Annual Report

Department of

Architecture and Building Engineering

Tokyo Metropolitan University

2022

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OVERVIEW OF RESEARCH ACTIVITIES

Architectural Planning / City Planning

Kenji TAKEMIYA

(1) Study on architectural planning of medical facilities

Kenji Takemiya

Medical facilities are constantly changing in response to advances in medical technology and changes in the medical system. This series of studies aims to clarify the current status and problems of medical facilities. This year, remarkable results have been achieved as follows.

1) In addition to understanding the spatial configuration and operation/usage status of palliative care wards, we conducted a comparative analysis with the survey results of the 2000 Health and Welfare Science Research Group.
2) We clarified the changes and regional differences in supply and demand in emergency medical care in recent years.
3) In recent years, in order to respond to the increase in work associated with improvements in the quality and safety of medical care as well as sophistication and complexity, medical staff in various fields share work with their high expertise and collaborate and complement each other. In many medical facilities, “team medical care” is practiced in which medical care is provided in a way that is appropriate for the situation of the patient. In this study, we organized the characteristics of the hospital spaces that support team medical care that have been planned so far, grasp the usage situation of the spaces from various angles, and clarify the facility planning requirements of hospitals that effectively promote team medical care.

(2) Research on welfare facilities for children and the elderly

Kenji Takemiya

1) In recent years, it has been reported that nearly 70% of children admitted to foster homes have experienced abuse. In this study, we grasped the facility planning status and utilization status of parent-child life training rooms and psychotherapy rooms that are used when supporting the restructuring of parent-child relationships in children's homes and infant homes.
2) The number of facilities aimed at promoting interaction among independent elderly people is increasing. In this study, we grasped the operation and usage situation of

"Fureai Iki Iki Salon", which provides food and drink in Tama City, Tokyo, and organized the characteristics of the space in terms of facility planning.

3) In recent years, the development of perinatal medicine has increased the survival rate of ultra-low birth weight infants and severe asymptomatic births, while living with medical care and devices such as tube feeding, airway incision, and ventilators The number of children with disabilities “children in medical care” is increasing. In this study, we conducted a case study of a facility that provides support for children requiring medical care and their families, and we organized the characteristics of the space in terms of facility planning.

(3) Research on architectural plans for community centers

A questionnaire survey and a field survey were conducted targeting the Machida City Community Center, and the facility usage characteristics of the facility were clarified.

These studies are to be published in Summaries of Technical Papers of Annual Meeting, AIJ.

Tohru YOSHIKAWA

Theoretical Study on Compactness of Cities

Tohru YOSHIKAWA

In Japan, urban policies for compact cities are being conducted considering the decrease in population, the lower birth rates, the aging society and the serious global environmental issues. Considering this situation, the study explored what is the compactness of cities. In this fiscal year, whether facilities should be consolidated or decentralized was analyzed in a model urban area with BRT.

Development of the evaluation method for the existing building stock on the basis of location

Tohru YOSHIKAWA

It is the problem important to our country, which is leaving for the low birthrate and aging society, to utilize a large quantity of buildings accumulated after the war as effective social property. To this end, methods easy to use for evaluating the existing building stock easily would be effective. Therefore, this study aimed at the development of the method to evaluate existing stock buildings based on the location. In this fiscal year, a medium- to long-term evaluation framework was developed based on the

assumption that facilities with declining utilization rates will be removed one after another.

Motoki TORIUMI

Masumi MATSUMOTO

Studies on Regeneration and Revitalization of New Towns
Masumi MATSUMOTO

Tama New Town is the largest new town developed 50 years ago in Japan. This series of studies aims to research and develop the methods for regeneration and revitalization of living environment of new towns, mainly exemplified by Tama New Town.

1) Research on housing conditions and lifestyles in Tama area.
2) Studies on governing body of an old condominium apartment.
3) Studies on community activities initiated by women residing in Tama New Town.

Studies on Sustainable Living of Elderly People in their Local Communities
Masumi MATSUMOTO

This series of studies aims to research on the living environment of elderly people who continue to live in the same community, and to research and develop supporting systems for such people.

Ryo SANUKI

I conducted urban planning and urban analysis research using urban spatial analysis methods and GIS. I also conducted applied research in different fields such as public facility policies, healthcare policies, utilization of public space, consensus building, and industrial location and guidance. Specifically, he studied (1) public facility management and regional evaluation methods with the aid of evaluation techniques, (2) the dialogue process of public facility restructuring with the participation of residents, (3) public facility and space utilization in Asian countries, and (4) analysis of various events in urban space (medical resource allocation, industrial location, etc.).

Architectural Design and History

Masao KOIZUMI

(1) Research on sustainable design

Masao KOIZUMI

Analysis on architectural design methods for realising sustainable society.

(2) Research on revitalization of downtown area

Masao KOIZUMI

We researched and proposed about new urban design methods, such as utilization of abandoned houses and discovering human resources about town management, on declining downtown area of local city.

Yoshihiko ITO

Gradual change and persistence in the architecture of the medieval Iberian Peninsula and western Mediterranean regions

Regional and pre-modern aspects of the architectural modernisation process in Japan and Asia

Yoshihiko ITO

Research on the persistence and changes in architecture and cities in the western Mediterranean during the Middle Ages (Iberian Peninsula, Maghreb, southern France, Italian Peninsula, Corsica, Sardinia and other islands).

Research on modern architecture in Southeast Asian cities, particularly in Thailand, and on reinforced concrete architecture in the pre-war period in Japan.

Fuminori NOUSAKU

Based on the design research method that links architectural design practice and research, the focus of our research is on composition studies that explore the semantic effects and origins of things that arise from the composition of elements in architecture, cities, and ecosystems, and actor-network theories that explore the connections between humans and non-humans in the resource cycle from production to disposal.

The following research were conducted in the last year.

1. Focusing on traditional wooden construction methods, we clarified the rhetoric of composition in contemporary houses designed by architects, and the construction

methods of traditional houses from the viewpoint of the legal system.
2. Focusing on children's playgrounds and alleys in urban spaces, we clarified the activities utilizing urban spaces in a communal childcare center in Tokyo and the spatial character of an alley with stairs in the Magome district of Ota Ward, Tokyo.
3. as an external advisor for the habitation design studio at the Swiss Federal Institute of Technology Lausanne (EPFL), participated in the design studio's esquisse and critique sessions on the themes of "food" and "soil".

Akira KINOSHITA

Analyses on Composition of Modern and Contemporary Architecture

Akira KINOSHITA

One of the main purposes of architectural design research is to clarify morphological principles that give birth to architectural beauty. For this purpose, it is important and effective to abstract compositional principles and compositional methods from existing architectural works and to examine the design principles. In the academic year of 2022, analysis on the composition of greenery in the contemporary Japanese houses and analysis on the façade design of small shops in Tokyo through postgraduate dissertations study are pursued.

