

건축물 실내 공간 수요변화에 대응하는 안전기준 개선 연구

A Study on the Improvement of Safety Regulations to
Respond to the Change of Interior Space Demand in Buildings

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SUMMARY

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Chapter 1. Introduction

As the low-growth economic trend continues, the remodeling and indoor construction industry using existing buildings are highlighted rather than new construction in the construction industry. It linked with changes in social conditions such as population, furniture, and technology, and it creates a new type of space with various functions. In addition to the positive aspect of revitalizing the construction industry or boosting the livelihood economy, it is also the subject of social problems such as the box office of an illegal renovation of existing buildings, accidents and disputes. This study was conducted to examine the conflicting points of the current building standards from the viewpoint of user safety when to change the indoor space and to prepare improvement plans.

The main contents of this study can be summarized into three main parts: first, the changes in the interior space of buildings according to changes in physical and social environments and the problems raised accordingly were identified. In addition, this study examined the limitations of the safety-related legal system of the interior space of buildings in Korea in light of the present condition and cause of the safety accident of the interior space of buildings, and compared the safety regulations of the buildings in Korea and abroad to derive implications for improving the legal system. Finally, the improvement plan for building standards corresponding to the new

indoor space demand-type was presented, and a reasonable safety standard improvement plan was suggested considering changes in the architectural environment in the future.

Chapter 2. Safety Problems of Interior Spaces in accordance with Changes in Building Demand

As the elderly population is increasing and the type of households such as single-person households, dual-income households, multicultural households, and companion animal households is subdivided, space marketing is expanding for them. Various living space service facilities are increasing, and there is a growing demand for efficient use of indoor space. The remodeling and renovation of existing buildings, maintenance and management projects and expansion of indoor construction works can be said to be the result of the same context.

On the other hand, as the social change accelerates, new architectural types such as shared housing and joint workspace have appeared, and service facilities for commercial purposes such as cartoon cafes, kids cafes, and dog cafes have also increased. In the case of kids' cafes and comic cafes, at least 770 are installed and operated around neighborhood living facilities nationwide, and the new leisure service has changed the form of indoor space. It is noteworthy that a multi-story floor is made inside one level and used for living room use.

In the case of the second floor, there are many cases where the building is installed arbitrarily during the building use process without building permission or notification, and some facilities have been ordered to be removed according to the interpretation of the illegality of the local government. In this case, it may lead to legal disputes between administrative agencies and business operators and the disposition of fines, which is the most fundamental cause of such conflicts, which is the absence of building standards for the act. Notably, there is no clear legal standard for the floor area, that is, the living room space, which has been vertically increased, besides, as the area increases, the occupant density increases. There is no complimentary device to eliminate the added safety risk other than the initial plan standard.

Chapter 3. The Act on the Safety of Building Interior Space

To secure the safety of the interior space of the building, the current legal system should be preceded by the regulations on the relationship between the law and the structure. Life safety accidents are occurring continuously in neighborhood living facilities such as PC rooms, jjimjilbang, indoor playgrounds (kids cafes), and as the elderly population increases, safety accidents for the elderly are also increasing. Kids' cafes, which are equivalent to indoor playgrounds, are located in multi-use facilities such as sales facilities and neighborhood living facilities, which can lead to large-scale damage in the event of an accident. Other multi-use facilities are frequently involved in fire safety accidents, and the cause is that fire safety performance is often deteriorated depending on the structure and materials of the internal partition installed as needed. The main contents of the current law system related to the safety of the interior space of the building are as follows.

The types of laws and regulations on the safety of interior space of buildings are divided into the building and maintenance law, the area welfare-related laws for the socially weak, the fire prevention and safety management related laws and regulations. According to the details of the rules, the standards for creating a safe living environment, the standards for fire prevention and evacuation safety, and the planning stage and maintenance stage application criteria can be divided according to the application point.

This law pointed out the limitations in three aspects: First, there is no legal definition of the floor added to live in the level. It is not irrelevant to the increase in the illegal use of 'attic,' which is the current legal space. Next, safety standards such as structure and construction method of indoor architecture are prepared, but the application target is limited to multi-use buildings and buildings to be sold, so it can not be applied to neighborhood living facilities and multi-use facilities with many changes in indoor space. Lastly, it is difficult to reflect the characteristics of indoor space only by the evacuation safety facility standard defined by the use and size of buildings.

