレール（トルコより）
18:05	石材の滑り免震技術の実験結果の概要	独立行政法人建築研究所 主任研究員　山口　修由
18:15	合成繊維シートによる滑り免震技術の実験結果の概要	東京ソイルリサーチ　つくば研究室　室長 阿部　秋男
18:25	質疑応答、コメント	
18:40	休憩	
第4部	テーマ1「リスク管理システム」、テーマ3「技術の社会への定着」の活動紹介	
	ファシリテーター	三重大学　教授　花里利一
18:55	リスク管理システムの活動状況	独立行政法人建築研究所 上席研究員　横井　俊明
19:15	質疑応答、コメント	

19:35	技術の普及のためのパイロットプロジェクトの概要	政策研究大学院大学 教授　岡崎 健二
19:50	インドネシアのパイロットプロジェクトの概要	バンドン工科大学教授 クリシュナ・プリバディ
20:00	ネパールのパイロットプロジェクトの概要	NSET ネパール ラム・カンデル
20:10	パキスタンのパイロットプロジェクトの概要	プレストン大学 ナジブ・アーマド
20:20	トルコのパイロットプロジェクトの概要	イスタンブール工科大学 アルパー・イリキ
20:30	インドネシアにおける建築物耐震性向上のための建築行政執行能力向上プロジェクトの概要	在インドネシア　JICA 長期専門家 亀村 幸泰（インドネシアより）
20:45	質疑応答、コメント	
21:00	閉会	

８．言語

英語

９．その他

東京主会場では飲み物、スナックを用意します。

１０．　参加の登録

参加を希望する方は、下記により、本案内に添付されている**登録票をメール又はファックス**により建築研究所に**2009 年１月１８日(日)まで**送付し、参加登録をお願いします。

メールアドレス: tokyo-2009@kenken.go.jp
ファックス:　029-864-2989
＜問い合わせ:　029-864-6641 (荒金又は今井)＞

１１．　添付資料

・参加登録票

・　主会場地図（東京開発ラーニング・センター、建築研究所）、インドネシア副会場地図（JICA ジャカルタ事務所、バンドン工科大学）、ネパール副会場地図（JICA ネパール事務所）、パキスタン副会場地図（JICA パキスタン事務所、ペシャワール工科大学）、トルコ副会場地図（JICA トルコ事務所）

参加登録票 Registration Form

地震防災のための東京国際ワークショップ２００９

Tokyo International Workshop 2009 on Earthquake Disaster Mitigation for Safer Housing

1. 称号　　Dr.　Mr.　Ms.　Others (　　　　)

2. 苗字（英語併記）

3. 名（英語併記）

4. 所属機関（英語併記）

5. 所属部署（英語併記）

6. メールアドレス（確実に連絡できるもの）

7. 住所（確実に連絡できるもの）

8. 電話、ファックス番号（確実に連絡できるもの）

9. 都市名、郵便番号、国名

10. 参加希望　(参加のタイプ（会場又はｳｪﾌﾞ・ｽﾄﾘｰﾐﾝｸﾞ）、月日、会場名の不要な文字を削除してください)

○ 会場での参加

１月２１日、２２日

日本：	東京	つくば	
インドネシア：	ジャカルタ	バンドン	ジョクジャカルタ
ネパール：	カトマンズ		
パキスタン：	イスラマバード	ペシャワール	
トルコ：	イスタンブール	アンカラ	

○ウエブ・ストリーミング・サービスによる参加

E-mail address: tokyo-2009@kenken.go.jp
Facsimile: 029-864-2989　問い合わせ(電話): 029-864-6641 (荒金、今井)

記入例

参加登録票 Registration Form

地震防災のための東京国際ワークショップ２００９

Tokyo International Workshop 2008 on Earthquake Disaster Mitigation for Safer Housing

1. 称号　　　　　　Dr.

