13th World Conference on Earthquake Engineering
Vancouver, B.C., Canada
August 1-6, 2004
Paper No. 3492

An Introduction to Examples of Community Disaster Prevention Activities Implemented through the Cooperation of Local Governments and Businesses

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SUMMARY

Many types of damage occur simultaneously, creating a chain reaction of destruction over a wide area at the time of a large-scale earthquake disaster, and there are limitations as to the extent to which individual organizations such as government agencies and businesses can respond to the massive scale of damage. Most desirable is for all of the organizations in each regional community to work closely together, cooperating with each other in times of crisis. However, currently there is little existing in terms of a framework of activities in which the regional community can cooperate at the time of a major emergency or disaster.

In New Town, a suburban development in of the Tokyo metropolitan area, a community of developers, government agencies and businesses has joined together to introduce trial measures for regional disaster prevention. After basic training that included studying the actual conditions that arise during an earthquake disaster, corresponding activities and disaster prevention measures, a simulated emergency response drill, at which time it was assumed that an earthquake occurred directly under the center of Tokyo, was enacted. Through this drill, the participants recognized the importance of community cooperation when responding to a disaster situation.

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INTRODUCTION

At the time of a large disaster, many types of damage occur simultaneously, each of them acting as a catalyst, creating a chain reaction that expands and widens the area of damage. Response to large-scale disasters needs to be immediate and precise; however, there are limits to this response, and these limits are largely dependent on the level of governmental leadership and the activities of individual companies. This being the situation, there is a need to construct and nurture regional disaster prevention systems that will take action to minimize damage through the active cooperation of governmental agencies, businesses and regional society as a whole.

In this paper, I introduce trial activities aimed at improving earthquake disaster response through the process of consorted cooperation of government and businesses. The project was first proposed by a regional entrepreneur while promoting the development of areas in suburban Tokyo.

Lessons Learned from the 1995 Great Hanshin-Awaji Earthquake and the Present Situation

The damage caused by the Great Hanshin-Awaji Earthquake clearly shows that, even with vast technological advancement, today's modern cities are still highly vulnerable to disaster. Not only did the disaster take the lives of more than 6,000 people, it caused extensive damage to societal and business infrastructures and brought on long-term disorder in regional activities, the influence of which extended to far-reaching areas.

Even though the earthquake struck at dawn, before there was much business or social activity, the damage related to businesses was immense. Until that time, the people looked to the government for leadership regarding disaster response. So companies, too, believed that the proper thing to do was follow the guidelines set forth by the government. But this changed, and many companies began to feel strongly that they must secure their own safety and security in the future, and thus recognized the necessity for close cooperation between the government and regional society regarding disaster prevention activities.

However, with the passage of time and influenced by the changes in Japan's economic environment, the experiences and shock from the disaster are slowly fading from memory. In the Tokyo metropolitan area, even with anxiety related to the urgency of the Tokai Earthquake and the fear of pending earthquake activity in the surrounding region, the implementation of measures for disaster prevention through the voluntary cooperation of businesses and regional society is extremely rare.

Chiba Newtown's Position in Relation to Tokyo

Chiba Newtown has grown to become recognized as a full-fledged city in its own right. It is located approximately 20-30 kilometers east of downtown Tokyo. Within the hillside region of the city, developments are underway to implement disaster prevention. In an attempt to lure businesses, residential development continues in the districts of New Town, including the cities of Inzai and Shirai as well throughout the hilly region of Inba. The goal is develop Chiba Newtown into an international city that draws and pulls from other nearby international centers of business and commerce, such as Narita Airport and Tsukuba City, and takes advantage of its proximity to downtown Tokyo.

With the housing developments increasing the number of residents, the reshaping of Newtown continues to take form, spurred by growth in the form of universities, hospitals, large-scale commercial districts, and business and research facilities. A multitude of opportunities for new businesses is available in Newtown, which serves as ideal location for the finance and IT sectors to develop additional office space as satellite branches for their main offices in downtown Tokyo.

Newtown is built upon a solid clay foundation on the hills of the Shimofusa Plateau. As a result, it is far less vulnerable than low-lying areas in terms of flooding, earthquakes and other destruction from natural disasters.

In the fall of 2002, at the close of the fifth study session, an earthquake disaster simulation event was created for all participants to experience. The simulation assumed that an earthquake with a magnitude 7of struck directly beneath Tokyo. With 24 participants divided into six groups, members played the roles of office workers caught in the disaster and debated the best ways to respond in such an emergency situation.

Fig. 1: Location of Chiba-Newtown Area

Development of Regional Cooperative Disaster Prevention Activities

- **_Opportunity**

Through the public relations efforts the Chiba Newtown developer, the Urban Development Corporation (UDC), a reporter was sent to Takenaka Research & Development Institute to gather information about advancements in the construction industry. Taking the opportunity to promote an exchange of opinions at the time, a study session concerning disaster prevention activities by members of the regional community, such as developers, government agencies and progressive businesses, was planned.

