

事業完了報告書

スマトラ島西部沖地震被災者支援（初動対応期）
山岳道路斜面と建築物の復旧への技術移転支援期間：
2009年12月13日（日）～23日（水）

2009年12月24日
国境なき技師団（EWBJ）

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1. 計画概要書（英文）15 枚

NPO: EWBJ

(Engineers Without Borders, Japan)-Team

for

**SUPPORT ACTIVITY FOR RECOVERY OF WEST SUMATRA
DAMAGED BY THE 2009 OFFSHORE-SUMATRA
EARTHQUAKE**

December 13 – 23, 2009



Engineers Without Borders, Japan

**in Collaboration with
Andalas University, Padang,
Government of West Sumatra Province
and Ministry of Public Works, Indonesia**



**Funded by
Japan Platform**



**Supported by
Japan Society of Civil Engineers,
Japan Association for Earthquake Engineering
and Architectural Institute of Japan**



1. OBJECT OF THE SECOND EWBJ TEAM

A huge earthquake with a magnitude 7.6 hit West Sumatra on September 30, 2009. The earthquake caused extensive damages to large buildings especially in Padang city and also numerous houses in West Sumatra province. At the same time, large landslides occurred in mountainous areas.

An investigation and support team established by EWBJ (Engineers without borders, Japan), JSCE (Japan Society of Civil Engineers), and JAEE (Japan Association for Earthquake Engineering) and it was sent to the site immediately after the earthquake in October 2009 as the first team of our support.

The team investigated disaster areas and prepared a report, in which the necessity of technical support for emergency restoration and prevention of secondary disasters in relation to road slopes and buildings were emphasized.

Upon the consideration of these recommendations from the first team, EWBJ have decided to send the second support team consisting of several experts specialized in retrofitting and restoration technologies from the members of JSCE, JAEE and AIJ (Architectural Institute of Japan) with a financial support by JPF (Japan Platform).

The team will carry out their support activities for the site surveys and will hold workshops in Padang and a forum in Jakarta.

Since the continuous support for recovery of damages is eagerly expected, this kinds of support shall be prolonging and it is our target to support the Indonesian side in situ with field technology. Dissemination of transferred techniques and of earthquake disaster mitigation activities against possible earthquakes in or in the vicinity of Sumatra Island are our desired goals and we are sure to exceed our efforts step by step farther.

Name of the Project:

Support Activity for Recovery of West Sumatra Damaged by the 2009 Offshore-Sumatra Earthquake conducted by NPO: EWBJ (Engineers Without Borders, Japan)

Duration of Project: December 13- 23, 2009

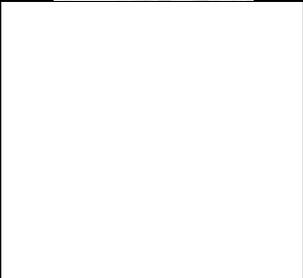
2. MEMBER LIST

(1) List of Field Member

| No. | Name | Photo |
|-----|--|---|
| 1 | <p>Prof. Masanori HAMADA, Position: Professor, Waseda University, Specialty: Earthquake Engineering Phone: (+81+3) 5286-3406, Fax.: (+81+3) 3208-0349 e-mail: hamada@waseda.jp Date of Birth : October 13, 1943</p> |  |
| 2 | <p>Prof. Ömer AYDAN, Position: Professor, Tokai University, Specialty: Geomechanics and Geoengineering Phone: (+81+543) 34-0411, Fax.: (+81+543) 34-976 e-mail: aydan@scc.u-tokai.ac.jp Date of Birth : January 02, 1955</p> |  |
| 3 | <p>Prof. Takayuki TERAMOTO, Position: Professor, Tokyo University of Science, Specialty: Structural Engineering Phone: (+81+4) 7159-3886, Fax.: (+81+4) 7159-3886 e-mail: t.tera@rs.kagu.tus.ac.jp Date of Birth : October 11, 1946</p> |  |
| 4 | <p>Dr. Toshio OKOSHI, Position: Senior Technical Adviser, The Building Center of Japan(BCJ), Specialty: Structural Engineering Phone: (+81+3) 5816-7528, Fax.: (+81+3) 5816-7547 e-mail: okoshi_t@bcj.or.jp Date of Birth : September 08, 1944</p> |  |
| 5 | <p>Mr. Akira SEZAKI, Position: Chief Engineer, Nippon Koei Co., Ltd. Specialty: Professional Engineer (Construction & Sanitary) Phone: (+81+3) 3238-8015, Fax.: (+81+3) 3238-8326 e-mail: a0315@n-koei.co.jp Date of Birth : August 23, 1942</p> |  |
| 6 | <p>Mr. Masahiro YOSHIMURA, Position: Managing Executive Officer, Nippon Expressway Research Institute Co., Ltd. Specialty: Geoengineering Phone: (+81+42) 791-2412, Fax.: (+81+42) 791-2380 e-mail: m.yoshimura.aa@ri-nexco.co.jp Date of Birth : November 14, 1951</p> |  |