2. 苗字（英語併記）　　建研　（Kenken）

3. 名（英語併記）　　一郎　（Ichro）

4. 所属機関（英語併記）　建築研究所
Building Research Institute (BRI)

5. 所属部署（英語併記）　国際地震工学センター
International Institute for Seismology and Earthquake Engineering (IISEE)

6. メールアドレス（確実に連絡できるもの）　tokyo-2009@kenken.go.jp

7. 住所（確実に連絡できるもの）　つくば市立原 1 番地

8. 電話、ファックス番号（確実に連絡できるもの）
電話 029-864-6641　　ファックス　029-864-2989

9. 都市名、郵便番号、国名　つくば市、〒305-0802、　日本

10. 参加希望　（参加のタイプ（会場又はｳｪﾌﾞ・ｽﾄﾘｰﾐﾝｸﾞ）、会場名の不要な文字を削除してください）

○ 会場参加
１月２１日、~~２２日~~
日本：　　　　東京

E-mail address: tokyo-2009@kenken.go.jp	
Facsimile: 029-864-2989	問い合わせ(電話): 029-864-6641 (荒金、今井)

地震防災のための東京国際ワークショップ2009
Tokyo International Workshop 2009 on Earthquake Disaster Mitigation for Safer Housing

2009(平成 21)年 1 月 21,22 日

January 21, 22, 2009

開催場所 Venue:

世界銀行東京開発ラーニングセンターTokyo Development Learning Center (TDLC), The World Bank

住所 Address:

〒100-0011 東京都千代田区内幸町 2-2-2 富国生命ビル 10 階

10F, Fukokuseimei Bld., 2-2-2 Uchisaiwai-cho, Chiyoda-ku, Tokyo 100-0011

電話 Tel: 03-3597-6650(代表)

FAX: 03-3597-6695

交通 Transfortation

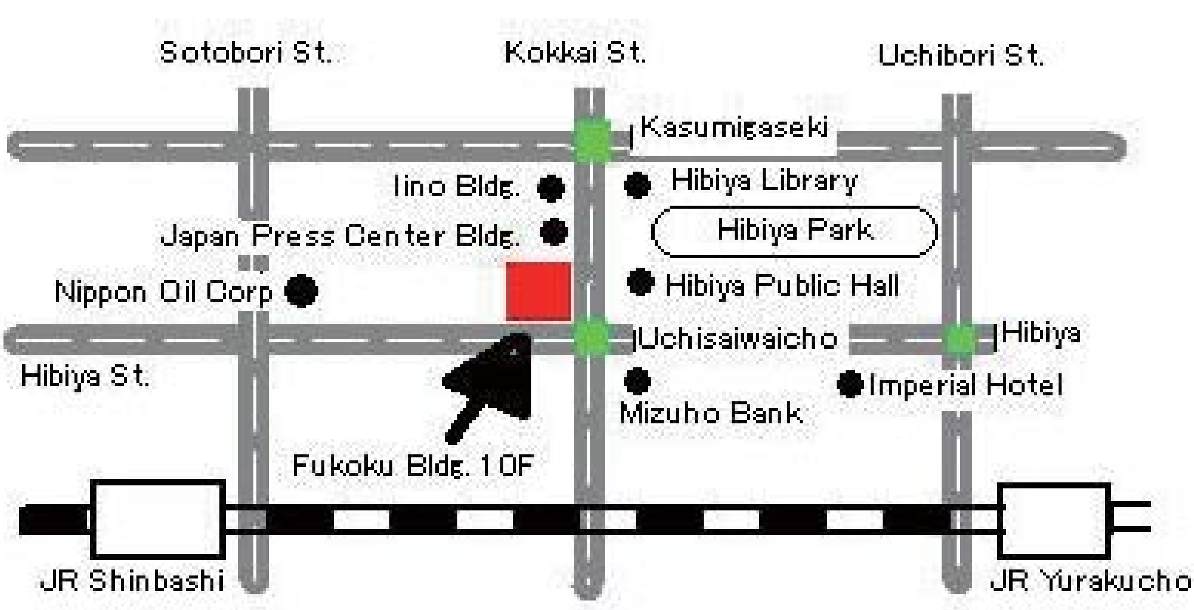
・JR 山手線、京浜東北線 新橋駅 日比谷口(JR Yamanote Line, Keihin Tohoku Line Shimbashi Station, Hibiya Exit)

・地下鉄 都営三田線 内幸町駅 A6 直結(Subway Toei Mita Line Uchisaiwaicho Station, Exit A6)