Development of Architectural Design Method

Akira KINOSHITA

In architectural design research, it is also important to apply design principles and compositional methods abstracted by analyses to actual architectural design works. Thereby theory and practice, in other words, basic research and high-level application would be synthesized. In the academic year of 2022, relations between theory and design practice were pursued through a design works of 9 master program students, 2 proposal design competitions and the renovation design of the department’s workshop space.

Research on Design of Architectural Conversion

Akira KINOSHITA

It is becoming one of the crucial social subjects in the architectural field of Japan to find out various methods to revitalize the existing building stocks. Among these methods, architectural conversion is particularly useful and important. For more than 10 years, with my research associates, I have made research survey on architectural conversion

abroad. In the academic year of 2022, I published a book on the design analysis of adaptive reuse and urban regeneration, with my research associates. In January 2023, I made a research trip to London and surveyed some large scale urban developments (Battersea Power Station, Coal Drop Yard, Tate Modern the Tank) which have converted industrial heritages as their core.

Study on Landscape Architecture and City in Early Modern Period

Akira KINOSHITA

In the academic year of 2022, I worked on the analysis of the relation between architectural design and the development of astronomical study, survey technologies, and navigation technologies in the latter half of the 17th century, focusing on Sir Christopher Wren and Robert Hooke, who made significant contributions on the theory and practice in architecture of the period. For this study I made a research trip to visit some of the country houses designed by Sir John Vanbrugh, Greenwich Astronomical Observatory where Wren worked.

Construction Management and Building Materials

Yoshinori KITSUTAKA

Shear repeated fatigue properties of post-installed anchor bolts

Yoshinori KITSUTAKA and Yoichiro KUNIEDA

In this research, we focus on the joint mortar part of the tile, create a pseudo floating tile, and propose a dynamic impact test and an out-of-plane displacement measurement method. From the results, the peeling properties of the tile finish were quantitatively clarified from the dynamic impact test and the measurement of the out-of-plane residual displacement. We also examined the effectiveness of the method of repairing floating tiles.

Effect of high temperature heating on fracture properties of short fiber reinforced mortar

Yoshinori KITSUTAKA and Yoichiro KUNIEDA

In this research, we focus on the effect of high temperature heating on fracture properties of short fiber reinforced mortar. Specimens reinforced by polypropylene, glass and steel short fibers were applied to bending and wedge splitting tests under high temperature. As a result, the addition of short fibers increased the flexural strength and toughness of the specimens. On the other hand, heating of specimens with short fibers resulted in the reduction of the flexural strength and flexural toughness under all conditions. Furthermore, by evaluating the fracture parameters from the results of the

fracture toughness test, the fracture energy of the fiber-containing specimen increased compared to that of the non-containing specimen. There was, however, a tendency for the fracture energy to decrease compared to that at room temperature.

Effect of major constituent minerals on mechanical properties of ALC

Yoshinori KITSUTAKA and Yoichiro KUNIEDA

This study aims to investigate the strength change of ALC, which consists mainly of tobermorite and xonotlite, respectively, under high temperature, assuming a fire. There is a positive correlation between density and strength for both tobermorite-based ALC and xonotlite-based ALC. When the density is the same, tobermorite-based ALC has about 20 to 50% higher strength than xonotlite-based ALC. When subjected to the effect of temperature, both ALCs tend to lose strength as the heating temperature rises. In addition, both ALCs show that the strength of high-density specimens decreases significantly compared to that of low-density specimens.

Effect of granulated blast furnace slag (GBFS) and waste gypsum powder on heat resistance of geopolymer paste

Yoshinori KITSUTAKA and Yoichiro KUNIEDA

The purpose of this study was to clarify the effect of addition of GBFS, gypsum powder and waste gypsum powder on the heat resistance of geopolymer paste. In the heating test, regardless of the specific surface area of GBFS, the strength of the test specimen with a high addition rate of GBFS decreased significantly. In other words, the effect of the specific surface area of GBFS on the heat resistance performance of the geopolymer paste is small at both the 7-day and 28-day ages. When the addition rate of fly ash, which is alternatively added as GBFS, is high, the strength is slightly increased by heating. The strength of the specimens without gypsum was greatly reduced by heating under conditions where the addition rate of GBFS was high, whereas the strength of the specimens with gypsum was increased. It was clarified that the decrease is slight, that the strength of 100N/mm2 or more can be maintained even after heating. The addition of gypsum powder and waste gypsum powder is effective in improving the heat resistance of the geopolymer paste.

Analysis of rain stains on building exteriors by rainwater flow simulation

Yoichiro KUNIEDA and Yoshinori KITSUTAKA

The purpose of this study is to establish a rainwater flow simulation method that reproduces rain stains that occur on the exterior of an actual building. A 3D-model is created based on the design drawing, and a rainwater flow simulation is performed using fluid analysis software. The flow rate distribution map of the wall surface is evaluated by quantifying the amount of passing particles for each wall element regarding the rainwater that reaches the wall surface. Furthermore, the optimum

simulation conditions were clarified by comparing the brightness distribution map of the outer wall surface and the flow distribution map obtained by the simulation.

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Makoto TSUNODA

Studies on Housing Production System allowing the Residents to Participate in Construction

Makoto TSUNODA

Residents may participate in housing construction. This allows you to customize your home in own way and stimulates the distribution of pre-owned homes. It also helps with measures against vacant houses. These acts were called DIY (Do It Yourself). Currently, it has become popular due to the expansion of tools and materials and the introduction of technology through SNS. The fact that the work done by specialized contractors has become more familiar is also considered to be one factor that reminds us. In order to establish housing production in which residents participate, it is

necessary to build assistive technologies that allow partial participation. For example, it is important to remove barriers to resident participation and lower the hurdles for participation.

In this year, we explored the possibility of renovation by residents. The actual conditions of renovations conducted by residents themselves and the businesses that support these renovations were identified. We also clarified the scope of construction for resident-participatory renovations. The motives for renovation have a wide range of contents. They include interest in construction, the DIY boom, and the influence of SNS information. It was revealed that barriers to participation are becoming lower. On the other hand, it was found that some events exceeded expectations. These included difficulties in construction, extended construction periods, and costs. In addition, details of the construction contractor's efforts to mitigate risks to the residents were found. These include experience in pre-workshop, dispatching specialists, and limiting the number of works in which they can participate. In addition, we found that there are three types of organizations that support renovations: construction companies, specialized contractors, and design firms.

