POTENTIAL SEISMIC RISK ASSESSMENT OF URBAN CITIES BASED ON MACRO-ZONATION CONCEPT

KANG-SEOK LEE
Graduate Student
Institute of Industrial Science
University of Tokyo, Japan

YOSHIAKI NAKANO
Associate Professor, ditto

TSUNEO OKADA
Professor
Shibaura Institute of Technology, Japan

ABSTRACT

This paper describes a potential seismic risk of a city or a group of cities based on the "macro-zonation concept" in which regional macro information such as topography, number of active faults and historical earthquakes, population, accessibility from neighboring cities etc. is considered. In this study, typical cities in Japan are selected and their potential seismic risk is estimated based on statistical data related to the macro information. Also the relationships between the estimated potential seismic risk and the damage observed in Kobe districts damaged by 1995 Hyogoken-nambu Earthquake are investigated.

1. INTRODUCTION

In the past, Japan had experienced many earthquakes, typically "1923 Great Kanto Earthquake Disaster", and countermeasures against earthquake disaster which focused mainly on "damage to structures" had been developed. However, due to the 1995 Hyogoken-nambu Earthquake, more than 5500 people were killed and the importance of the relationship between "structural safety" and "human safety" was highly recognized. This disaster clearly revealed that the current countermeasures were insufficient and that the development of the countermeasure strategy considering a broad array of issues related to the urban earthquake disaster was essentially needed.

In Japan, various schemes for seismic risk assessment have been developed and they have been applied to numerous urban cities especially after the 1995 Hyogoken-nambu Earthquake. Generally, the micro-zonation concept is applied to conventional risk assessment schemes, where the entire area concerned is divided into numerous unit areas and various data