

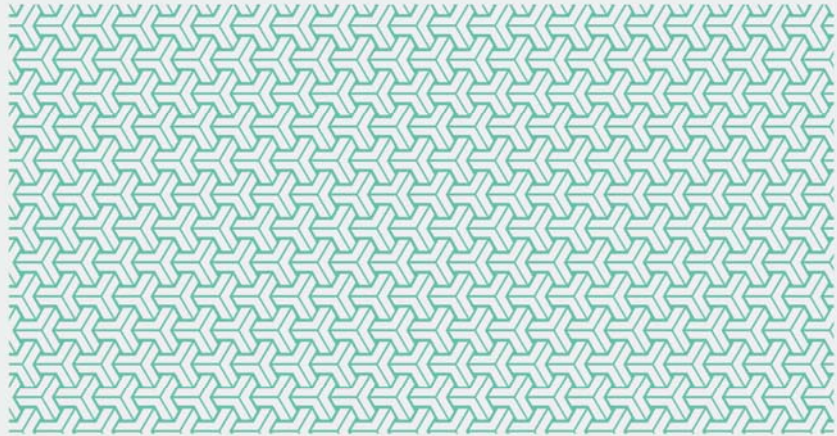
## 소방서 조성 기준 및 계획 현황 연구

Research on the Planning Regulations and Spatial issues of fire Station

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As of September 2018, there are about 3,000 fire-related buildings nationwide, including fire stations and 119 safety centers, and the establishing of fire-fighting facilities is ongoing every year. However, with the lack of an integrated system of formation and management at the level of the National Fire Agency, each metropolitan and provincial fire departments take charge the preliminary planning and construction of fire station, thus the budget planning guidelines and area standards for the facility are being different. In addition, during the preliminary planning procedure of fire station, the area standards per personnel and the budget standards of general public offices have been applied and general administrative official personnel who is less related to the fire-fighting tasks take dominant role in the decision making process, which makes it difficult to reflect the opinions of on-site workers(fire-fighters). Under these conditions, this study is aimed to diagnose the planning procedure and status of the fire station and to draw up issues for the work space plan so that it can meet new demands, such as streamlining work related to fire fighting and improving treatment of fire-fighters.

The objective of this study is to analyse the status of the fire department regarding the age level, region, and size of each facility, reviewing the statistical year-end report of the fire department and the online site of E-AIS(Electronic Architectural administration Information System). In addition, the project overview and design guidelines notified on the Korea On-Line E-Procurement System over the past three years (from 2016 to 2018) will be analyzed and the three chosen projects that have been preliminary reviewed by Architecture and Urban Research Institute(AURI) in advance will be compared to the design competition stage and the construction completion stage to derive key issues and problems in the planning process. In addition, an interview survey was conducted with the staff for the establishing of the fire department to identify the relevant criteria, actual planning and composition, the need for improvement in the formation process, and difficulties in carrying out the actual project

A survey of the standards, management system, and facilities status of the fire station was conducted through various statistical data and related regulation. Consequently, there was a deviation in the conditions for the formation of fire stations in each region and that there were no integrated

planning guidelines. Although the central government agency establishes laws and regulations on the "Basic Fire Prevention Act" and "Regulations on the Installation of Local Fire Service," most of them are mainly about the legal basis for the installation of organizations, the retention of necessary personnel and equipment. In addition, the primary principles of area calculation and planning standards are mainly assigned to the local ordinance or criteria. Therefore, the actual task of planning and building a fire station is carried out by the municipal and provincial fire departments. As a result of checking the status of the criteria for the formation of local fire station office, the majority of local governments did not have a specific criteria for net area calculation and planning working space, so that they proceed tasks by referring to past implementation cases. It has been found that some regions have criteria applied to work areas and standby spaces of residents, but it is rather related to the standard area of general work facilities following "Regional Shared Property Management Act", therefore there is a lack of clear correlation between the criteria and the characteristic of the fire department. In particular, the basic principles of area assessment for special facilities unique to fire fighting work vary from region to region, and the evidence of the principles are not clear, so an overall review on the criteria is required. Meanwhile, 'the Standard Design Guideline (2013.5) for the Gyeonggi-do province fire building' is a representative example of the design standards for fire station building. Through interviews with fire-related personnel, the company reviews the area and requirements of each room and proposes a standard design plan principles for fire station building, which is being used as a major guide when constructing a fire-fighting office in Gyeonggi Province. However, it is necessary to readjust and supplement the planning guidelines considering the date of publication and the recent work characteristics of the fire department by reflecting recent amendments to the Act.

The analysis of the contents of the a fire station projects that conducted a preliminary review of the public building project showed that there are problems in terms of inadequate preliminary plan resulting insufficient location review, difficulties in estimating and reflecting mid- to long-term demand, and problems related to the absence of criteria for detailed facility planning. When looking at the guidelines at the stage of placing an order for

design, while the ratio of areas in offices and fire-related workspaces stood at 16.1% to 18.8% of the total floor area, the ratio of areas in the stand-by area, other auxiliary facilities, and the public sector differed greatly by each project. In case of standby area, the smallest of 1% was shown comparing the largest of 8% , while other auxiliary facilities were distributed within 12-33% and the public area was between 7-29% and the differences of allocated areas ratio of was wide. In addition, the design guidelines for plot planning and for space and facility plans showed a wide variation between those that were mentioned in detail and those that were omitted.

According to a survey on the current state and satisfaction of fire stations, while the satisfaction level was highest at stand-by area(26.2%), followed by office space and fire-related work facilities(18% each), 28% of respondents answered that garage area is most unsatisfactory area, followed by the office area(22%), and the stand-by area(19%). The respondents said they used 27 hours of office space, 10.8 hours of air space, and 5.4 hours of air space based on the average weekly usage time, while the total rating for indoor environment and function in the office area was 3.2 points out of five, with 2.7 points for total evaluation of the stand-by space and 2.6 points for the garage area. Office space has shown slightly higher level of satisfactory on the indoor environment and functions even though they are less frequently used. Meanwhile, the garage is more frequently used area, but the least satisfactory level of indoor environment and function has shown.

Key issues and problems derived for the Fire Department's spatial plan through analysis of the criteria for the formation of fire stations, the management system, and the status of their use are as follows. First, it is necessary to establish a rational system for predicting demand for new and expanded fire stations, and find design indicators optimized for new fire stations, such as proper site selection indicators, transport of fire vehicles, and transport of fire-fighters smoothly. In addition, the planning standards need to be readjusted according to the characteristics of the fire department's operations, including considering the facility plan criteria suitable for the work system between the fire department and 119 safety center, readjusting the facility plan considering the conditions for revision of the fire department vehicle layout standards, replacing the latest fire suppression equipment, and providing separate space for storage,

maintenance and maintenance of rescue equipment. In addition, the support service system for fire-fighting services such as space for routine training, program operation, space for post-traumatic stress treatment, professional counseling, and regular door-to-door treatment system operation is required.

**Keywords**

Public buildings, Fire-Fighting Facilities, Standards for Building Fire Stations, Current Status of Fire Stations