| | | |
|---|---|---|
| 7 | <p>Mr. Masaru TAKEMOTO, Position: Acting Division Chief, Nippon Expressway Research Institute Co., Ltd. Specialty: Geoengineering Phone: (+81+ 42) 791-1624, Fax.: (+81+42) 791-2380 e-mail: m.takemoto.aa@ri-nexco.co.jp Date of Birth : September 23, 1968</p> |  |
| 9 | <p>Mr. Tomoji SUZUKI Position: Team Coordinator, Japan Society of Civil Engineer Deputy Secretary General, JSCE Indonesia Section Specialty: Civil Engineering Phone: (+62+21) 3193-7374, 3192-3318, Fax.: (+62+21) 3193-1916 e-mail: jisuzuki@cbn.net.id , jisuzuki24@gmail.com Date of Birth : February 04, 1946</p> |  |

(2) List of Domestic members

| | | |
|---|--|---|
| 1 | <p>Mr. Rusnardi Rahmat Putra, Position: Kyoto University Specialty: Earthquake Engineering Phone: , Fax.: e-mail: rusnardi.rahmat@gmail.com Date of Birth : September 23, 1976</p> |  |
| 2 | <p>Dr. Fauzan Position: Andalas university, Staff at Civil Engineering Department Specialty: Structural Engineering Phone: 0751-7837823, Fax.: 0751-72566 e-mail: fauzan@ft.unand.ac.id, fauzanrn@yahoo.com</p> |  |

(3) List of supporting member in Tokyo, Japan

| | | |
|---|---|---|
| 1 | <p>Mr. Masashi MATSUO, Position: Secretary-general, NPO Engineers Without Borders, Japan</p> <p>Specialty: ,</p> <p>Phone: (+81+3) 3209-5124, Fax.: (+81+3) 3209-5124 e-mail: matsuo@ewb-japan.org</p> | |
| 2 | <p>Dr. Shigeru MIWA, Position: Director, Research Institute of Technology, Tobishima Corporation,</p> <p>Specialty: Geotechnical Earthquake Engineering, Phone: (+81+4) 7198-1365, Fax.: (+81+4) 7198-7586 e-mail: shigeru_miwa@tobishima.co.jp Date of Birth : April 15, 1957</p> |  |

(4) Cooperating Members at Andalas University

| | | |
|---|---|---|
| 1 | <p>Dr. I. FEBRIN Position: Dean of Engineering Faculty Specialty: Structural Engineering Phone: +62-812-6625081 (Mobile phone), Fax.: 0751-72566 e-mail: febrin@ft.unand.ac.id</p> |  |
| 2 | <p>Dr. ABDUL HAKAM Position: Staff at Civil Engineering Department Specialty: Geotechnics & Earthquake Engineering Phone: 0751-7837823, Fax.: 0751-72566 e-mail: a.hakam@ft.unand.ac.id</p> |  |

3. Itinerary: December 13 – 23, 2009

[As of Dec. 08, 2009]

| Date | Contents | Site |
|-------------------|--|-------------------------------------|
| Dec. 13 (Sun.) | 1) Leave by Garuda Indonesia GA 881: Departure from Narita at 11:00/ Arrival at Jakarta at 19:20 | Jakarta Airport Hotel |
| 14 (Mon.) | 1) 06:10-07:50: JAKARTA - PADANG (CGK-PDG) with Garuda Indonesia (GA160) 2) Investigation and meeting for restoration of damaged structure with the professional engineers in Indonesia | Padang |
| 15 (Tue.) | 1) Investigation and meeting for restoration of damaged structure with the professional engineers in Indonesia | Padang |
| 16 (wed.) | 1) Investigation and meeting for restoration of damaged structure with the professional engineers in Indonesia Internal meeting on preparation for small workshop | Padang |
| 17 (Thr.) | 1) Workshops on especially retrofitting RC building and repair and rehabilitation of roads and slopes including seismic design for dams | Padang |
| 18 (Fri.) | 1) Socialization and dissemination of restoration technique for damaged structures in West Sumatra Province. | Padang |
| 19 (Sat.) | 1) Socialization and dissemination of restoration techniques for damaged structure in West Sumatra Province. | Padang |
| 20 (Sun.) | 1) 13:00-14:45: PADANG - JAKARTA (PDG -CGK) with Garuda Indonesia (GA163) Internal meeting on preparation for Seminar | Jakarta Grand Kemang Hotel |
| 21 (Mon.) | 1) Forum at PU PUSAT together with BARITBANG and other agencies | Jakarta Grand Kemang Hotel |
| 22 (Tue.) | 1) Meeting at Government, embassy and JICA and media's interview. 2) 21:15 – 08:50: JAKARTA – NARITA (GA880) | |
| 23 (Wed.) | 1) 07:20 Arrival at Narita | |

1. WORK SCHEDULE

Our team is scheduled to visit the earthquake site of Padang aiming to assist your efforts to recover the earthquake damages. However your support is essential.

