

Annual Report

Department of
Architecrure and Building Engineering
Tokyo Metropolitan University

2019

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OVERVIEW OF RESEARCH ACTIVITIES

Architectural Planning / City Planning

Kenji TAKEMIYA

(1) Study on architectural planning of educational facilities

Kenji Takemiya

1) We conducted a survey on the actual usage of facilities in public elementary and junior high school integrated education schools in Tokyo in order to clarify the school management and space composition corresponding to the grade divisions [4.3.2] on the curriculum, a data collection survey, hearing survey.

2) Special Needs School In order to understand the characteristics of facilities that support employment in high schools, we visited advanced facilities in Japan and South Korea and sorted out the problems in facility planning.

3) We selected Kindergarten K, which has a unique idea and environment for learning necessary for childhood growth, as a case study field. We clarified the correspondence between the educational idea and the growth environment and the usage characteristics of the growth environment.

(2) Study on architectural planning of local community facilities

Kenji Takmeiya

1) We conducted a similar survey to the community center in Tama City, which was conducted in 2004, to clarify the changes in facility usage.

2) The transition of community facility development was clarified for Mitaka City, which has multiple community facilities with different functions.

(3) Research on welfare facilities for children, children with disabilities, and the elderly

Kenji Takemiya

1) We conducted a questionnaire survey and a site visit survey on facility operation and environmental improvement for an office that carries out small-scale, multi-functional home care in Tokyo. We summarized the planning requirements for the facility plan.

2) Regarding the childcare facilities for school children whose target grades have been expanded up to the sixth grade, we have clarified the maintenance status and facility usage status in 23 wards of Tokyo. In addition, we conducted a detailed survey on the actual usage of facilities targeting O facilities, which have a characteristic facility plan. We showed the facility planning requirements corresponding to the expansion of the target grade.

3) Targeting after-school day service offices in Tokyo, conducting a collection of materials regarding facility management and facility planning, a visit hearing survey, and a survey of the actual usage of facilities. We showed facility planning requirements and consideration for the users with disability.

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, this project deepened the method to quantify foot accessibility in consideration of inclination using GIS, applied it to the area around the Tokyo 2020 Olympic and Paralympic venues and analyzed the results.

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 year, consumer surplus and numbers of visitors as evaluation indexes of social benefit for facilities with distance decay of utilization ratio were applied to Tama New Town and removal scenarios of facilities were analyzed.

Motoki TORIUMI

Masumi MATSUMOTO

Studies on Regeneration and Revitalization of New Towns

Masumi MATSUMOTO

Tama New Town is the largest new town developed over 40 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 Minami-osawa District of Tama New Town.
- 2) Research on neighboring commercial areas of Tama New Town.
- 3) Studies on governing body of an old condominium apartment.
- 4) 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.

- 1) Research on community salons and support for senior citizen.
- 2) Research on various community activities for elderly people and their relationship with the professionals working in community comprehensive care centers.

Studies on the Positioning of Interior Design in Housing Design Processes

Masumi MATSUMOTO

Conducted hearings to architects on the design making processes relating to housing designs.

Ryo SANUKI

I am conducting urban planning and urban analysis research using city space analysis method and GIS. I'm also studying Public Facility Management with other researchers or staff from various municipalities.

Architectural Design and History

Masao KOIZUMI

- (1) Research on public space in urban area.

Masao KOIZUMI

We proposed a new urban public space on an occasion of exhibition of urban space.

- (2) Research on sustainable residential environment under aging society.

Masao KOIZUMI

We researched the planning methods of community facility based on mutual and public assistance under aging and low birth-rate society.

(3) Research on revitalization of downtown area

Masao KOIZUMI

We researched and proposed about new urban design methods, such as utilization of abandoned houses, improving contents for visitors, information transmission to local residents, on declining downtown area of local city.

Katsuhiro KOBAYASHI and Akira KINOSHITA

Analyses on Composition of Modern and Contemporary Architecture

Katsuhiro KOBAYASHI, 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 2019, from the point of “Kitsch” and “Roof-scape”, architectural works were analyzed.

Development of Architectural Design Method

Katsuhiro KOBAYASHI, 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 2019, relations between theory and design practice were pursued through four design works of master program students.

Research on Design of Architectural Conversion

Katsuhiro KOBAYASHI, 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 very useful and important. For more than 10 years, we have made research survey on architectural conversion abroad. In the academic year of 2019, we published research results of our research trip to the cities of Bangkok, Ayuthaya, Cheng-Mai (Thailand) in 2018, in *Summaries of Technical Papers of Annual Meeting, A.I.J.* We also made trips to investigate converted buildings in Shanghai in September and Ho-Chi-Min, and Hanoi in January.

Study on Landscape Architecture and City in Early Modern Period

Akira KINOSHITA

In the academic year of 2019, the geometrical composition of Sir John Vanbrugh's architectural works was examined. Although many critics and historians had placed Vanbrugh's Seaton Delaval Hall in Northampton, England as a turning point from Baroque to Neo-Classism, its geometrical composition that create dynamic impression were overlooked.