Research on Building System Design for Renovation in Buildings Stock.
Makoto TSUNODA

In recent years, many performance improvements have been implemented through renovation as one of the means for long-term use of buildings. In new construction, we use various construction methods to meet the required performance. However, in the renovation, there is a completely different condition that the existing state exists. Therefore, the contents of the construction method will reflect the functions of the components that are not seen in new construction. As a result, a relationship can be found between the role of the members and the performance improvement in each renovation construction method. Especially in renovation, it is often practiced under a wide range of requirements and limited conditions. Therefore, it is considered that the contents of the construction method are directly reflected in the constituent members.

In this year, the impact of the maintenance of wall greening on façade design was clarified. The actual conditions of the composition and maintenance of wall greening were identified. The causal relationship between the methods for continuous plant growth and the composition method of the external wall surface to realize was also considered. Many of the components required for plant maintenance detract from the aesthetics of the building exterior. It was clarified that a device for concealing them is necessary for façade design. Three types of greening surface visibility were classified,

and it was found that the shape of the planter and the installation of components to assist the plants affect the way the elevation is presented. It was also shown that it is desirable to deliver replaceable components that consider the growing conditions of the plants.

Studies on methodology of the building improvement to be compatible with value of property and utility.

Makoto TSUNODA

Buildings that are still usable are often removed for some reason. There are various reasons for removal, such as the performance at the time of completion cannot be maintained and the way the building is used has changed. There are various reproduction methods to solve these situations. To improve the asset value when extending the life of an existing building, there are maintenance and improvement of various performances. The addition of new performance that has not been possessed until now is also targeted. Similarly, in order to improve the utility value, in addition to changing the state of the building itself, it is also required to change the function of how it is used. These two value enhancements are not independent of each other. Therefore, a program for architectural regeneration should be devised in consideration of the trade-off between the two. Nowadays, various reproduction methods such as renovation and conversion can be seen, but the reproducibility is low in addition to the strong individuality as an architecture. Therefore, the purpose is to construct a more general methodology that includes multiple value enhancements to further promote future architectural regeneration.

In this year, focusing on the design method of the converted exhibition facility, we extracted the architectural operations performed during the renovation and conversion, and grasped what kind of architectural operation combination was used for the renovated exhibition space. In addition, we organized the exhibition space that is not created in the newly built museum, the ingenuity and problems unique to the converted exhibition facility, and searched for useful knowledge for the design of future museum architecture. By creating a diversion flow and performing comparative analysis, it was clarified under what background the diversion to the exhibition facility was examined and influenced the selection process of the design method. It is considered useful to consider the part to be preserved and the part to be modified on a large scale in a long time axis in order to expand the possibility of a new design method.

Studies on Activation Technique of Public Building Stock

Makoto TSUNODA

In Japan, demolition and new construction based on declining in the durability and increased availability of buildings continues to be practiced. This practice is unfavorable from the viewpoint of utilization of the existing building stock. Activation technique is necessary for leading preservation and improvement of the public property.

In this year, the study focused on a vacant shop converted into a childcare support facility. The potential for conversion was explored through a survey of actual usage. Using vacant shops as base buildings for conversion is effective because they are located in areas with high transport accessibility. However, it was found to be difficult to satisfy the diversity of childcare support facilities. In carrying out the floor plan of the facility, it should be borne in mind that the location of the water supply and entrances and exits before the conversion will have a significant impact on how the facility is used after the conversion. The study also revealed the importance of establishing a network between facilities in the planning of the overall childcare facility.

Structural Engineering

Kazuhiro KITAYAMA

1. Axial Collapse Mechanism for Reinforced Concrete Beam-Column Joint Failing in Joint Hinging

KITAYAMA Kazuhiro and Jin Kiwoong (Meiji University)

Collapse of buildings is induced by a loss of ability for sustaining vertical loads due to dead and live loads. These vertical loads are carried mainly by columns, which are divided into two parts, i.e., a region along clear height and its upper and lower beam-column joint regions. Collapse of reinforced concrete (R/C) buildings subjected to past earthquakes has occurred in Japan by a sway mechanism in a particular story caused by column shear failure or flexural failure at a top and bottom of columns. Many buildings, however abroad, suffered collapse due to a loss of axial load capacity at beam-column joints (Moehle 2003, Park and Mosalam 2013). Those buildings had unconfined beam-column joints without hoops or small column sections, being different from usual R/C buildings in Japan.

However, almost the whole collapse occurred in Japan for a R/C five-story city office building during Kumamoto Earthquake in 2016 due to axial failure at beam-column joints located in a perimeter frame (Mukai 2016), which was designed according to old seismic provisions in Japan. Beam-column joints in the building seemed to fail in joint-hinging prior to axial collapse (Saito, Mukai and Shiohara 2018).

Beam-column joints in the perimeter frame of the five-story city office building, where three beams frame into the joint region, damaged heavily during the earthquake. Such behavior leading to axial collapse after joint-hinging failure at this type of a beam-column joint is not investigated at all. Therefore, tri-directional loading tests to R/C perimeter column-beam subassemblages with three beams were planned to study axial collapse mechanism after joint-hinging failure in the beam-column joint. Specimens with a half scale to actual buildings were designed to yield in beams under uni-directional lateral loading, but to fail in joint-hinging under bi-directional lateral loading, which is the same mechanism as that for the city office building collapsed by Kumamoto Earthquake. Column and beam sections, the span length and the height in the specimens are common to those in recent tests conducted by the authors to facilitate comparison with each test result. Test parameters are the arrangement of joint lateral hoops (three D6 hoops and six D4 hoops in the beam-column joint region), the arrangement of column longitudinal bars (8-D16 and 8-D13) and a number of framing beams into the joint, i.e., a corner column-beam joint with two beams orthogonal to each other and a perimeter column-beam joint with three beams.

Test results are described herein for perimeter column-beam joint specimens with three beams. All specimens reached a peak lateral capacity at a story drift angle of 1.5% accompanied by tensile yielding of beam and column longitudinal bars and joint lateral hoops. The story shear force at a story drift angle of 1.5% under uni-directional loading reached the expected beam yield capacity by the section analysis assuming that plane sections remain plane. This indicates that beam flexural yielding occurred under uni-directional loading. The resultant shear force under bi-directional loading succeeding to uni-directional loading reached the expected joint-hinging capacity at a south-west loading point and north-east loading point in a horizontal plane where the top of a column moves as depicting a rectangular shape, showing joint-hinging failure under bi-directional horizontal loading.