On the other hand, we compared the evacuation safety regulations of domestic and foreign buildings to establish a legal system related to evacuation safety of more intelligent buildings. The internal evacuation safety regulations stipulate the use of buildings, the number of floors, the width of corridors according to the size, the

installation of evacuation stairs, the number of exits, and the walking distance, and are operated by dualization into building laws and sub-decrees. Recently, in order to cope with the emergence of large-scale buildings using new materials and new construction methods, some rules and regulations have introduced the standard of occupancy density, but it is limited to massive and high-rise buildings, and it is challenging to secure consistency because the measure of occupancy density is different for each law.

In the case of overseas countries, performance-oriented evacuation safety design standards are introduced from the planning and design stages. The present invention relates to a building use classification method based on a person in a room, calculating the person in a room density and the evacuation capacity for each user, and applying evacuation regulations corresponding to the characteristics of each building. For example, in the United States and the United Kingdom, the maximum number of indoor space users should be determined, and the number of evacuation routes should be determined accordingly, and the minimum width of the evacuation route should be calculated by reflecting the unit width per occupant peruse.

Chapter 4. Improvement of Safety Standards for the Change of Interior Space

To secure the indoor space safety of buildings, a clear concept of 'middle-story,' which is pointed out as the most practical problem, should be established. Based on this, the standard of the installation area and structural reinforcement should be prepared in the range that the floor area ratio of existing buildings does not change. Also, the rule of interior space and finishing materials corresponding to the changes in interior space in the process of using other structures should be prepared, and the maintenance inspection regulations should be strengthened. In the mid- to long-term, it is necessary to improve fundamental building standards such as evacuation safety plan considering the density of indoor space occupants.

In this direction, this study proposed the following improvement plan for safety standards in terms of evacuation, and fire protection structure, indoor construction, management and inspection so that safety can be secured according to changes in indoor space in the planning stage as well as in the use stage.

First, the legal concept of 'mezzanine,' which is controversial in the architectural market, is defined in the Enforcement Decree of the Building Act, and the installation area and height are defined.

Second, buildings, including multi-use facilities, will be included in the direct statistical stage, outdoor evacuation stairs, and entrance installation targets considering the new construction stage.

Third, the facilities that install and operate the middle floor centering on multi-use facilities among existing buildings, as well as new buildings, will expand the scope of application of indoor construction safety standards so that the responsibility for safety management at the use stage can be strengthened.

Fourth, in case of an accident in a multi-use facility used by an unspecified number of people with different evacuation performance, a shelter space considering vulnerable people to be evacuated should be prepared to ensure safety.

Fifth, the revision of the Enforcement Decree of the Building Act for safe movement from the middle floor to the refuge floor, along with the improvement of the indoor building safety standards for the middle level installed in existing buildings, is supplemented.

Sixth, the purpose of this study is to expand the buildings, including multi-use facilities according to the Enforcement Decree of the Special Act on Safety Management of Multi-use Businesses and to prepare guidelines for regular inspection of indoor premises.

Chapter 5. Conclusion

The present situation diagnosis and problem improvement of related safety standards are urgent in that safety accidents occurring in the interior space of buildings can cause the complex of various industries, the method of changing the interior space, and the structure and materials of the installations used in the change. This study is meaningful in that it has prepared institutional conditions to solve the problems of current safety standards by reflecting the characteristics of indoor space use of new industries that appear as the demand of the market.

However, more fundamentally, it is necessary to establish safety standards that penetrate the entire building that can respond flexibly to the changing architectural

environment and manage systematically. For this, it is required to reflect various planning elements such as main user characteristics and size along with the use and size of buildings. When referring to the case of overseas construction standards, the reorganization of the use classification, which is the starting point of the plan, and the performance design standard accordingly can be a method. It is necessary to consider the improvement of an efficient building standards system considering the domestic situation.

Keywords :

Interior space, Demand change, Safety standards, Evacuation, Mezzanine, Occupant density