Creation of Safe & Reliable City against Disaster

Development of Disaster Information Sharing System for Asian Region using World-wide Web

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Asian countries are prone to be attacked by natural disasters because of the geological and meteorological conditions. Furthermore, Asian megalitescities are weak against disaster occurs, human and property damage is apt to be expanded. To reduce damage by natural disasters, progress of science and technology like prediction of disasters or devices for damage mitigation is essential. At the same time, disaster management policies such as legal systems, frameworks of administrative organizations, emergency response and public awareness of disaster reduction are also significant for disaster damage mitigation.

To learn lessons from past disasters with sharing information on disaster management policies and international cooperation, Asia Disaster Reduction Center(ADRC) is gathering information on disaster management of 22 Asian member countries. Gathered information is classified into 7 databases by information category and frequency of information transaction. The 7 databases are 'The latest disaster information', 'Disaster experts information', 'The great Hanshin-Awaji earthquake information', 'Disaster training course information' and 'Calendar of events regarding disaster reduction'. This paper presents the way of development of information sharing system which disseminate gathered information.

In order to open the information to public and to deal with multi media information like numeral data, text data and image data, we adopt World-wide web on the Internet as mean to share the information. Data itself accumulated in the databases and instruction of design on web browser(color, layout and style) are independently established. When a user requests to obtain some information via the Internet, required hyper text information will return to the user referring to both databases and design instruction. This system enable a person who does not have skill of making hypertext to edit information disseminated to the world only by changing content of database. And when change of design will be required in future, we do not have to make any change for database itself. As this system simplify information editing via the Internet, the number of information editors can be increased and continuous information update is available, making use of time differences. Now, users can browse information by information category and by nation.

After its establishment, this system is accessed more than 40,000 times from central and local government organization and research institutes located in 54 countries for 8 months. The data format adopted in this system may contribute to establish a standard format for disaster information.

A Study for Damage Effect from Major Accident on LPG Charging Facility

Roh, Sam-Kew, Eun Gu Ham & Young Mi Seo

The LPG refueling station's explosion at Bucheon city was a major accident which with rare frequency of occurrence and large damage effect. Therefore, to prevent similar accident in the future from LPG charging stations which located in urban area, it needs to identify the damage effects of such facilities by comparing theoretically quantities risk and actual damage. The BLEVE effects from the accident showed similar damage effect in case of heat flux, however, the overpressure level reflected at the reduced distance by 15%. The structure damage to the near by area showed comparatively large heat radiation damage to the concrete structure strength and shape changes through heat flux while the overpressure effect was small.

The Strategy for Utility Infrastructure Improvement against a Large Scale
Hazard-Proposals from Southern Hyogo Prefecture Earthquake Experience-
Takamasa HASHIMOTO, Ryouetsu ITOGA & Naoyuki TSUKAMOTO

In this paper, we describe a mutual linkage of lifeline depressions on various system in emergency and restoration period, and improvement bottlenecks among lifeline facilities on local level improvements in due consideration of each lifeline system's hierarchy distinct from a disaster prevention's hierarchy. We also discuss necessity of cooperation among related organizations and revolution lifeline systems for total damage reductions, upgrading of reliability, and earthquake-resilient urban planning against lifeline hazard.

Empirical Application for the Urban Disaster Risk Assessment-Fire and Facility Cases in Cheongju-
Hwang, Hee-Yun, Baek, Ki-Young, Byung-Ho Park, Man-Hyung Lee
Jae-Hoon Hwang, Eul-Leal Rye & Taehwan Kim

Based on basic characteristics of urban disasters and their data availabilities in Korea, this study provides risk assessment models which are derived from Cheongju examples. In specific, the application models are confined to fire and facility risk survey results in the paper. For the assessment criteria, major independent variables for the categories of fire include both the frequency levels and the amount of damage. In the same context, the degree of facility risk assessment is heavily hinged on both the weighted values of key facilities and their weighted rank-sizes.

From the empirical configuration, this paper presents that the potential figure of fire risk is relatively higher in the built-up areas within the existing Central Business District where accommodates a number of dilapidated housing units and community-supportive facilities. In contrast, the potential figure of facility risk is higher in both old residential areas and the newly-built apartment complex. In short, the CBD and its neighboring residential areas record a high potential figure in terms of total risk. Juxtaposing fire and facility risk all together.