Compressive yielding of column longitudinal bars and crushing of cover concrete in an upper part of the beam-column joint region, for all specimens, caused a decrease in the lateral resisting capacity at a story drift angle of 2% in a longitudinal direction parallel to the cruciform beam-column subassemblage with two beams opposite to each other. At a story drift angle of 3%, column bars exposed due to spall-off of cover concrete showed symptoms of buckling at a south side of the beam-column joint without a framing beam. Column bars buckled with crushing of core concrete in the beam-column joint at a story drift angle of 4%, indicating a tendency toward joint axial collapse. Buckling of column bars developed more severely for the specimen with a small column-bar-ratio of 1.1%, and did more moderately, in contrast, for the specimen with closely distributed lateral hoops in the joint.

For the specimen with small diameter column bars (8-D13), having a column-bar-ratio of 1.1%, a relative rotation angle of the upper column to the lower column increased remarkably

toward the south direction during the second loading cycle at a story drift angle of 4% under bi-directional loading, showing the onset of joint axial collapse. This led to reaching a rotation limit to the universal joint at a top of the upper column, and the loading test to this specimen was stopped. Tests to other two specimens with column bar arrangement of 8-D16, in contrast, were finished after completion of the second loading cycle at a story drift angle of 4%. The beam-column joints for all specimens resulted in a just preceding condition to axial collapse judging from both column bar buckling and remarkable concrete damage in the beam-column joint. Axial collapse in the beam-column joint with small diameter column bars occurred earlier comparing with other joints with larger diameter column bars.

Conclusions drawn from the tests are summarized as follows.

(1) Using small diameter column bars, which decreased a column bar ratio from 1.7% to 1.1%, caused premature axial collapse in the beam-column joint after joint-hinging failure.

(2) Closely-distributed lateral hoops placed in the beam-column joint region played an effective role on mitigation of damage to the joint and prevention of axial collapse in the joint.

(3) Lateral resisting capacity to the direction orthogonal to a perimeter frame was kept almost constant because of confinement effect due to two transverse beams which cover opposite joint faces for the perimeter column-beam subassemblages with three beams. This confinement effect also contributed to restraining axial collapse in the joint.

2. Re-study on Earthquake Resistant Performance of Reinforced Concrete Beam-Column Joint Judged Previously to Fail in Shear

KITAYAMA Kazuhiro

It had been conceived to be a common sense that a beam-column joint in reinforced concrete moment-resisting frames fails in excessive shear until a joint-hinging mechanism caused by bending moment acting at the joint was proposed by Dr. Shiohara Hitoshi in the early 21st century. When a large amount of beam and column longitudinal bars is intentionally arranged for beam-column frames in a laboratory test, the beam-column joint may fail in shear accompanied by crushing of core concrete in the joint before yielding of beam or column longitudinal bars. In usual seismic design for R/C frames, however, beam or column longitudinal bars yield preceding beam-column joint failure. In even such a case diagonal cracks in a beam-column joint opened widely with an increase in deformation of the frame, cover concrete in the joint spalled off under cyclic load reversals, and then heavy damage concentrated on the joint for many previous tests. This phenomenon had been called “joint shear failure after yielding of longitudinal bar.” If previous test

results are re-examined from a point of present view, heavy damage to many beam-column joints may be attributed to not shear but bending moment resulting in joint-hinging failure.

Cyclic reversed loading tests were carried out by Kitayama in the late 1980s using cruciform beam-column subassemblage specimens designated as B2 and B4 whose beam-column joints were judged to fail in shear after yielding of beam longitudinal bars. Test results for the specimens were then reviewed, and earthquake resistant performance was re-studied. Specimens B2 and B4 had different beam, column and joint reinforcement, but a column-to-beam strength ratio for ultimate bending capacity was almost same, a number of which was 1.4.

Beam longitudinal bars, joint lateral hoops and column longitudinal bars yielded in turn for both specimens. Lateral resisting capacity reached the peak value at a story drift angle of 4%, and after then descended gradually. X-shaped diagonal cracks and spall-off of cover concrete were observed in the beam-column joint region. Both specimens were judged to fail eventually in joint-hinging.

Jiro TAKAGI

Toshikazu KABEYASAWA

An evaluation of the strength of the reinforced concrete multi-story wall under tensile force

A study on out of plane strength of reinforced concrete wall under wave load

Experimental and analytical studies are carried out under 2022 Building Standards Development Promotion Project of MLIT. It examined the compressive wall contribute most all of the base shear in the coupled shear wall frame. It proposed new frame analytical model reflected the interaction between axial load and shear, due to simulate the test result. Wall frame test specimens are designed and built for the loading test in the next year project.

A Study on out-of-plane fracture strength of reinforced concrete seismic walls due to tsunami wave force

A non-linear three-dimensional finite element analysis was carried out for a loading test of a reinforced concrete outer wall in which out-of-plane failure was caused by water pressure. The experimental results were greatly overestimated in the model without specifying the deformation properties and damage locations. It was pointed out that this is because the finite element analysis does not take into account the decrease of bond

strength under three-dimensional stress state in concrete.

A study on the flat plate structure

The effect of slab shear reinforcement in flat plate structure on punching shear strength was evaluated in the static loading test on the assembled RC frame. The ACI formula, which takes into account the effect of the shear reinforcement, has a higher accuracy in estimating the punching shear strength than the formula of the domestic RC standard, and it is expected that the shear reinforcement will contribute to the strength when strain occurs in reinforcement dur to the torsion deformation of the slab.

A study on shaking table test of full-scale 10-story reinforced concrete building

An effective slab width of T-shaped beam is evaluated in the shaking test on the full-scale 10-story reinforced concrete test specimen. The load carrying capacity in the analytical model with full-slab width effective assumption approximates the maximum base shear in the frame direction of the test specimen. On the other hand, load carrying capacity in the model overestimate the base shear in the wall direction, because beam rotation angle is not uniform.

A study on the land slide load on the buildings

A simulation analysis was carried out for a landslide disaster that occurred in Atami City, Shizuoka Prefecture, and it was pointed out that the landslide suffered area was underestimated in the analysis using the measured amount of soil and general simulation software. In addition, We conducted a damage survey on the floods and landslides that occurred in the Tohoku region in August, and it examined the damage pattern of buildings caused by inland floods and landslides.

Noriko TAKIYAMA

Mechanical properties of post-installed lattice walls to improve the seismic performance of existing wooden houses.

Noriko TAKIYAMA

To create demand for locally produced timber and to strengthen existing wooden houses against earthquakes, we proposed the use of "post-installed lattice walls", in which latticework made of locally produced timber is inserted into existing framework, and we are working on a project to study this seismic behavior. As an initial step, static loading tests were conducted on five lattice frames (framework, full wall, hanging wall, hanging-spandrel wall, and spandrel wall) made of grading timber. The results of these experiments were compared, and differences in reinforcement effects due to lattice installed position were discussed.