The study session was proposed to be an informal gathering to promote discussion and information exchange in the region, and was held as a voluntary study session by the organizing group. The UDC, having proposed the plan, took charge as the event secretariat, and Takenaka Corporation and the Takenaka Research & Development Institute participated in joint organization. Numerous organizations and companies in agreement with the proposal openly participated, including prefecture and city governmental organizations, financial institutions such as banks and stock brokerages, IT companies, manufacturers, infrastructure service companies, medical institutions, fire departments and organizations with like concerns.

- **Study Session Theme and Outline**

The first study session was held in September 2001, and five sessions have been held since then.

Each session consists of 25-30 members. The first session included a commemorative special lecture presentation presented by Dr. Katayama Tsuneo, the Director General of the National Research Institute for Earth Science and Disaster Prevention. Among the topics addressed by Dr. Katayama included his experience in researching earthquakes, the Great Hanshin-Awaji Earthquake Disaster, and stressing the importance of local communities and what they can do towards disaster prevention.

Other main topics are listed as follows:

- Introduction and summary for local disaster prevention for the Tokyo metropolitan area
- The Great Hanshin-Awaji Earthquake and emergency response
- Large-scale disaster and approaches to risk management
- Introduction to 3D simulation of in-house furniture vibration; video presentation of Kyoto University's Disaster Prevention Research Center experiment
- Disaster Prevention Manual; Example from UDC, feedback on the effectiveness of the Great Hanshin-Awaji Earthquake manual
- Introduction to disaster prevention and planning at the local level; for the case of Inzai
- Introduction to simulated disaster prevention drills; introduction and approaches to role playing and damage response in simulated disaster drills

In addition, at the fifth study session in the fall of 2002, all members in attendance participated in a rapid response time drill based upon the simulation of an earthquake striking the Tokyo metropolitan area.

Earthquake Disaster Emergency Response Simulation

• Influence of Earthquake under Downtown Tokyo on Newtown Region

Even separated 20-30 kilometers from the epicenter of a magnitude 7 earthquake under the Tokyo metropolis, there is a high possibility that intense seismic waves would cause widespread damage throughout Newtown.

First, if such an earthquake were to strike, the seismic intensity would be mapped out on an earthquake distribution chart, which attempts to predict the most likely areas an earthquake will occur. With an earthquake ranging in the high 5's to low 6's on the Japan Meteorological Agency (JMA) intensity scale, debate focused on estimating the level of seismic force and damage the earthquake might cause. The results of a comprehensive study on seismic activity and its damage assessment were presented to the JMA. The interpretation of the data, however, in regards to the earthquake's intensity and damage was difficult to accurately understand and estimate. It was deemed that exact measurements as to the extent of the earthquake's aftermath would be very difficult, if not impossible, to predict.

This exhaustive deliberation process pointed out the necessity of regional organizations being able to cooperate and correctly relay and assess information regarding damage.

• Estimate of Damage to Downtown Tokyo and Vicinity Following an Earthquake Directly Underneath

The majority of Newtown's emerging businesses are located in the heart of Tokyo. While it is hoped that Newtown's offices would only suffer minor damage from an earthquake, it is conceivable that disaster relief support activities will be required. To estimate the level of damage in a disaster area, the establishment of a support activities plan is necessary.

The estimated damage to the Tokyo area was discussed. In a scenario of a massive earthquake occurring directly underneath Tokyo, it is feasible that the level of damage would be similar to that of the Great Hanshin-Awaji Earthquake. The amount of damage, however, cannot be fully known since geographic and environmental factors differ from region to region, and factor into the outcome. Furthermore, participants were not well informed on geographic factors and how they might alter the

damage an earthquake generates as the seismic waves spread outwards from the epicenter to surrounding areas.

As the years pass, the shocking scenes of the immense damage depicted on television and in other media are beginning to fade from people's memories. It is necessary to develop methods that stress the conditions and experiences people will encounter when a disaster occurs.

• Newtown Offices Provide Support Activities for Head Offices in Tokyo

Numerous business offices will fill the role of "back-up" offices in the event head offices in downtown Tokyo are heavily damaged or destroyed as the result of an earthquake. Being a considerable distance away from the epicenter under Tokyo, and considering Newtown's stability on the Shimousa Plateau, it is possible that the damage to Newtown buildings will be minimal. Therefore, with the very high likelihood of offices in downtown Tokyo sustaining extensive damage, the discussion of support activities service was requested. Optimal routes and means to reach post-earthquake Tokyo as well as relief support supplies were discussed, and ideas were exchanged on the storage of supplies and goods after a disaster. Furthermore, the importance of participants familiarizing themselves with business and residential locations and local geography in addition to other unknown information was recognized and discussed.

Photo 1: Presentation and Discussion during Earthquake Disaster Response Simulation

Conclusion and Future Outlook

The aim of our activities is to strengthen the preparedness for regional disaster prevention through the cooperation of regional governmental agencies, developers and businesses. We have proven that

improvements to disaster prevention preparation can be achieved through basic educational training and earthquake simulation drills.

While it's easy to get "caught up" in everyday life and lose one's focus regarding disaster prevention, the participants of our study sessions have acknowledged the importance of daily disaster prevention awareness coupled with cooperative action within the community. It is planned to continue the promotion of and discussion regarding local disaster prevention.

Finally, it is my hope that all of the participants involved will take what they've learned to their respective workplaces as part of the process of continuing the promotion of disaster prevention.

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