Investigations of the sites are scheduled to be performed in the areas nearby Padang city because of limitation of time.

After investigation with your experts, we would like to have a small workshop grouping the experts into teams for the purpose of confirming concept of damages and recovery methods. If possible, please ask engineers to join us. Since our team consists of road, dam, architect and geoengineers, participants for those specialties are most expected.

No duplication of the sites where the JICA teams executed their investigation is more convenient.

PROPOSED SCHEDULE AND ACTIVITIES

1st Dec. 13 (sun): Arrive at JKT in the evening from Tokyo

2nd Dec. 14(mon): Arrived at Padang by morning flight

Investigation for the earthquake damages will be started immediately after joint meeting for deciding survey schedule.

The investigation teams will be consisted with three teams sharing activities.

(1)Infrastructure Investigation Teams; Two parties for survey the disaster sites sharing their works on roads, landslides, dams, etc. including structures, tunnel and facilities

(2) Superstructure Investigation Team; Building and housing structures

3rd Dec. 15(tue): Investigation for the earthquake damages

4th Dec.16(wed): Investigation for the earthquake damages

5th 17 (thu): Workshops by architecture team and civil engineer teams. Full day workshop from morning to evening is scheduled.

6th Dec. 18(fri): Socialization and dissemination of restoration techniques for damaged structures

7th Dec.19(sat): Socialization and dissemination of restoration techniques for damaged structures
If necessary, additional survey for the extensional areas

8th Dec. 20 (sun) Depart Padan to Jakarta

Internal meeting on preparation for Forum

9th Dec. 21(mon) Forum at PU. PUSAT together with BARITBANG and other agencies

10th Dec. 22(tue) Meeting at Japanese government embassy and JICA and media's interview. Leave JKT to home afternoon

2. SITE INVESTIGATION IN WEST SUMATRA PROVINCE

Three teams will spread into the individual site with cars for investigating the disaster damages. Especially the dam team proposes to visit Maninjau lake to investigate the Maninjau PowerStation. Kind arrangement to get approval from the management office is requested. Other teams will be carried out their investigation around the city area and mountain areas.

(1) Road Team

- Road and associated facilities at city area and mountain area
- Your requested area

(2) Dam Team

- Maninjau lake and Maninjau powerstation reservoirs

(3) Architect Team

- Building
- House
- Structures
- Market

3. WORKSHOP AT PADANG

Two seminars by civil engineer teams and architecture team using workshop style are proposed in order to confirm the concept and how to implement emergency recovery of disaster damages.

1) Roadway Slopes and Dams

Participants: West Sumatra Provincial officials, Academicians, Local Engineers involved directly with roadways, slopes and dams

Desired number of participants: 15

In addition to Workshop, field studies on Dec. 18 and Dec.19

General Requirement: to have detailed discussions on specific points of emergency recovery and repairs

2) Architecture Group

Similar requirements of Roadway Slopes and Dams

3,1 OUR PRESENTATION

Contents of the presentation will be provided in view points of followings clauses.

- (1) Stability of slopes with the consideration of geological features, earthquakes and ground water seepage.
- (2) Recovery methods for damaged roads, landslides and dam deformation
- (3) Quick assessment and evaluation procedures for seismic damages
- (4) Access method to the sites and utilization of equipment
- (5) Building Structural Safety in Japan
- (6) Seismic Retrofit Techniques
- (7) Seismic Retrofit Examples
- (8) Discussion about the damaged Buildings

3.2 PRESENTATION ACTIVITIES OF CIVIL ENGINEERING TEAMS

As the participants in Padang have a strong will to recover from the seismic damages by the Pariaman-Padang earthquake as well as avoiding secondary disasters, we would like to make to support their efforts and activities by introducing those experiences in Japan. For the purpose, we will survey sites at first and, with understanding of actual damages in the province, we will have a workshop to discuss how to execute quick restoration of devastated area.

- Prof. Aydan will introduce the characteristics of slope failures (including so-called landslides) with the consideration of slope geometry, ground conditions, ground water conditions and geological features. The lecture will include

- (1) Effects of earthquakes on the stability of natural and cut slopes
- (2) The characteristics and mechanism of slope failures caused by the Pariaman-Padang Earthquake and ground and ground-water conditions

- Mr. M. Yoshimura will introduce the recent experiences of Japanese road restoration and Japanese government planning.

- (1) Road damages caused by Niigata Chuetsu Earthquake
- (2) Experience of restoration
- (3) Proposed emergency restoration

- Mr. M. Takemoto will introduce long term disaster prevention plan of Japan for roads.