Seismic Behavior of Joints of Existing Wooden Frame with Reinforced by Aramid Fiber Sheet

Noriko TAKIYAMA

High-performance aramid fiber sheets are a new class of composite materials made up of weaved polyamide fibers. In this study, the seismic performance and failure behavior of timber column–ground sill joints reinforced with aramid fiber sheets were investigated. In a past study, we conducted many bending tests under cyclic loading for three column–ground sill specimens. After reinforcing the specimens with aramid fiber sheets, the joint strength improved but was dependent on the method of attaching the sheet. It was found that the seismic property is unstable because of many failure mode. So, we proposed an improvement in the method of attaching the fiber sheet to the joint. Then, we used vertical splitting sheet, to stabilize the failure mode and to improve deformation performance. Therefore, we could control the failure of column-ground sill joints. We has kept to conduct the loading test of full-scale frame, to understand seismic property of frame, and tried to constructed analysis model. In this year, splitting sheets were replaced with braided cords made of aramid fiber to clarify the location of the aggregation lines during modeling and to improve the accuracy of the construction.

Seismic Property of Traditional Wooden House in IPDGHB, Fukushima

Noriko TAKIYAMA

The Odatsuki district in Fukushima prefecture, which was registered as an IPDGHB (Important Preservation District for Groups of Historic Buildings), contains many traditional mad-walled townhouses. The purpose of this study was to analyze the structural and vibration characteristics of mad-walled townhouse in Odatsuki district, by investigation existing townhouses and loading test of real scale frame. In this year, the data obtained from these were analyzed and design values for the shear forces of sheathed mud-walls were proposed.

Study on Earthquake Resistance of Traditional Churches in Nagano

Noriko TAKIYAMA

We conducted investigations on four traditional churches to evaluate the earthquake resistance in Nagano. The churches are constructed by various structures (wood, RC, brick), with wooden roof truss on top. We conducted actual measurements and microtremor measurements to evaluate the earthquake resistance and analyze vibration characteristics.

Kazushige YAMAMURA

Environmental Engineering

Akihiro NAGATA

A Study on the Performance of Air Curtain

Akihiro NAGATA

As overall building insulation performance improves, the percentage of outdoor air load is increasing, and emphasis is being placed on reducing outdoor air load. Air curtains have long been used as a measure to reduce outdoor air loads, but knowledge of their effectiveness is not yet sufficient. In this study, the thermal and airflow interception performance of air curtains has been investigated through experiments and numerical simulations. This year, we conducted experiments on airflow characteristics when push-pull type air curtains were applied to take-out delivery ports, and obtained a basic understanding of airflow characteristics.

A Study on Biophiric Design

Akihiro NAGATA

We conducted an actual measurement on indoor greening for a purely wooden high-rise training facility in Yokohama, Japan. In particular, we conducted an experiment with about 20 subjects in a space with a greened ceiling, and obtained their reports using the SD method. The 3DCG was created using Archicad/Twinmotion, and Meta quest 2 was used for VR presentation. The presentation methods were (1) on-site, (2) VR of spherical images taken on-site, and (3) VR of computer graphics. For (3), several variations were created using the as-built condition as the standard condition. Factor analysis was used to extract two factors (likability and liveliness), and the results showed that there was no significant difference in the tendency among (1), (2), and (3) regarding the evaluation of the state of the building at the time of completion. However, the likability of computer graphics was lower than that of real space and spherical images. Although greening increased both likability and activity, the relationship with the ceiling height when greening the ceiling is not simple, and a more detailed study is desirable.

Masayuki ICHINOSE

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Masayuki OGATA

Mitigating Infection Risks in Urban and Built Environments

This research endeavors to identify effective and sustainable strategies to counter the spread of the

novel coronavirus by analyzing methods of evaluating exposure to aerosol particles and organizing corresponding countermeasures. Through the utilization of a simulated cough generator, the study investigates the impact of various ventilation and airflow conditions in an indoor environment on the distribution of respiratory aerosol particle concentrations. The experimental results demonstrate that even when exposure takes place close to the source, exposure is higher in a poorly ventilated space than in a space with sufficient ventilation. The findings indicate that even in the presence of exposure near the source, exposure can be reduced in spaces with adequate ventilation, as opposed to those with poor ventilation.

LIST OF RESEARCH ACTIVITIES

Architectural Planning / City Planning

Kenji TAKEMIYA

2. Proceedings of Oral Presentations

1) ENDO Yutaro, TAKEMIYA Kenji: Analysis of space use by young children and their parents over time - For K kindergartens with distinctive interior spaces -, Summaries of technical papers of annual meeting E-1, AIJ, pp. 571-572, 2022(in Japanese)
2) ODA Koji, TAKEMIYA Kenji: Distribution of length of stay of patients discharged from palliative care units due to death and the possibility of using these results to predict demand for facilities and equipment, Summaries of technical papers of annual meeting E-1, AIJ, pp. 415-416, 2022(in Japanese)
3) SHIBATA Yuka, TAKEMIYA Kenji: Study on Spatial Composition and Changes of Architectural Brief of Maggie's Center, Summaries of technical papers of annual meeting E-1, AIJ, pp. 421-422, 2022(in Japanese)
4) ENOMOTO Risa, ITABASHI Asuka, TAKEMIYA Kenji: Research of the questionnaire survey about utilizing facilities, Research on utilizing facilities of community centers Tama city before and after the spread of COVID-19 infection part 1, Summaries of technical papers of annual meeting E-1, AIJ, pp. 507-508, 2022(in Japanese)
5) ITABASHI Asuka, TAKEMIYA Kenji: Research of all-day observation survey about the space used without reservation Research on utilizing facilities of community centers Tama city before and after the spread of COVID-19 infection part 2, Summaries of technical papers of annual meeting E-1, AIJ, pp. 509-510, 2022(in Japanese)
6) KOIKEDA Masaki, KAWADA Asuka, TAKEMIYA Kenji: Changes in facility development and current status of Machida City Regional Center, Study on changes in facility development and usage characteristics of Machida City Regional Center (Part 1), Summaries of technical papers of annual meeting E-1, AIJ, pp. 515-516, 2022(in Japanese)
7) KAWADA Asuka, TAKEMIYA Kenji: Usage characteristics of Machida City Regional Center from questionnaire and observation surveys, Study on changes in facility development and usage characteristics of Machida City Regional Center (Part 2),

Summaries of technical papers of annual meeting E-1, AIJ, pp. 517-518, 2022(in Japanese)

