Way Sounding of Reinforcement for Effective Reduction of Earthquake Fatalities (4) In Case against Nankai Trough Earthquakes

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Using the sampled diagnostic data for seismic performance of wooden houses, we found in the previous paper that the fatalities due to a Nankai Trough earthquake would be significantly reduced if the reinforcement is to get into practice by a small fraction as of 5% out of 5 millions of houses existing in Toukai region. But, this result was derived based on a non-realistic assumption that all the houses have already been examined of their seismic performance. What we should develop is, therefore, to acquire a reasonable criterion by which houses to examine are well extracted.

For this aim we adopt an index of built year of houses in unit of a decade, from a reason that the structural performance is in good correlation with built year.

And, under the assumption that all the houses across a prefecture are made in a certain

decade and that a giant Nankai Trough earthquake may occur, the risk probability of the total collapsing of a house, which correlates strongly with to the deaths, was calculated for 5 different decades up to 2000.

Knowing the total number of houses built by decades, we get the cumulative risk probabilities adding each of risk probabilities in ascending order of decades. And, in comparison of each of cumulative risk probabilities with that for all decades, we deduce the satisfaction rates of extraction of candidate houses.

What we have found are as follows; in Gifu and Mie prefectures the satisfaction rates are 70% or higher, which suggests switching from diagnostics to reinforcement is not a difficult matter. In Aichi prefecture it comes up to 59% by adding to 1971 and in

Shizuoka prefecture it comes up to 46% only after adding those to 1970s. This suggests the switching from diagnostics to reinforcement is not an easy matter. These suggests we need to explore additional indexes by which better extraction will result.