- (1) Disasters for the road structures in Japan
- (2) Long term disaster prevention plan in Japan
- (3) Proposed emergency restoration

- Mr. A. Sezaki will introduce the seismic effects of earthquakes dams in Japan and the consideration of their effects on dam design.

- (1) Dam damage caused by Niigata Chuetsu Earthquake
- (2) Seismic design of dam
- (3) Findings at Naninjau and other reservoirs

3.3 PRESENTATION OF ARCHITECTURE TEAM

We propose the building-structure-presentations of workshop at Indonesia as follows. We have prepared some other papers and presentation documents about the building seismic evaluation and restoration.

So, other themes should be picked up according to the request of Indonesian side.

- (1) Dec. 17th Workshop on the Building Structures at Padang (Tentative)

(Each 90 minutes presentation by Japanese or English with translation)

1. Building Structural Safety in Japan

- (1) History of the Seismic Design
- (2) Seismic Capacity Evaluation
- (3) Seismic Performance for Government Facilities

2. Seismic Retrofit Techniques

- (1) Strength Upgrade Method
- (2) Ductility Upgrade Method
- (3) New Technology (Seismic Isolation and Structural-Control)

3. Seismic Retrofit Examples

- (1) Strength/Ductility Upgrade
- (2) Seismic Isolation
- (3) Structural-Control

4. Discussion about the damaged Buildings in Padang ,

Comments and discussion on the damaged building structures and how to repair

4. WORKSHOP SCHEDULE

(1) WORKSHOP SCHEDULE OF CIVIL ENGINEERING TEAMS

| Time | Program | Speaker / Moderator | Remarks |
|---------------|---|------------------------------------|---------|
| 8.30 – 09.00 | Registration | | |
| 09.00 – 09.30 | Opening Ceremony (jointly conducted with Structural engineering team) | | |
| 9.30-10:10 | Characteristics of slope failures | Dr. ö. Aydan | |
| 10:10-10:40 | Liquefaction observation in Padang City after following the 30/10/09 earthquake | Dr. A. Hakam | |
| 10.40 – 11.00 | Coffee Break | | |
| 11:00-12:00 | Emergency Recovery Approaches for Dam | Mr. A. Sezaki | |
| 12.00 – 13.00 | Lunch | | |
| 13.00 – 15.00 | Road Damages caused by Niigata Chetue Earthquake & Emergency Recovery Approaches for Roads and Slopes | Mr. M. Yoshimura & Mr. M. Takemoto | |
| 15.00 – 16.00 | Findings at Padang Earthquake Damages | All Lecturers | |
| 16.00 – 16.20 | Coffee Break | | |
| 16.20 – 17.20 | Discussion & Summary of Workshop | | |
| 17.20 – 17.30 | Closing Ceremony (jointly conducted with Structural engineering team) | | |

(2)WORKSHOP SCHEDULE OF ARCHTECT TEAM

| Time | Program | Speaker / Moderator | Remarks |
|---------------|---|-----------------------|---------|
| 8.30 – 09.00 | Registration | | |
| 09.00 – 09.30 | Opening Ceremony (jointly conducted with civil engineering team) | | |
| 09.30 – 10.30 | Building Structural Safety in Japan | Dr. Toshio Okoshi | |
| 10.30 – 10.50 | Coffee Break | | |
| 10.50 – 11.40 | Post Earthquake Inspection and Evaluation of Damaged Buildings in Japan | Dr. Takayuki Teramoto | |
| 11:40-12:00 | A brief outline of building damage by the 30/09/09 earthquake | Dr. Fauzan | |
| 12.00 – 13.00 | Lunch | | |
| 13.00 – 14.00 | Seismic Retrofit Techniques | Dr. Takayuki Teramoto | |
| 14.00 – 15.00 | Seismic Performance for Government Facilities in Japan | Dr. Toshio Okoshi | |
| 15.00 – 16.00 | Seismic Retrofit Examples | Dr. Takayuki Teramoto | |
| 16.00 – 16.20 | Coffee Break | | |
| 16.20 – 17.20 | Discussion & Summary of Workshop | | |
| 17.20 – 17.30 | Closing Ceremony (jointly conducted with civil engineering team) | | |

4. FORUM IN JAKARTA

4.1 OUR PRESENTATION

Contents of the presentations as well as seminars are provided with the view points of followings:

- (1) Stability of slopes with the consideration of geological features, earthquakes and seepage.
- (2) Recovery methods of damaged roads, landslides and dam deformation
- (3) Quick assessment and evaluation procedures for damages
- (4) Access method to the sites and utilization of equipment

