

## The Problems and Improvement Ways of Safety Audit

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### 1. Introduction

It has been 20~ 30 years since housing came into being that their conditions are so deteriorated and old now in functions and facilities. Such fact causes inconveniences, safety problems, increase in maintenance cost, and for a settlement of those matter, they want their houses to be reconstructed or they have to repair a part or the whole of their houses. In general, the life span of building is classified into economic, functional, and physical ways. When a building had better to be rebuilt than to be occupied for more economic value, we can say that the building has reached the end of its economic life span, and for functional life span. Business profitability has derived a flooded reconstruction which shortening building life span causing a squandering of the nation's resources and environmental problems, defiling city's appearance by high density reconstruction which at last resulted in seeking of another alternative. But the remodeling, which's been considered as an alternative, is far from a practical revitalization for being in conflict with the various present laws and a structural illogic of the existing buildings. Now the government is permitting to remodeling or repairing the existing building for continual residence without demolishing it to minimize a squandering and side effects due to immoderate reconstruction. Based on such fact, this study will analyze and examine the present state and problems on remodeling and reconstruction projects of old apartment houses, and will conduct a comparative analysis on remodeling and reconstruction to pick out what sort of factors should be considered to draw out a decision making for a rational work promotion.

### 2. The Problems of Safety Audit

First, there is major cause for faulty management of apartment house. Maintaining of it is essential for a lifespan enlargement of the building an efficient use of housing resources. As stated in summary, the limited endurance period to 20 years is lacking logicity as a means to regulate reconstruction. And the situation won't much change, provided that an absolute standard might be proposed. As long as there is no strong economic inducement on reconstruction, the effort of reinforcing maintenance or enlarging building lifespan won't pay off. A development merit of the project had better be adjustable from various angles to enlarge building's lifespan. Apartment house management needs repletion. Under the management system of apartment house, it got to be over 300 families equipped with elevators, central heating system to be subject of mandatory management. Thus, the apartment complex of the families more than 20 and less than 300, which is voluntary subject, is excluded from liability for installment for long-range repair plan build-up & repair cost, and an apartment house with families less than 20 is not even the subject to multi-family housing management law. Second, there is lack of objectivity in safety audit. There are two laws relevant to the administrative body that conducting the safety audit and its regulations, which are the law on housing and special law on facility safety, and the safety audit for reconstruction is following the provision of the law on housing. And unfortunately, they are being judged insufficient in objective assessment standards over a physical deterioration of the housing which led to a faulty audit. There must be cases for dropping liability in safety audit. Under such condition that safety audit is disregarded when there exist resolution of reconstruction, apartment houses about 15 years of their age came to be major subject to investment regardless of their physical lifespan. Accordingly, apartment price shows a tendency to fall down from 6 to 10 years of its age and then rise again when it's about 15 years old. And its price is formed based on an estimated time of reconstruction. Such serious abnormality even takes a role to raise the price of deteriorated apartment house. Reconstruction project that makes all the apartment houses aged 15 years to be listed in it shouldn't be judged positive from the view of an efficient utilization. The safety audit over reconstruction was done by Institute of Construction Technology, but now by a professional agency for it or Infrastructure Safety & Technology Corporation under the Special Law on the Safety Control of Public Structures. It's a measurement to raise liability in safety audit. With it, a judging criterion over reconstruction which's been done by a voluntary evaluation standard, gained expertise and objectivity on safety audit of facilities.

### 3. Improvement Ways of Safety Audit

We have a systematical safety measurement, but it doesn't mean our safety awareness is better than before or illegal. Short-cut involved faulty reconstruction has died away. Safety control was still demanded after than that in 1996, "The Special Act on the Safety Control of Public Structures" was established, and over 35thousands facilities

such as buildings which have higher than 16-story including apartment houses, bridges longer than 100m, facility for multiplex use wider than 5,000m<sup>2</sup> were specified to have mandatory safety check & safety audit in detail. After then, a systematic and mandatory safety control, which's been only maintenance and management level as a recommended matter previously, established, and Enhancement of the Korean Construction Supervision system (1995), introduction of Total Quality Management (2000), introduction of appraisalment on auditing (2001), are still being improved, and an integrated safety measurement for construction and transportation is looked for to build up a detailed safety control system. Safety audit technique would be continually developed along with making preventive preparation from faulty reconstruction and technology integration through information sharing of Industry-academic cooperation and management system, making of existing structural engineering to be advanced and information technology should be exchanged and revitalized. As a nation for possible earthquake occurrence, an earthquake-resistant design of buildings has come a center of a major issue after the tsunami which stroke South Asia. From 2009, the height of the buildings subject to earthquake-resistant design has been changed from over 6-story or over 10,000m<sup>2</sup> to over 3-story or 1000m<sup>2</sup>, that is a drastic change mandatory subject, and seismic evaluation on social infrastructure such as bridges, subways to which seismic-resistant design hasn't been applied yet along with reinforcement work, and an isolation method & collision avoidance equipment should be equipped to social infrastructure such as special facilities, bridges, subways.

#### 4. Conclusions

Reconstruction and remodeling are identical in possessing merits and demerits, that is, neither can be said to be more advantageous than the other and so, a building enlargement & major repair-concept remodeling should be chosen and decided in a natural way, provided that no structural safety involved problem would occur. And so, now to conclude, if the government systemized its policy support with legislation, system improvement, or tax policy for reconstruction and remodeling to be developed easily adjusting the development to the longevity of the apartment houses which are subject to the reconstruction & remodeling, a more effective and efficient reconstruction & remodeling project would be revitalized

#### 5. References

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