・地下鉄 千代田線 霞ヶ関駅 C4 出口(Subway Chiyoda Line Kasumigaseki, Exit C4)

・地下鉄 日比谷線 霞ヶ関駅 C4 出口(Subway Hibiya Line Kasumigaseki, Exit C4)

・地下鉄 丸の内線 霞ヶ関駅 B2 出口(Subway Marunouchi Line, Kasumigaseki, Exit B2)



Building Research Institute (BRI)

1 Tachihara, Tsukuba city, Ibaraki, 305-0802

MapURL: http://www.kenken.go.jp./english/information/information/transport/access.html

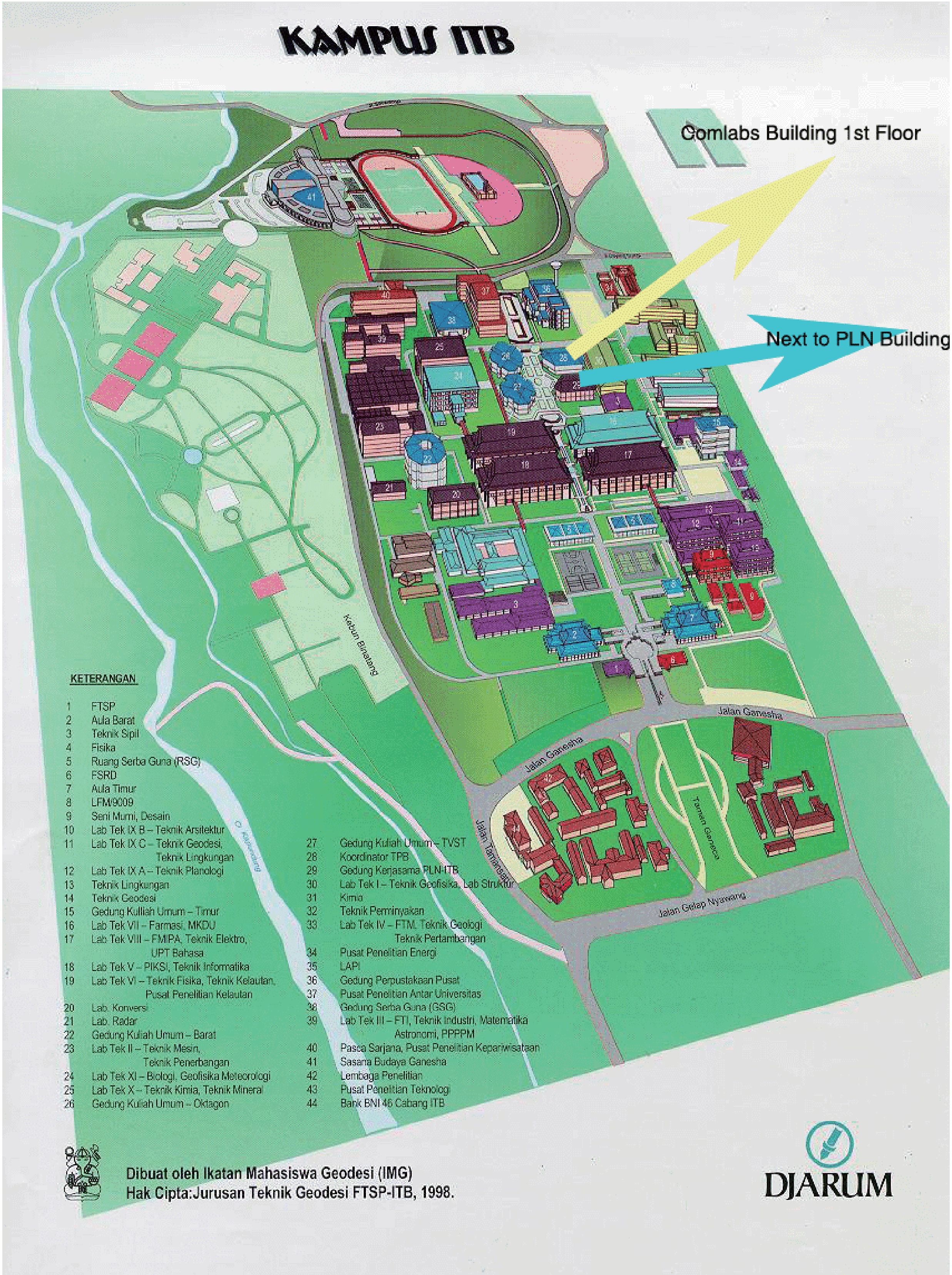
Contact person: Taiki Saito (tsaito@kenken.go.jp) Tel: +81-29-864-6751