4.2 PRESENTATION OF CIVIL ENGINEERING TEAMS

1. Niigata Chuetsu Earthquake in Japan (Oct. 23, 2004)
 - 1.1.1 Characteristics and damage by the earthquake
 - 1.1.2 Basic concept and principles of recovery
 - 1.1.3 Emergency recovery implementation
2. Observation and findings at Padang earthquake
 - 2.1.1 Characteristics of the earthquake
 - 2.1.2 Damage of structures
 - 2.1.3 Damage to Roads and slopes
 - 2.1.4 Damage to Dams
3. Emergency Recovery Approaches for roads, slopes and dams
 - 3.1.1 Recovery of failed or deformed roads, embankments and slopes
 - 3.1.2 Protection against infiltration of rain and ground water into damaged structures
 - 3.1.3 Compaction of embankments and fillings
 - 3.1.4 Application of recovery approaches
4. Auxiliary and Long-term Approaches
 - 4.1.1 Inspection, observations and monitoring
 - 4.1.2 Planning of long term measures for recovery and re-construction
 - 4.1.3 Preparation of guidelines

4.3 PRESENTATION OF ARCHITECTURE TEAM

(Each 30 minutes presentation by English for building structures)

1. Building Structural Safety in Japan
 - (1) History of the Seismic Design
 - (2) Seismic Capacity Evaluation
 - (3) Seismic Performance for Government Facilities
2. Seismic Retrofit Techniques
 - (1) Strength Upgrade Method
 - (2) Ductility Upgrade Method
 - (3) New Technology (Seismic Isolation and Structural-Control)
3. Seismic Retrofit Examples
 - (1) Strength/Ductility Upgrade
 - (2) Seismic Isolation

(3) Structural-Control

4. Discussion

FORUM SCHEDULE

| Time | Program | Speaker / Moderator | Remarks |
|---------------------------------|--|---|---------|
| 08.30 – 09.00 | Registration | | |
| 09.00 – 10.00 | Opening Ceremony | | |
| 09.00 – 09.15 | - Report by Organizing Committee | Dr. M. Amron Director General, Agency for R&D, Ministry of Public Works | Venue: |
| 09.15 – 09.30 | - Address by JSCE, JAEE and EWB Japan | Prof. Dr. Masanori HAMADA | |
| 09.30 – 09.45 | - Keynote Speakers | National Agency for Disaster Management | |
| 09.45 – 10.00 | - Opening Remarks | Dr. Hermanto Dardak | |
| 10.00 – 10.15 | Coffee Break | | |
| 10.15 – 12.30 | Parallel Discussion (Session 1) | | |
| A. Building | | | |
| 10.15 – 10.45 | Building Structural Safety in Japan | Dr. Toshio Okoshi | |
| 10.45 – 11.15 | Seismic Retrofit Techniques | Dr. Takayuki Teramoto | |
| 11.15 – 11.45 | | RIHS | |
| 11.45 – 12.30 | Discussion | Moderator: Dr. Anita Firmanti | |
| B. Infrastructure (Road) | | | |
| 10.15 – 11:15 | Road Damages caused by Niigata Chetue Earthquake & Emergency Recovery Approaches for Roads and Slopes | Mr. M. Yoshimura & Mr. M. Takemoto | |
| 11.15 – 11.45 | | Research Institute for Road and Bridge (RIRB) | |
| 11.45 – 12.30 | Discussion | Moderator: (RIRB/RIRB) | |
| 12.30 – 13.30 | Lunch | | |
| 13.30 – 15.45 | Parallel Discussion (Session 2) | | |
| A. Building | | | |
| 13.30 – 14.00 | Seismic Performance for Government Facility in Japan | Dr. Toshio Okoshi | |
| 14.00 – 14.30 | Seismic Retrofit Examples | Dr. Takayuki Teramoto | |
| 14.30 – 15.45 | Discussion | Moderator: Lutfi Faisal | |
| B. Infrastructure (Dam) | | | |
| 13.30 – 14.30 | Emergency Recovery Approaches for Dam | Mr. A. Sezaki | |
| 14.30 – 15.00 | | Research Institute for Water Resources (RIWR) | |
| 15.00 – 15.45 | Discussion | Moderator: (RIRB/RIRB) | |
| 15.45 – 16.15 | Closing Ceremony | | |
| 15.45 – 16.00 | ▪ Summary of Workshop | Mr. Maryoko Hadi Mrs. Silvia Fransisca | |
| 16.00 – 16.15 | ▪ Closing Remarks | Dr. Anita Firmanti | |

NPO EWB-JAPAN (Engineers Without Borders, Japan)



Prospectus

Goals of the NPO, Engineers without Borders, Japan

Several devastating earthquakes have recently caused tremendous disasters all over the world. The disasters include the tsunami induced by Off-Sumatran earthquake of 2004, Bam earthquake, Iran of 2003, Niigata-Chuetsu earthquake of 2004, Japan and Pakistan earthquake, 2005. Storms and floods have also been resulted in huge losses of lives and properties.