8) AKIBA Daichi, TAKEMIYA Kenji: Consideration on Finishing and Maintenance of Wood Materials in Early Childhood Educational Facilities, Summaries of technical papers of annual meeting E-1, AIJ, pp. 583-584, 2022(in Japanese)
9) SUNAMURA Mina, TAKEMIYA Kenji: Study on Eating-and-Drinking Space in Libraries -Case Study on Public Libraries in Tokyo-, Summaries of technical papers of annual meeting E-1, AIJ, pp. 713-714, 2022(in Japanese)
10) OGAWA Sayaka,TAKEMIYA Kenji: Consideration on current status and issues of the rental housing for the elderly Focusing on the change after the law amendment in 2011, Summaries of technical papers of annual meeting E-1, AIJ, pp. 853-854, 2022(in Japanese)

Tohru YOSHIKAWA

1. Refereed Papers

Takuya KUSUNOKI, Tohru YOSHIKAWA and Ryo SANUKI, Analysis of The Distribution Structure of the Number of Hospital Beds and the Capacity of Long-Term Care Insurance Facilities from the Viewpoint of Regional Characteristics, Journal of Architecture and Planning (Transactions of AIJ), Vo.88, No.803, pp.212-223, (in Japanese), 2023.

2. Proceedings of Oral Presentations

Tohru YOSHIKAWA, Differences in the Behavior by the Utilization Distance of Utilization Probabilities and Consumer Surpluses of Local Public Facilities with Distance Decay of the Utilization Ratio, Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, Urban Planning, pp.267-268, (in Japanese), 2022.

Riku TOMIYOSHI, Tohru YOSHIKAWA and Ryo SANUKI, Analysis of Changes in User Behavior on the Lawn of the Public Space in Front of a Station, Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, Urban Planning, pp.745-746, (in Japanese), 2022.

Takumi AKENIWA, Tohru YOSHIKAWA and Ryo SANUKI, A Multitemporal Comparative Analysis of the Relationship Between Vacant Dwellings and Regional Characteristics - Focusing on Municipalities in Kanagawa Prefecture -, Summaries of

Technical Papers of Annual Meeting, Architectural Institute of Japan, Urban Planning, pp.883-884, (in Japanese), 2022.
Yuusuke OHNO, Tohru YOSHIKAWA and Ryo SANUKI, Evaluation of the Space Landscape in Front of Stations - Focusing on the View of Traffic Function and Plaza Function -, Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, Urban Planning, pp.1139-1140, (in Japanese), 2022.
Takuya KUSUNOKI, Tohru YOSHIKAWA and Ryo SANUKI, Analysis of the Distribution Structure of the Number of Hospital Beds and the Capacity of Long-Term Care Insurance Facilities from the Viewpoint of Regional Characteristics -Using Structural Equation Modelling for Secondary Medical Area throughout Japan-, 5th World Planning Schools Congress, 16th Asian Planning Schools Association Congress, Session 5 2.L9-E, p.95, 2022.
Takuya KUSUNOKI, Tohru YOSHIKAWA and Ryo SANUKI, Analysis of Regional Trends in General, Long-Term Care, and Psychiatric Hospital Beds in Japan, International Conference of Asian-Pasific Planning Societies 2022, Sustainable City Regions Ⅱ, pp.205-208, 2022.

3. Others

3-2 Research Reports

Shota SHIGENAWA and Tohru YOSHIKAWA, Comparison of Travel Load between Automated Guideway Transit and Buses in Urban Areas, Reports of the City Planning Institute of Japan, Vo.21, No.1, pp.36-42, (in Japanese), 2022.

3-3 Manuals / Reviews

Tohru YOSHIKAWA, The power of a collection of the everyday use, Studies on Tama New Town, No.24, pp.91-92, (in Japanese), 2022.

Motoki TORIUMI

Masumi MATSUMOTO

Ryo SANUKI

1. Refereed Papers

1. Ryo SANUKI, Shih-Hung YANG, Kasane YUASA : A Study on the Influence of COVID-19 on Citizen's Workshop on Restructuring of Public Facilities, Papers on Property Management, Taiwan Institute of Property Management, pp.107-114, 2022.6
2. Takuya KUSUNOKI, Tohru YOSHIKAWA, Ryo SANUKI : Analysis of Regional Trends in General, Long-Term Care, and Psychiatric Beds in Hospitals in Japan's Aging Society, Internatinal conference Asian-Pacific Planning Societies 2022 (Nagasaki), 2022.8
3. Takuya KUSUNOKI, Tohru YOSHIKAWA, Ryo SANUKI : Analysis of the distribution structure of the number of hospital beds and the capacity of long-term care insurance facilities from the viewpoint of regional characteristics - Using structural equation modelling for secondary medical area throughout Japan, 5th World Planning Schools Congress (WPSC) - 16th Asian Planning Schools Association Congress, 2022.8
4. Yuki MIYAMOTO, Tohru YOSHIKAWA, Ryo SANUKI : THE ANALYSIS OF LAND USE CONVERSION TENDENCY OF FACTORIES USING LOGISTIC REGRESSION ANALYSIS - Targeting municipalities in Kanagawa Prefecture , Proceedings of the Architectural Institute of Japan, Vol.87, No,802, pp.2492-2503, 2022.12
5. Takuya KUSUNOKI, Tohru YOSHIKAWA, Ryo SANUKI : ANALYSIS OF THE DISTRIBUTION STRUCTURE OF THE NUMBER OF HOSPITAL BEDS AND THE CAPACITY OF LONG-TERM CARE INSURANCE FACILITIES FROM THE VIEWPOINT OF REGIONAL CHARACTERISTICS - Using structural equation modeling for secondary medical areas throughout Japan in 2015, Proceedings of the Architectural Institute of Japan, Vol.88, No,803, pp.212-223, 2023.1
6. Ryo SANUKI, Shih-Hung YANG : A Study on the Influences of COVID-19 and its Countermeasures on Citizens' Workshops of Public Facilities Restructuring, Journal of Property Management, Vol.14, No,1, pp.1-14, 2023.3

2. Proceedings of Oral Presentations

1. Riku Tomiyoshi, Tohru Yoshikawa, Ryo Sanuki : Analysis of User Behavior on Lawns in Public Spaces in Front of Stations - Focusing on Seating -, Summaries of technical papers of Annual Meeting, Architectural Institute of Japan, pp.745-746, 2022.7
2. Takumi Akeniwa, Tohru Yoshikawa, Ryo Sanuki : A multitemporal comparative analysis of the relationship between vacant dwellings and regional characteristics-Focusing on municipalities in Kanagawa Prefecture-, Summaries of technical papers of Annual Meeting, Architectural Institute of Japan, pp.883-884, 2022.7
3. Yusuke Ohno, Tohru Yoshikawa, Ryo Sanuki : Evaluation of the spatial landscape in front of the station focusing on the visibility of the traffic function and the plaza function -For a

suburban station in the Tokyo metropolitan area-, Summaries of technical papers of Annual Meeting, Architectural Institute of Japan, pp.1139-1140, 2022.7