JICA　INDONESIA OFFICE

SENTRAL SENAYAN II, 14th Floor, JI. Asia Afrika No. 8
Gelora Bung Karno-Senayan, Central Jakarta 10270 INDONESIA
Phone: 62-21-57952112　/　Fax: 62-21-57952116

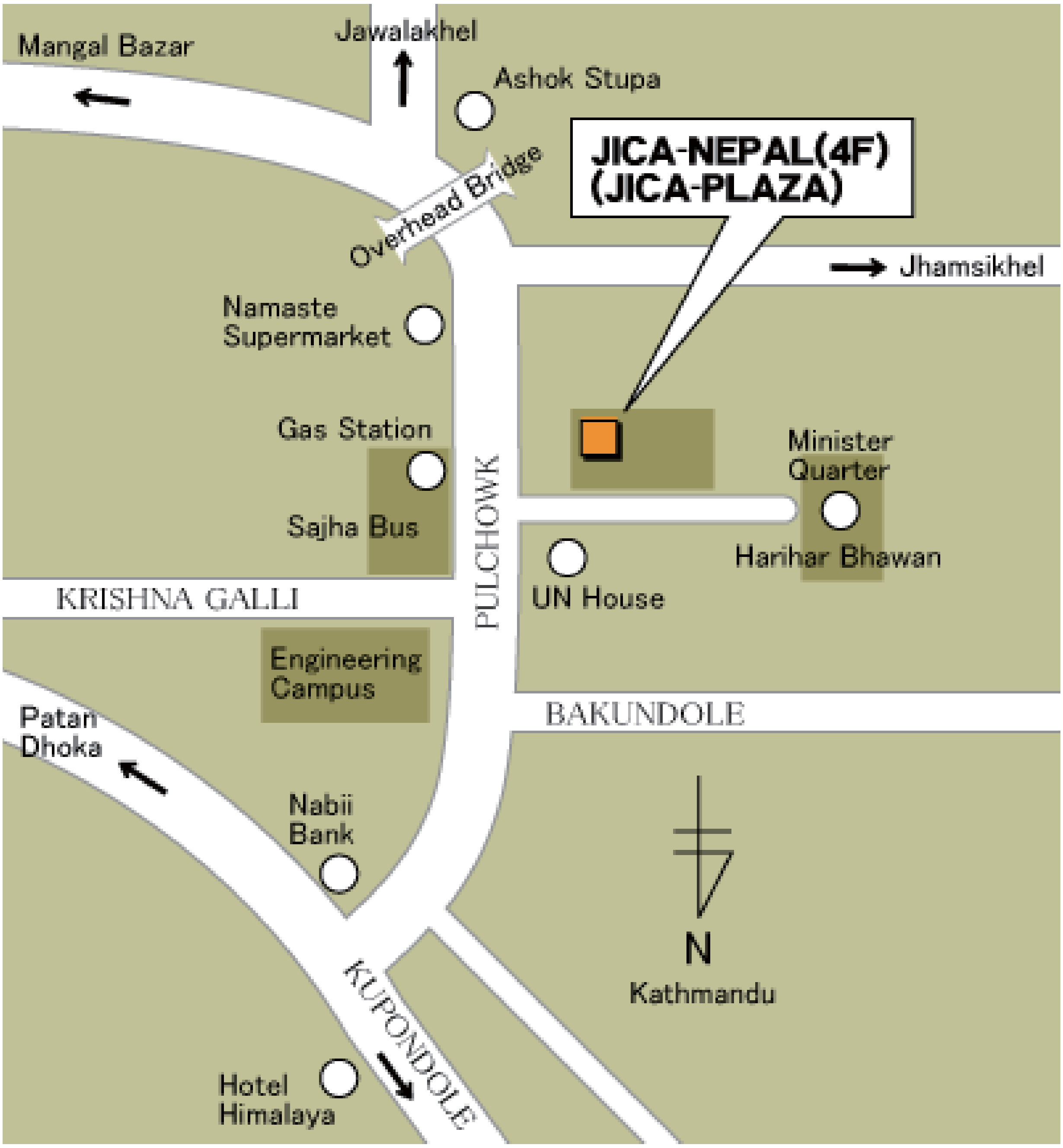
Location Map (Bandung Institute of Technology (ITB))