Japanese academic societies such as the Japan Society of Civil Engineers (JSCE), Architectural Institute of Japan (AIJ) have contributed to the risk reduction of natural disasters worldwide by sending investigation/ technical teams, to investigate and analyze disasters and induced damages, and to make recommendations for disaster mitigation.

Prompt and appropriate advices from experts in the fields of civil engineering and architectural engineering are regarded valuable in long-term. However, the activities of engineers from the societies of civil engineers and architectural engineers are considered sufficient to reduce the sufferings of the afflicted people by natural disasters. The experts from the civil engineering and architectural engineering fields are strongly requested for their technical diagnoses of the causes of damages and advice and suggestions concerning effective rehabilitation and retrofitting techniques to apply to damaged buildings, dwellings and infrastructures such as roadways, railways, bridges and lifelines.

Lessons learned from past natural disasters have been included in teaching materials: they are utilized in disaster prevention education in Japan. However, there is very little disaster prevention education to promote the public awareness in developing countries. Due to the lack of correct knowledge and understanding of natural disasters, people can have groundless fears and take longer time to overcome their anxiety. Furthermore, public awareness and retrofitting information and techniques are expected to be promoted more widely, and increase the overall wellbeing of the people. Hence, there yet remains an important place for the experts from the fields of both civil engineering and architectural engineering for the education of the public for natural disaster mitigation.

It has been highly appreciated worldwide that various Japanese NPOs including medical aid groups have contributed greatly to relieve support of the people affected by natural disasters.

We, as the engineers from the fields of civil engineering and architectural engineering, hereby established the NPO, Engineers without Borders, Japan (hereinafter referred to as the NPO, or the Organization) for the purpose of supporting directly the damaged areas and affected people and also developing activities to reduce the natural disasters within Japan and worldwide.

Activities

(1) Supports for restoration and reconstruction of the areas affected by natural disasters

The NPO's activities shall include the followings: (a) To diagnose damaged houses, buildings and civil-infrastructures such as bridges, port and harbor facilities, and riverbanks. If structures are determined serviceable suffering slight damage, (b) To advise appropriate repair works, and (c) To conduct reasonable and practical restoration works to affected areas

(2) Dissemination of technologies and know-hows for natural disaster mitigation

The NPO shall take the leadership for disseminating technologies for natural disaster mitigation by organizing seminars, distributing textbooks for better diagnosis and retrofitting of houses, buildings, civil infrastructures, industrial facilities and lifelines.

(3) Education for prevention and mitigation of natural disasters

The NPO shall edit and publish teaching materials and translate them into various languages for promoting public awareness and preparedness about disaster prevention that should be conveyed to the next generations. Educational programs for trainers shall be organized as well.

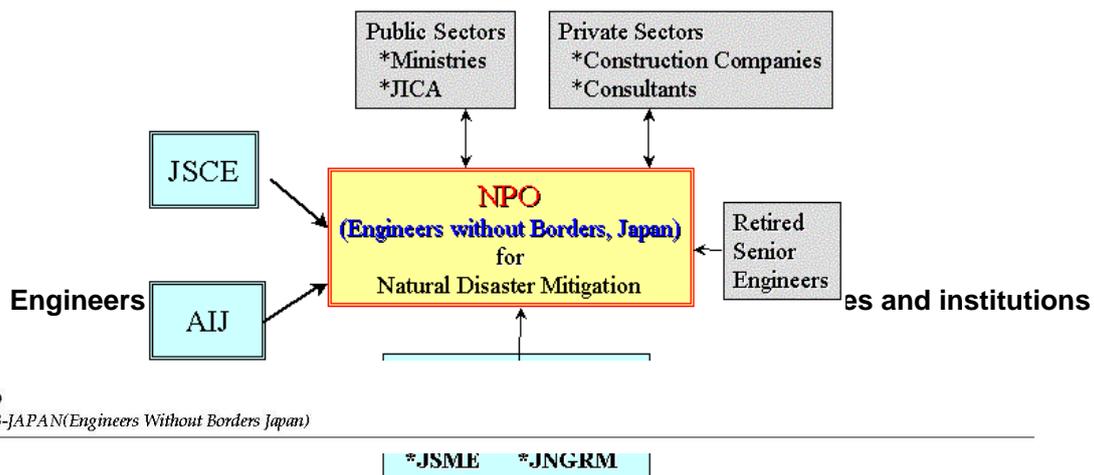
(4) Promotion of the international disaster prevention researches

Natural disasters such as earthquakes, storms and floods are the common problems that many countries have to deal with. The NPO will take an important role in promoting higher educations and researches worldwide, asking for collaborations of academic societies, major universities, public and private research institutions to join its activities. In addition, the Organization shall conduct international symposiums and exchange programs researchers for researchers and students.

Organization

The outline of the NPO shown in Figure 1 has been approved by both JSCE and AIJ. As it expands the field of activity, the Organization will receive supports from JSME (Japan Society of Mechanical Engineers) and/or IEEJ (The Institute of Electrical Engineers of Japan) in due time.