3. Others

1. Sho Kadono, Akira Kinoshita, Tetsuya Mitamura, Ryo Sanuki, Katsuhiro Kobayashi : From Architectural Reincarnation to Urban Renewal - Strategies for Utilization of Existing Buildings in Overseas Cities, The Building Center of Japan, 2022.6
2. (Web magazine interview) https://jichitai.works/article/details/1550

Architectural Design and History

Masao KOIZUMI

1. Refereed Papers

Yuji IWAHASHI, Masao KOIZUMI, Keiichiro TANIGUCHI, Kaho TSUJI, " An environment-oriented house to combine passive design methods by dweller's activity as mode-chand, part1 : An evaluation of architectural elements for optimizing passive design techniques", AIJ J. Technol. Des. Vol.28, No.70, 1337-1342, Oct., 2022

2. Proceedings of Oral Presentations

3. Others

3-1.Monographs/Technical books

3-2. Research Reports

Masao KOIZUMI and others, symposium" Yokohama architectual square", Panelist, Yokohama City, 2022.11.12

Masao KOIZUMI, lecture " Sustainable Architecture and Environment", Building Maintenance & Management Center, 2022.11.16

Masao KOIZUMI and others, symposium" a square cultivated by language and body" , Zenkoku Machinaka Kenkyukai, 2022.11.25

Masao KOIZUMI, lecture “ Callenge for Environmental Architecture”, Niigata Architectural Design Cooperative, 2022.12.2

Masao KOIZUMI and others, symposium“ School buildings under decarbonization society” , Tokyo Institute of Technology, 2022.2.14

Masao KOIZUMI, lecture “ sending cheers”,
Kanagawa Prefecture Society of Architects & Building Engineers, 2023.3.25

Masao KOIZUMI and others, exhibition“Osamu IKEDA tribute exhibition”, BankART, 2022.6.14～19

Masao KOIZUMI and others, exhibition“ACY15th Anniversariy exhibition, Creators in Yokohama ”, ACY, 2022.7.21～8.1

Masao KOIZUMI and others, exhibition“HARA Hiroshi”, Agency for Cultural Affairs, 2023.1.31

3-3. Manuals/Reviews

Masao KOIZUMI and others, “ 50 years of gas and hot water - from energy conservation to energy creation”, Better Living, Center For Better Living, pp.198-199, 2022.5.1

Masao KOIZUMI, “100th Anniversary of Yokohama Public Architecture - Kotobukicho, Yokohama-shi health welfare interchange center
Municipal housing Kotobukicho sky apartment house”, The Kensetsutsushin Shimbun, p.5, 2022.5.6

Masao KOIZUMI and others, “ Architectural design methods utilizing light, heat, and air flow environment simulation”, Kenchiku gijutsu, pp.36-41, pp.54-59, pp.144-151, 2022.5.15

Masao KOIZUMI, “ 100th Anniversary of Yokohama Public Architecture – Zou-no hana Park/Terrace”, The Kensetsutsushin Shimbun, p.18, 2022.5.25

Masao KOIZUMI, “ the idea of LCCM demonstration House”, IBECs238, IBECs, pp.13-14, 2022.6.1

Masao KOIZUMI and others, “ The future of environment for health”, Kenchiku gijutsu Jul. , Kenchikugijutsu, pp.78-79, 2022.6.17

Masao KOIZUMI , “Sustainable architecture that connects people”, TAKENAKA DESIGN WORKS, Takenaka Corporation, pp.2-5, 2022.8.1

Masao KOIZUMI and others, “ Masao KOIZUMI and others, “ The Fifth Sreet furniture design competition”, recording book for Sreet furniture design competition, Sreet furniture design competition steering committee, p.7, 2022.11.1

Masao KOIZUMI and others, “ Chapter 17 : environmental housing as an object of “envy””, the house and shape of envy , Kenchiku Shiryo Kenkyusha, pp.160-181, 2022.12.10

Masao KOIZUMI and others, “environmental housing described by Exergy?”, Kenchiku gijutsu Jan. , Kenchikugijutsu, pp.136-137, 2022.12.17

Masao KOIZUMI, “Building Maintenance & Management Center : Public Buildings Month Lecture”, The Kensetsutsushin Shimbun, p.9, 2022.12.23

Masao KOIZUMI, “ 100th Anniversary of Yokohama Public Architecture - Kotobukicho, Yokohama-shi health welfare interchange center
Municipal housing Kotobukicho sky apartment house”, Kentsu Shimbun web Feb., 2023.2.1

Masao KOIZUMI, “1st SDGs Architecture Prize : Introduction of award-winning works”, IBECs245, IBECs, p.8 p.19, p.21, 2022.6.1

3-4. Works / Products, etc.

Masao KOIZUMI and others, Musashino-shi Dai-go elementary school and Inogashira elementary school, architectual design proposal, finalist, Musashino-shi, 2022.4

Masao KOIZUMI and others, Kawasaki-shi Fujimi Park, architectual design proposal,

second prize, Kawasaki-city, 2022.7

Masao KOIZUMI, Nogeyama Zoo Fureai corner, architectual design proposal, first prize, Kawasaki-city, 2022.7

Masao KOIZUMI, Negishi Forest Park toilet design competition, juror, 2022.4

Masao KOIZUMI, Shunan Park PFI competition, furor, juror, 2022.4

Masao KOIZUMI, Annual Architectural Design Commendation of the AIJ , juror, 2022.10

Masao KOIZUMI, SDGs Architecture Prize, juror, 2022.10

Masao KOIZUMI , " Exicite Yokohama 22" promotion committee , committee, Yokohama-city, 2022.4

Masao KOIZUMI , advisory board on " Supporting program of revitalization of downtown", deputy of chairperson, Japan Foundation For Regional Vitalization 2022.4

Masao KOIZUMI, Committee on study of architectural design fee, MLIT,2022.4

Masao KOIZUMI, Kanagawa Architects evaluation Committee, Kanagawa Prefecture, 2022.4

Masao KOIZUMI, BIM model project evaluating committee, MLIT, 2022.5

Masao KOIZUMI, BIM environment arrangement committee, MLIT, 2022.8

Masao KOIZUMI, WG on leading model project of BIM, MLIT, 2022.10

Masao KOIZUMI, WG on mid-small model project of BIM, MLIT, 2022.10

Masao KOIZUMI, BIM Promoting Comittee, Ministry of Land, Infrastructure, Transport and Tourism, MLIT , 2022.10

Masao KOIZUMI, ZEH road map follow up committee, Ministry of Economy, Trade and Industory, METI, 2022.10

Masao KOIZUMI, SDGs-SWH design guide study Committee, JSBC, 2022.12

Masao KOIZUMI, Public building prize Kanto District, jurors,Public Buildings Association, 2022.4

Masao KOIZUMI, working group of architectural design congress, committee, Architectural Institute of Japan (AIJ), 2022.4

Masao KOIZUMI, task force on the field of academic, art, technology, committee, AIJ, 2022.4

Yoshihiko ITO

1. Refereed Papers

- "Early Medieval Architecture in the Iberian Peninsula: A Historiography", *Journal of the Society of Architectural Historians of Japan,* no.80, March 2023.

