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研究成果報告書

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建築物のレジリエンス評価手法の開発

Development and Research of Resilience Evaluation Method for Office Buildings

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Abstract

Earthquake damage envisaged in our country belonging to frequent seismic zones is also enormous, but a structure that economically supports restoration like earthquake insurance is extremely weak. The purpose of this research is to appropriately evaluate the resilience performance of business buildings (business resilience support capacity as buildings such as earthquake resistance, resistance to power failure, energy saving, BCP formulation, recovery easiness). To establish an evaluation technology that enables excellent buildings to transfer earthquake risk with a low burden. To that end, the indicators obtained from evaluation technology are not only engineering experts, but also developed resilience indices of buildings that can be understood by non-life insurance companies, banks, bond market participants and others involved in risk transfer, It is required to provide that it is things. Originally we considered earthquake insurance as the main method of risk transfer but because it turned out that the asset size of the damage insurance company in Japan is small and it is difficult to undertake further earthquake risks, we will limit the method of risk transfer to earthquake insurance only The objective was to develop an evaluation method that can be understood by other financial institutions and investment stakeholders that can be used for general purpose in other risk avoidance methods. Information relating to such resilience of buildings is appropriately provided to the real estate market, investment in excellent buildings proceeds with invisible markets, contributing to safety and security without public assistance such as subsidies. We aim to contribute to the formation of a society in which the qualitative improvement of building stock is performed autonomously.

In this research, the following research was carried out with the support of the Secom Science and Technology Promotion Foundation.

1. Evidence collection of resilience information in domestic buildings: We conducted a survey aimed at clarifying the actual condition of earthquake damage of domestic and overseas buildings and building evidence to evaluate the resilience of buildings using the data. In the survey of the Tohoku district Pacific offshore earthquake that took place in 2014, we clarified the effect of reducing the damage caused by the operation management of building facilities for commercial buildings. In the survey of the Kumamoto earthquake conducted in 2016, we investigated the damage situation of aquarium facilities and built damage function considering earthquake resistance performance using the damage data.

2. Develop resilience evaluation method for building corresponding to reinsurance, bond market, real estate investment market etc.: We comprehensively evaluated seismic performance and disaster prevention performance of business buildings and developed a resilience evaluation method for buildings aimed at responding to reinsurance and bond market real estate investment market etc.

3. Creation of evaluation examples for domestic buildings: The above evaluation method was introduced to 8domestic buildings and evaluated.