Way Sounding of Housing reinforcement for Effective Reduction of Earthquake Fatalities (6) Death Tall for All Japan

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1. Introduction

We have been conducting a series of studies for drastic reduction of earthquake fatalities, based on the filed evidence that most deaths occur only under totally collapsed dwelling houses. And, in the previous paper we developed a systematic equation by which features of earthquake casualties are well described, and applied it for the Tokai area, Central Japan, assuming anticipating Nankai Truff giant earthquake and ascertained its usefulness.

In 2005, the Special Investigation Committee of the Headquarters for Earthquake Research Promotion of Japan developed nation-wide Probabilistic Seismic hazard Maps, totally of 12 cases, through which one can refer ground surface seismic intensity values in any 1km by 1km sized segmental areas in all over Japan, amounting 300,000 units or over, given in relation with different probabilities as of 2,5,10 and 39% within coming 50 years. This gives a good opportunity to extend our study area to the whole of Japan.

2. Scheme of Estimation

General processes to estimate earthquake fatalities and casualties are made in the following steps.

1) All 12 hazard maps were reduced to significant 4 maps after consideration of mutual resemblance and, likewise, the segmental areas of 300,000 units over Japan were reduced to 150,000 in consideration if there are inhabitants or not. Number of dwelling houses were simply counted as 1/3 of total population in each segmental area.

2) Estimation of earthquake casualties in grading their seriousness from no injury to death was made using the equation set deduced in the previous paper which connects the relation, in probabilistic way, among seismic intensity, damage to dwelling houses and human casualty.

3. Some of Results and Remarks

A case with a probability of 2% brings a worst-case scenario with over 100,000 deaths and even in the minimum case of a probability of 39% inhabitants to be killed will come up to 10,000. And, these figures suggest which way our earthquake protection policy should go and regarded way-finding is nothing but the top-ranked task we must attack in the next stage.