2. Proceedings of Oral Presentations

- Yoshihiko Ito, "Churches on Expansion, Cities on Transformation: on the Construction of Gothic Cathedrals in the Iberian Peninsula and its Urban Materialization/Materiality" (Symposium *Urban Forms and Images Showcased by Materiality, Materiality of Urban Space Symposia Series vol.4,* Architectural Institute of Japan, Feb. 2023.

3. Others

3-1. Monographs / Technical books

- Yoshihiko Ito, "From Great Mosques to Cathedrals: Architectural Heritage of Islam and its Transformation in Medieval Christian Iberian Cities", in *Art in Spanish Empire: Circulations and Transformations,* Tokyo: Sangensha, 2022.

3-2. Research Reports

3-3. Manuals / Reviews

- *Encyclopedia of Islamic Culture,* Tokyo: Maruzen, 2023.01. ("Religious Facilities and Architecture (Maghreb)")
- *Encylopedia of the House of Habsburg,* Tokyo: Maruzen, 2023.01. ("Carl V's Palace in the Alhambra", "Archivo de Indias of Seville", "Plaza Mayor of Madrid")

Yoshihiko ITO, "Javier Ibáñez Fernández, Begoña Alonso Ruiz, *El cimborrio en la arquitectura hispánica medieval y moderna,"Seiyo Chusei Kenkyu,* 2022.12.

Fuminori NOUSAKU

1. Refereed Papers

2. Proceedings of Oral Presentations

"Wild Ecology" Going Public Lecture Series, KU Leuven Belgium, Online, 2022.5

"URBAN WILD ECOLOGY – Coexistence with Soil and Waste", Dean's Talk, Department of Architecture, ETH Zürich, 2022.11

"Learning Space from Kazuo Shinohara", Architekturforum Zürich, 2022.9

"URBAN WILD ECOLOGY", Chulalongkorn University, Department of Architecture, December, 2022.12

"URBAN WILD ECOLOGY", Shizuoka Prefecture Architectural Culture Research Association, 2023.2

3. Others

3-1. Monographs / Technical books

MAKE DO WITH NOW: NEW DIRECTIONS IN JAPANESE ARCHITECTURE, Swiss Architecture Museum, 2022.11

3-2. Research Reports

Saki Tamachi, "The Rhetoric of Composition in Contemporary Japanese Houses Using Traditional Wooden Construction Methods"

Kaito Tabata, “Compositional Methods of Contemporary Japanese Houses Using Traditional Wooden Construction Methods from the Viewpoint of the Legal System”

Erika Miyashita, “Compositional Characteristics of Alley with Stairs in a Residential Area with Valley Topography: A Case Study of Magome District, Ota-ku, Tokyo”

Mai Oshida, “Practice of Childcare Utilizing Urban Space in a Community Childcare Center in Tokyo”

3-3. Manuals / Reviews

Fuminori Nousaku, Norihisa Kawashima, Yoshiki Mishima, “How the architectural community perceives the subterranean environment”, “NIWA 250” pp81-83, Neuf, January 2023

Fuminori Nousaku “AERA The Face of This Year”, Asahi News Paper publishing, 2023.1

Fuminori Nousaku, “An Ecological Knowledge Intrinsic to Traditional Architecture”, Jutakutokushu 2022.9, Shinkenchikusha, 2022.9

Fuminori Nousaku, “Thinking Architecture viewed from Multi-spicies” AIJ Magazine “City is Already Wild”, AIL, 2022.5

Katsuhiro Miyamoto, Fuminori Nousaku, Midori Yamada, Yui Fushimi, Roundtable about Extension and Renovation, *Waseda University architectural design & engineering* pp.10-15, 2022

Exhibit, “Piles and Pointed Roof”, SD Review 2022, Exhibition of Wining Architectural Drawing and Models, Daikanyama Hills, Tokyo Japan: 16th – 25th September 2022

Exhibit, “Holes in the House -Urban Wild Ecology-”, MAKE DO WITH NOW: NEW DIRECTIONS IN JAPANESE ARCHITECTURE, Swiss Architecture Museum, Basel Switzerland: 13th October 2022 – 12.3 March 2023

3-4. Works / Products, etc.

Piles and Pointed Roof

SD 2022, pp.038-039, No. 20th December 2022, Kajima Institute Publishing

Shinkenchiku pp.100-107, March 2023, Shinkenchiku-sha, Japan

Werk, Bauen+Wohnen, pp.16-17, January 2023, Verlag Werk AG, Switzerland

Setouchi " " Museum

Shinkenchiku pp.108-113, March 2023, Shinkenchiku-sha, Japan

Akeno Raised Floor

Jutaku Kenchiku, pp.46-51, December 2022, Kenchikushiryoukenkyu-sha, Japan

Werk, Bauen+Wohnen, pp.12-15, January 2023, Verlag Werk AG, Switzerland

Holes in the House

Make do with Now pp.48-73, Yuma Shinohara, Andreas Ruby, Swiss Architecture Museum & Christoph Merian Verlag, 2022

3-5. International Joint Research and Education

External advisor for the habitation design studio at the Swiss Federal Institute of Technology Lausanne (EPFL)

Akira KINOSHITA

3. Others

3-3 books

KADONO Sho, Akinoshita Akira, et. Al., *from Architectural Conversion to Urban Renovation*, Building Center of Japan, 2022, May

Construction Management and Building Materials

Yoshinori KITSUTAKA

1. Refereed Papers

1) Satoshi SASAKI, Yoshinori KITSUTAKA and Yoichiro KUNIEDA: Proposal of Dynamic Test Method for Peeling of Exterior Wall Finish Tiles and Understanding of Peeling Properties, J. Struct. Constr. Eng., AIJ, Vol. 88, No.805, 356-363, 2023.3 (in Japanese)

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