The Organization also shall collaborate with the Ministry of Foreign Affairs (MOFA), JICA and the Ministry of Land Infrastructure and Transport (MLIT), and solicit advice, suggestions and funds from private sectors for its sound steering. Though working as an independent organization, the Organization shall collaborate with existing NPOs in order to acquire the know-hows for effective and efficient business operation.



2. 事業計画概要書

事業計画 概要表

事業計画書

理論的枠組み（ログ・フレーム）

事業進捗

3. 事業実施状況

当初計画に従って派遣者7名は13日にジャカルタに集結した。翌早朝にジャカルタを飛行機で発ちパダン空港に到着。旅装を解いた後に現地技術者との打ち合わせを実施した後に現場被災状況の調査に移った。現場調査をパダンワークショップまでの間に実施し、かつ、パダン及びジャカルタで用いる説明資料を作成した。

17日のパダン・ワークショップは宿泊ホテル会議室で開催した。ワークショップは派遣技術者と現地技術者の発表が行われ、災害復興対応についての協議を実施した。ただしワークショップ後も引き続き翌日、翌々日も協議と調査を実施した。その後21日（日）にジャカルタでのフォーラム実施のため飛行機で移動した。

21日は宿泊ホテルでジャカルタ・ホールがインドネシア公共事業省により開催されて現地技術者及び派遣技術者が順次講演を実施するとともに技術協議を行った。

22日は濱田団長及び数名の派遣技術者が大使館及びJICAを訪問し概要説明を行い、ジャカルタ空港より夜行便を利用し日本に翌23日に帰国した。

3.1 実施スケジュール

計画と変わることなく下記の工程を完了した。

- 12月13日（日）成田→ジャカルタ移動
- 12月14日（月）ジャカルタ→パダン 現地調査
- 12月15日（火）パダン：現地調査
- 12月16日（水）パダン：現地調査及びまとめ
- 12月17日（木）パダン：ワークショップ
- 12月18日（金）パダン：現地指導、アイダン教授は帰国。
- 12月19日（土）パダン：現地調査
- 12月20日（日）パダン→ジャカルタ移動、濱田団長は日本より到着し参加した。

- 12月21日（月）ワークショップ
- 12月22日（火）中央政府機関等対応、ジャカルタ→成田移動
- 12月23日（火）成田帰国

3.2 パダン・ワークショップ資料

日本側が現地にてワークショップ用に冊子として発表内容を取りまとめて参加者に配布した。発表者はパワーポイントを利用し発表を行った。

3.3 ジャカルタ・フォーラム資料

パダン同様に発表内容を冊子として公共事業省が取りまとめ配布した。発表者はパワーポ

イントを利用し発表を行った。

3.4 現場調査及びワークショップ等写真

(12月14日)

道路の崩壊現場



(12月15日)

斜面の崩壊現場



2. 会議関係

・12月17日 Workshop

(Padang)

参加者とのディスカッション (道路)





サマリー



・ 12月17日 Workshop
(Jakarta)



パダン地震復旧協力 建築関係写真

091224 寺本隆幸

1. 調査関係
(12月14日)



(12月15日)



(12月16日)

RIHS の Ferri 氏



2. 会議関係

- 12月22日 Workshop
(Jakarta)



河川関係

Maninjau 発電所



変電所碍子の地震破損



Maninjau ダム



堰堤の破損と橋脚



湖周回道路の土石流



JKT ホール



4. 実施状況報告書

実施においては勿論派遣側にも準備期間が少なく、十分な用意が出来たとはいえないが、受入国での関係者との調整においても時間が足りず、予定スケジュール及び対応が十分になされるかとの危惧はあった。しかし、役所、大学先の協力もあって、事業は計画と変わることなく進められた。

現地乗り込み 13 日、17 日のマークショップ、21 日のジャカルタ・ホーラムまでのスケジュールは順調に進み、調査団は 22 日夕にインドネシアを離れ 23 日に帰国した。

4.1 週間報告書

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団体名：国境なき技師団（E W B J）

プログラム名：スマトラ島西部沖地震被災者支援（初動対応期）

事業名：山岳道路斜面と建築物の復旧への技術移転支援事業

報告者：瀬崎 明

報告日：2009 年 1 2 月 2 4 日（木）

報告対象期間：2009 年 1 2 月 1 3 日（日）～ 2 3 日（水）

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1. 対象期間中の活動状況

（1）事業の進捗状況

震災復旧の技術支援対象を山岳道路斜面崩壊の復旧および建築物破壊改修技術を主体として、これに河川構造物破損対応を含めて技術移転支援を実施した。具体的な支援方法としては、第一段階として派遣技術者及び現地技術者の共同での災害状況把握を実施した。これにより災害復旧対応の共通認識を得るものとした。