Jl. Tamansari 64 Bandung 40116, Indonesia
Computer Lab (Com Lab) Building
Tel: +62-22-2500-935



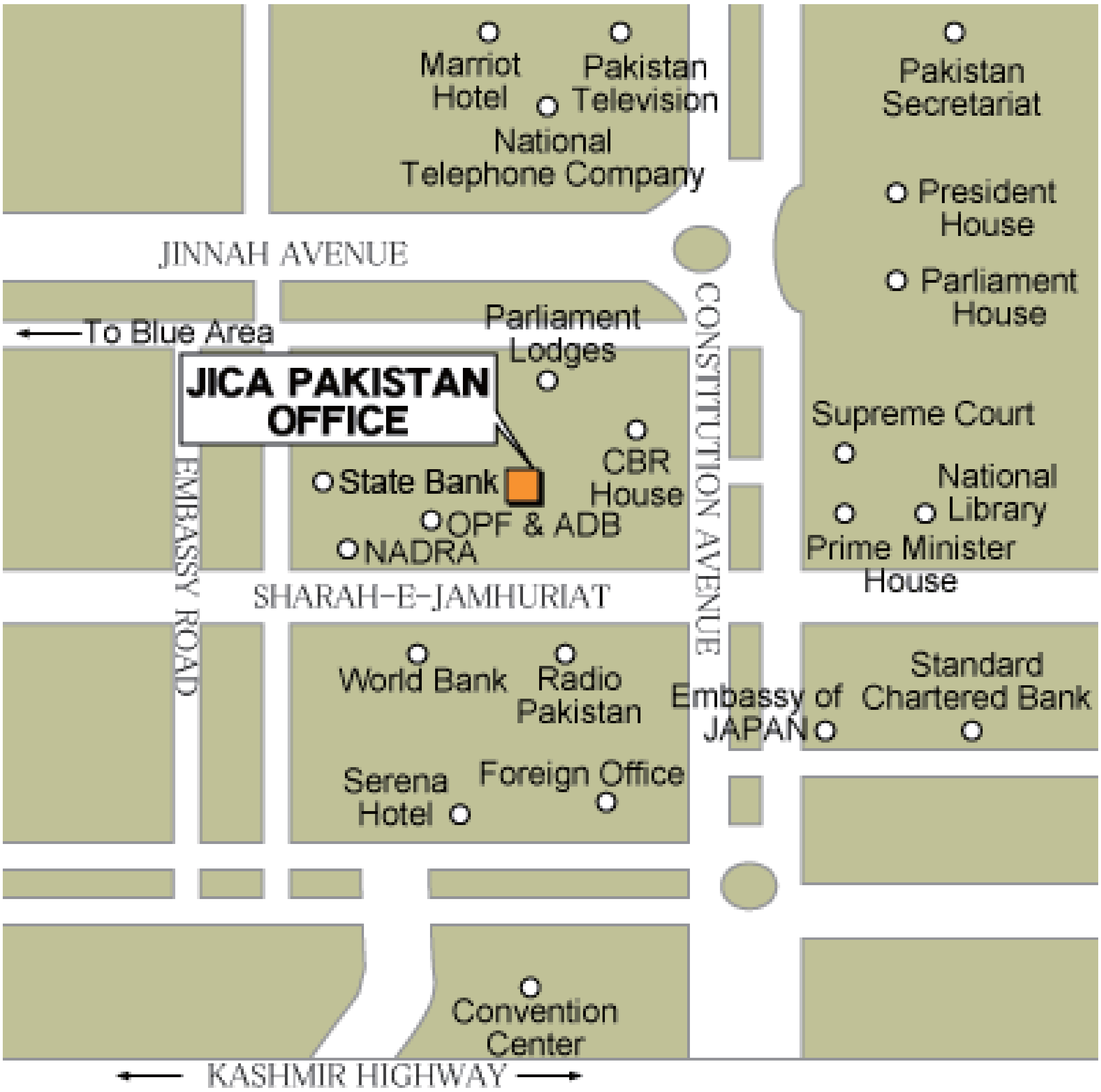
JICA NEPAL OFFICE

Block B, Karmachari Sanchaya Kosh Building, Hariharbhavan, Lalitpur, NEPAL
(P. O. Box 450, Kathmandu, NEPAL)
