

Foreword and Editorial

International Journal of ICT-aided Architecture and Civil Engineering (IJACE)

We are very happy to publish this issue of an International Journal of ICT-aided Architecture and Civil Engineering by Global Vision School Publication.

This issue contains 7 articles. Achieving such a high quality of papers would have been impossible without the huge work that was undertaken by the Editorial Board members and External Reviewers. We take this opportunity to thank them for their great support and cooperation.

The paper entitled, “An Experimental Study on the Use of Water Sources and Water System in Urban Parks”, Various uses of water space are found in modern urban spaces and water plays a central role in the facility environment for urban residents’ recreation. Because water space is reflected in park planning, its design aspects and the approaches to it are diversified depending on the functions of the surrounding environment and the main space. The depth of the diversity is increasing and providing many different experiences to park users. This study reviewed the uses of water spaces in urban parks and the use characteristics, and it examined the possibility of applying water space to urban parks. The water systems built in urban parks are developing from things that people remember from the past to objects with diversity, and planned water systems are changing into plans intended to enhance the educational significance. These changes are becoming features that deepen the significance of urban parks, and they add comprehensive significance by combining with planning about planting. The experimental implication for applying in the urban park around Magok Central Park as proposed under this study has diverse implications, including the aspect of enthusiastically seeking for consideration on the environment together with the utility through education and experiment.

The paper entitled, “Green Building Integrated Construction Process Model through Analysis of Building Construction”, The purpose of this study was to analyze the applicability of green technologies on green building. The priority for applying green technology was deduced with high effectiveness compared to risk. The process of this study was to establish a barriers(risks) elements in the pilot study, to set up the list of green technology applied on Building Project, and to conduct a survey on green building specialist. In the result, the green technologies such as prefab-external-wall system, PV/BIPV power generation; LED, triplex glass system, atrium, etc. were ranked in high class for applicability on green building. Green building can contribute to reduce the energy usage dramatically and can be applied to new building projects. This paper explored the efficient construction process for sustainable and green building. Construction process will be performed on the new green building projects and performance evaluation will be carried out as well.

The paper entitled, “Green Numerical Modeling Structures with Inclusions Using the Extended Finite Element Method”, The extended finite element method (XFEM) is widely applied in various computational areas to deal with discontinuity problems. The idea is the use of enrichment functions to add to the finite element approximation space. Furthermore, the XFEM is associated with the level set method to track and define the geometrical

representation of discontinuities. This makes it convenient to model structures containing material interfaces. This paper implements the linear modeling for two types of shapes of inclusions by using the XFEM analysis on quadrilateral elements. In particular, we consider the way to construct a new level set function that is used to develop the enrichment function for the corresponding interfaces. Several numerical examples show results of various shapes of interfaces in practical benchmarks and stress distributions.

In the paper “Emotional Design Elements of Public Facilities-Focusing on public museums in Jeju”, Emotional design of public facilities is an important factor to enhance the quality of life of the community members by enhancing the public image and emotional sensitivity. The art museum is a space where emotional research is needed as a variety of roles that enrich the life as a comfortable space for creating a wide range of culture for the public. This study examined and analyzed emotional design elements based on Donald Norman's emotional design research on the public facilities of four public art museums in Jeju area which has the largest number of museum facilities compared to the domestic population. As a result of the study, visual elements of stereotyped shapes and tactile elements of wood and stone material texture are the most common. There are 4 art museums public facilities have stable and comfortable emotional factors, but there are few stimuli that cause fun and interest such as uniqueness and irregularity. In order to increase the emotional satisfaction of the visitors, it is necessary to stimulate interest and try various expressions.

In the research paper “Evacuation Simulation based on Emergency Stair”, recently, various disasters caused by factors such as climate change and terror events have been increasing all over the world. In addition, the damage has been increasing due to the complex disasters such as fire and explosion, and unexpected accidental disasters such as human error or deliberate arson are frequent. Especially, if a complex disaster or an accidental disaster occurs in a large building such as a skyscraper, the damage will be enormous. In case of disaster response of a super high-rise buildings, therefore, it is necessary to assume various situations. For this purpose, evacuation simulations should be performed on the assumption of various disaster situations, and an optimal evacuation method should be devised accordingly. In this paper, the simulation is performed assuming that one of the emergency stairs can't be used when a fire occurs in a super high-rise building, and then we find the optimal evacuation method based on the simulation results.

In the paper “Comparative Study of Urban Sustainability through the International Competition for National Museum Complex”, recently, public architecture from the perspective of the city has recently become an international issue and, as a concept, has been actively implemented in various projects in Korean architecture. Among these projects, the master plan of the National Museum Complex of the Administrative City was introduced as a new architectural project with the intention of achieving urban sustainability while reflecting the urban context. Some of the proposals for the competition for this project, including those presented during the first and second rounds of the judging process, showed the development of novel ideas for sustainable architecture. Therefore, this study sought to reexamine the value of various approaches to urban context and sustainability through comparative studies of these proposals. The conclusion of these comparative studies indicated that, in the contemporary city, architecture should be sustainable and publicly oriented while considering environmental sustainability with respect to the quality of life and

ecosystem, social sustainability in which local cultures and identities were harmonized, and economic sustainability including cost savings and energy utilization.

The paper entitled “Schematic Design of Unit-care Welfare Facility applying a Traditional Korean House for Elderly”, this paper presents a blueprint and CG (computer graphics) of a newly designed elderly welfare facility in Korea. This new facility combines the characteristics of hanok, a Korean traditional house, with the unit-care type facility to provide a more efficient caring environment for the elderly. A lot of the elderly in Korea are accustomed to living in a hanok than in concrete apartments. The unit-care type of facility, with the addition of hanok, will provide the elderly with a comfortable set-up, and thus increase the quality of the healthcare program. Using the findings of this study, the facility manager, architects, and engineers may utilize the concept of combining the use of the hanok and the unit-care type of facility to construct a home-like care facility.

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**Editors of the June Issue on
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