A Study on the Process and the Factors of Realization of the Joint Housing Projects in the Great Hanshin-Awaji Earthquake Disaster Afflicted Urban Area
Shingo SUEKANE, Chusaku YASUDA & Koichi MIWA

In this paper, the joint housing project realized in Kobe city after the earthquake are investigated in order to explore the factors of realization of the projects focusing on their physical characters, the intention of project concerned people (inhabitants), and the process of the projects. The joint housing projects differ their character owing to both the physical character of the project and the attributes of the project concerned people. The issues and intentions of project concerned people in each step of the project procedure were different owing to the characters of the project, and built the sufficient consensus on the purpose and merit of project through collaborative work between project concerned people and consultants, and public agencies.

The Street Network Reliability Against Disaster in Historic Area -An-pin District Survey in Tainan City-
Yung-Lung Lee, Kan-Chung Huang & Kuang-Yih Yeh
For the disaster prevention purpose of urban planning, we have to integrate and take as one of the planning targets. After the great Chi-chi earthquake, recovery and reconstruction works emerge; especially we have to concern the street network damages and effects. Considering the road improvement plan, not only malfunction recovery but also multi-stage improvements based on a comprehensive evaluation, we try to propose and promote a disaster prevented road improvement plan in the future urban planning.

This survey refers the quake-damaged area and finds some affecting factors on the street closure. Tainan City is well known with her abounding historic and cultural heritage. An-pin district used to be the political and economic center in Holland ruling age. There are lots of historical buildings like An-pin fort and conserved wall of Taiwan castle. This district still preserves the traditional outlook, including the traditional houses and congested street network. For the safety concern and urban renewal purpose we have to propose a street network plan which maintain the lowest closure rate when earthquake disaster occurring.

This survey employs 2 main factors of street closure: (1) street width; (2) adjacent house type which learn from Chi-chi Town experiences. We also make evaluation criteria for interval alternatives of planned 6-meter width street development. And this study concludes with some survey results for improving the safety of An-pin district street network.

A study on the Refuge Action of City Inhabitant in Taiwan 921 Great Earthquake
Fuchen HUANG, Masanori SAWAKI & Kunihiro NARUMI,

Earthquake occurred in the central part of Taiwan on September 21st 1999, and an extremely serious damage was brought out. This study investigated what kind of refuge action the city inhabitants took in such a big earthquake, and was aimed to consider disaster prevention measures in urban area of future Taiwan through analysis of the reality of refuge action and the action factor. Consideration was based on questionnaire acted as respondents, comprising 618 from North Area of Taiwan - area with seismic intensity 4 and 89 from Central Area - area with seismic intensity 6.

Sustainable Post-quake Reconstruction:
A Case Study of the 921 Earthquake Area Redevelopment in Taiwan
Yung-Jaan Lee & Ben-Juang Wang

Since the 921 Earthquake occurred, the continuously vast and complex disaster reconstruction has just started to test the collective wisdom of both the government and people in Taiwan. To the disaster areas, the reconstruction work is a struggle between reality and ideal. To Taiwan as a whole, this is a choice between sustainable development and destruction. In the face of the lasting and difficult disaster reconstruction, people and the government need not only patience and persistence, but also new attitudes and values. Adopting the comprehensive planning and citizen participation to solve the urgent needs is important and is also a critical factor in deciding whether the post-disaster reconstruction can succeed or not.

Therefore, this study starts from identifying and clarifying the sustainable development concept. Further, this study combines rural-town planning and community building to explore post disaster reconstruction from various aspects. Finally, this study will propose a vision for building a 21st-century sustainable rural-urban community.

Strategic Planning for the Post-Earthquake Redevelopment in Lu-Ku
John Chien-yuan Lin, Sheng-Ping Yang & Feng-Tyan Lin

The Chi-Chi earthquake occurred to Taiwan on September 21 of 1999 has seriously damaged the central area of
Taiwan. Lu-Ku is a rural township located near the center of earthquake (about 9 Km south of Chi-Chi). To recover from the serious damage, a lot of reconstruction works are needed. In order to appropriately identify and schedule reconstruction projects, a strategic planning of future development is critically needed. In this paper, the physical and social-economic environmental characteristics and strategies of Lu-Ku redevelopment are analyzed. In addition, important lessons learned from this planning project are presented and discussed.