Phone: +977-1-5010310 / Fax: +977-1-5010284



JICA Pakistan Office

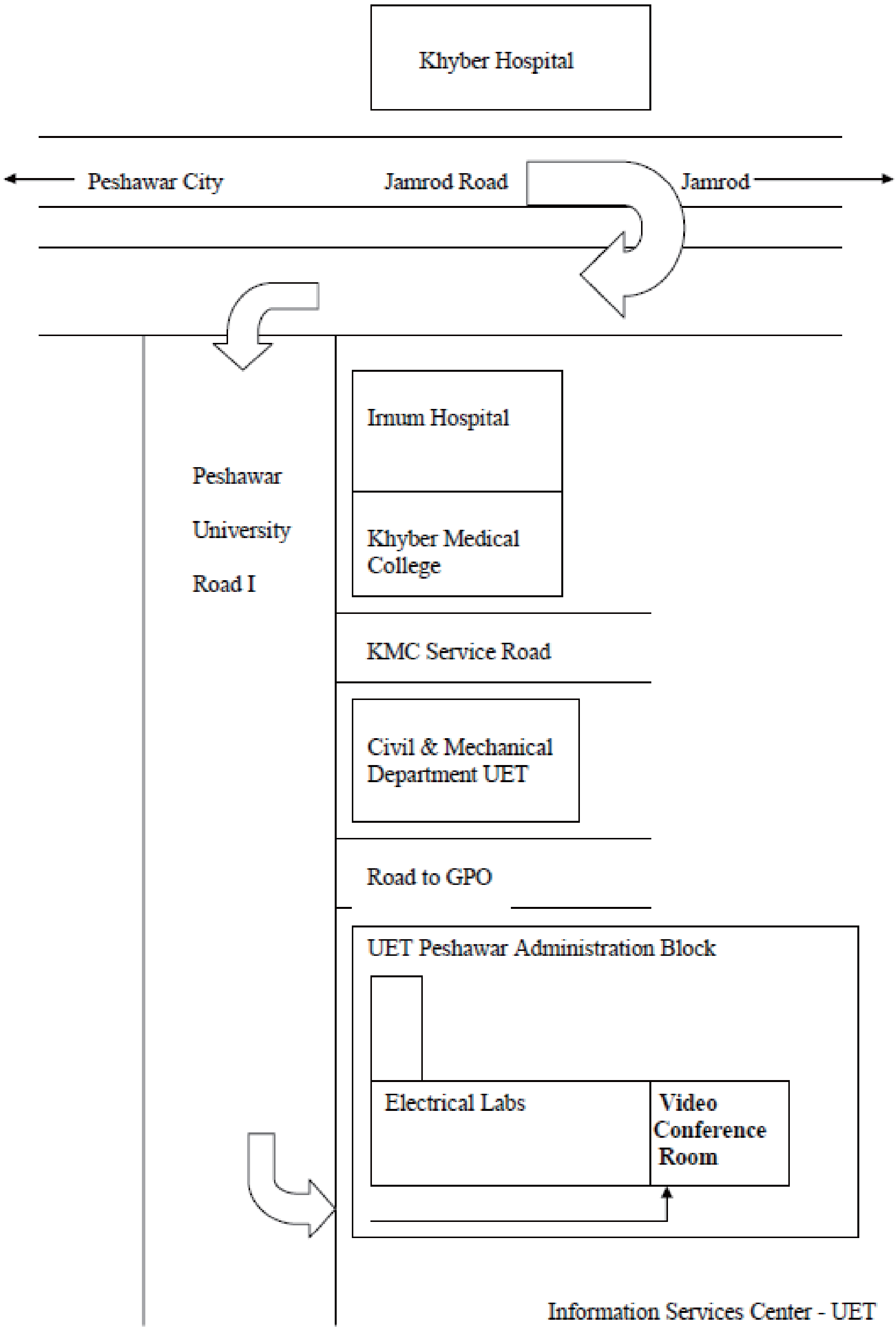
Address: COMSATS Building, 3rd Floor, Shahrah-e-Jamhuriat,
G-5/2, Islamabad, Pakistan Tel: +92-51-2829473-8
Contact Person: Mr. Nobuhiro KAWATANI
(E-mail:Kawatani.Nobuhiro@jica.go.jp)