第二段階としてはワークショップおよびホーラムを開催し復旧技術について派遣技術者と現地技術者の協議を行い、適切な復旧方法を検討した。

続いて派遣技術者による復旧技術の提案を行い質疑応答による協議を行って実施方法の共通認識を確かめた。

1 2 月 1 3 日（日）成田→ジャカルタ移動

災害地パダンへの直行が不可能であるため経由地ジャカルタで一泊した。宿泊先では派遣チームが一同に会し、現地での実施方法を協議した。

1 2 月 1 4 日（月）ジャカルタ→パダン 現地調査

翌朝 5 時過ぎにホテルをチェックアウトし 6 時過ぎの航空機第一便で現地パダンに向けて出発した。約 2 時間の飛行の後、パダン空港に到着市内の宿泊地

で旅装を 解き現地調査を現地側調査団と協議した。その足で道路、河川チームを一組、建築チームを一組とした調査チームに分け、それぞれの調査現場に向き目視可能な時刻まで現地視察を行った。

道路、河川チーム5名はパダンよりパダンパンジャンへ向かい通行可能な範囲で災害状況把握を行った。

建築チームは2名はパダン市内の重要構造物および大型建築物について災害状況の調査を実施した。

12月15日（火）パダン：現地調査

昨日と同様に現地調査を実施し道路、河川チームは途中の道路状況を調査しつつマニンジョ発電所を目指した。発電所を経由しマニンジョ湖外郭道路の災害状況を続けて調査した。

建築チームは昨日と同様建物の災害調査を実施した。

12月16日（水）パダン：現地調査及びまとめ

道路、河川チームは一部の現地調査を実施するとともに、明日のワークショップに向けた災害調査の取りまとめおよび発表資料の作成を実施した。

建築チームはこの日も災害調査を主体として行動を行った後夜間に翌日の発表資料のとりまとめを行った。

12月17日（木）パダン：ワークショップ（約70名参加）

8時30分より参加者登録を開始した。ワークショップ開催時は会場を共にして開始したが、現地参加技術者の技術分野を考慮し道路、河川分野（土木）と建築の二手に会場を分けて技術ワークショップを実施した。閉会は再び共同で実施し18時30分に閉会した。

12月18日（金）パダン：現地指導

ワークショップ後のフォローアップ作業として金曜日および土曜日を現地側との再調整と継続調査期間とした。しかしながら現地在が休日であったこともあり現地土木関係者は参加がなく、実施しなかった。当日午後便にてダイアン教授は帰国の途に着いた。

建築関係者は災害調査およびフォローアップ協議を実施した。

12月19日（土）パダン：現地調査

土木チームはジャカルタホーラムに向けて資料作成を実施した。

建築チームは現地のアンダラス大学での協議を実施した。

12月20日（日）パダン→ジャカルタ移動

正午前に宿泊地を出発し、パダン空港より1時過ぎの飛行機でジャカルタに向けて残る全員6名のチームが現地技術者数名とともに出発した。ジャカルタに到着後、宿泊地でありかつ翌日のフォーラム開催地であるグランドクマンホテルに向かった。

夕刻にホテルへ到着した。日本より到着の濱田団長の到着を待つて状況報告およびフォーラム内容の協議を実施した。

1 2月21日（月）ワークショップ（約90名参加）

8時30分より参加者登録開始。パダンでのワークショップ様式と同様に途中より2つに会場を分けてフォーラムを実施した。土木および建築共に現地側発表も専門的であり、かなり詳細にわたる技術協議実施された。

1 7時過ぎに公共事業省副大臣の閉会挨拶により閉会した。

1 2月22日（火）中央政府機関等対応、ジャカルタ→成田移動

浜田団長および数名が代表し、日本大使館およびJICAへ表敬訪問を行い活動内容の報告を行った。その後夕刻の飛行機にて夜行便で帰国の途に着いた。

1 2月23日（火）成田帰国

（2）成果

被災地パダンでの共同調査では、日本側技術者は日本での経験を踏まえた技術力が高く、調査においても現場を踏まえた分析と指導が的確に実施できた。現地側は大学教授および専門家も多かったが震災経験も浅く、共同調査で得るものは多かったと考えられる。

ワークショップおよびフォーラムにおいても現地側から積極的な対応がなされた。

ジャカルタでのフォーラムは災害対応の実施主力省庁である公共事業省が主催し、費用などを含めて協力があった。

今回参加の現地技術者より今後の継続実施について多くの申し入れがあったことは、派遣技術者としても嬉しい反応といえる。

2. 事業実施を巡る環境変化

（1）政治社会状況の変化

特になし

（2）環境変化による事業への影響

特にないが、斜面崩壊及び河川構造物被災などは雨季であるため災害規模の拡大と二次災害の発生が危惧される。

3. その他特記事項

1 2月23日にJPF対応期の事業は終了