North West Frontier Province (NWFP) University of Engineering and Technology Peshwar

Peshawar University Campus Road No. 2 (P.O.Box 814), Peshawar, Pakistan
Tel: +92-521-842173
Contact Person: Dr. M. Inayatullah Babar (babar@nwfpuet.edu.pk)
Tel: +92- Ph ++92-3219076151/++92-3219122761

NWFP University of Engineering & Technology, Peshawar – Video Conferencing Room Map



Information Services Center - UET

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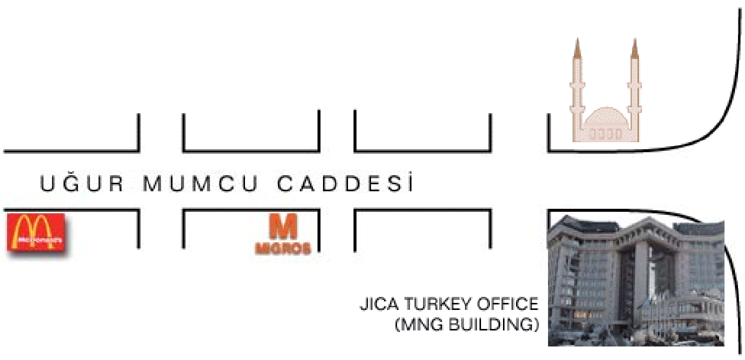
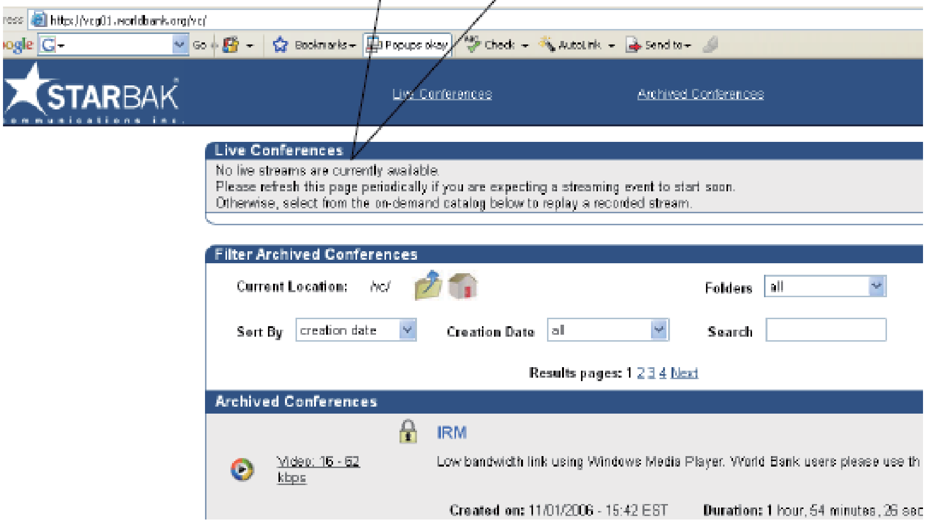


JICA Turkey Office
Ugur Mumcu Caddesi, 88/6 B Block Gaziosmanpasa 06700, Ankara, Turkey
Mailing Address: P.K. 117, Kavaklidere 06692, Ankara, Turkey
Tel: + 90-312-447 2530-31-32 Fax: +90-312-447 2534

The Video will appear here on January 21-22, 2009

The Title "BRI International Video Conference"



Address: http://vcg01.worldbank.org/vc/