In order to analyze such aspect of the building "motion parallax", a concept of visual effect in the field of cognitive science was referred. As the result of analysis, it was clarified that certain composition creates optical illusion of movement. And the possibility of Vanbrugh's intentional manipulation of dynamic composition was inferred. And composition of reverse perspective in Seaton Delaval Hall was analyzed.

Jun INOKUMA

Construction Management and Building Materials

Yoshinori KITSUTAKA

Water Shielding Performance of Shielding Containers Made Using Heavyweight Concrete

Yoshinori KITSUTAKA

Changes in the shielding performance of shielding containers made using heavy-weight concrete with high shielding capability against radioactivity for interim storage facilities were investigated by outdoor exposure, particularly when in contact with external water. As a result, no marked difference was found in the ratios of micropores near the surface after outdoor exposure. Water permeation tests to evaluate their shielding properties revealed that their shielding performance was equivalent to that before exposure. Within the range of this study, no marked loss in the shielding performance was observed for heavy-weight concrete.

Study of Xonotlite-Based Autoclaved Lightweight Aerated Concrete

Yoshinori KITSUTAKA and Yoichiro KUNIEDA

Autoclaved lightweight concrete (ALC) is a building material with tobermorite as the major constituent mineral, and made by Portland cement, silica and lime. On account of the most striking characteristics of thermal insulation properties and fire resistance, ALC is widely used as walls, floors and roofs. Tobermorite and xonotlite are well known as typical calcium silicate hydrates, in

particular, xonotlite has long been used as a heat insulating material for high temperatures. However, it was difficult to synthesize xonotlite using cement because aluminum ions were the factor of inhibiting xonotlite formation and its crystal growth. The objective of this study is to investigate the effects of blending and casting conditions on slurry viscosity and hardening rate of ALC green cake, and to study autoclaving conditions for synthesizing xonotlite. Water content ratio is directly related to slurry viscosity and hardening rate of ALC green cake. The compressive strength of xonotlite-based ALC increases as the density increases, however, its effect is smaller than tobermorite-based ALC.

Study of Effects of Deformational Performance Caused by Thermal Fluctuation on Delamination of Exterior Tiles

Yoshinori KITSUTAKA and Yoichiro KUNIEDA

According to the increase of human density in urban area, building has become high-raised. Exterior tiles tend to be applied due to high durability and excellence in designability. The risk of delamination and falling is to be especially concerned if applied to high-raised building in which degradation of adherence can be caused by deformation between external tiles and framework mortar with environment (e.g. earthquake, building wind and thermal change). In this study, the effects of deformational performance caused by thermal fluctuation were focused. With 4D simulation of thermal analysis, the deformation of external tiles was estimated according to the thermal change of façade. Tension-compression fatigue test was applied to clarify the influence of the deformation between tile and mortar on the tile's adherence.

Proposal of Noise Evaluation Method for Reducing Environment Impact of Building Demolition

Yoichiro KUNIEDA and Yoshinori KITSUTAKA

There is still high demand for building demolition in urban area after 30years from a construction boom in Japan. Building demolition can be suspended when neighbors claimed to a government because of the noise and the vibration. In order to estimate the demolition impact on neighbors at planning phase, the evaluation method for demolition impact for both mental and physical was suggested in this study. Based on the onsite demolition data, the uniqueness of noise in each demolition process and the reduction of noise volume with distance were found. The impact of demolition was able to be calculated as the score with suggested formula in which physical and mental index were applied.

Makoto TSUNODA

Studies on Production and Supply Process of Wooden Public Buildings

Makoto TSUNODA

In our country, an artificial plantation by the postwar planting has greeted time of the felling. Therefore, the effective inflection of resources has been demanded for maintenance of the forest. An action to the wood utilization in the public building has increased in the local government. However, procurement of a large quantity of wood is not often enough to need a period for processes such as drying or the sawing from felling of the wood. In the public building utilizing a large quantity of wood, the cooperation system which can cope with the placement of the expert talented person who was familiar with the wood circulation and a problem and limitation of the wood characteristic quickly will be indispensable in future.

In this year, About the present conditions and a problem of the domestic lumber use, the correspondence of each local government is grasped and has identified possibility of the cooperation of wood consumers as wood suppliers. In addition, the laborer who performed stable wood supply was investigated and arranged each business every duties process. And duties content about the wood procurement has been clarified. Furthermore, the cooperation system technique between each main constituent was shown. A person of ordering needs ability for different adjustment conventionally. A designer needs ability for ordering that assumed a wood amount change. The builder showed that a management capability including wood quality improvement was necessary.

Research on the method of renovating detached houses to improve comprehensive performance

Makoto TSUNODA

Housing renovation technology plays an effective role in improving various performances required by residents. However, there are many restrictive refurbishment actions that only improve unit performance, not leading to an increase in the value of existing homes. In order to build used residential market, it is necessary to develop comprehensive renovation technology that can cope with improvement of required performance of various living conditions. This research aims to construct a comprehensive renovation system to support residents from the elucidation of the mutual relationship between the technologies of used housing renovation process.

In this year, problems in the construction of the window installation in DIY in the lease house were clarified. And the way of thinking of the building method according to the part that was effective for a continuous use was shown.

Research on How to Configure the Renovation Construction Methods Corresponding to the Building Stock

Makoto TSUNODA

Although we were supported by using the formulas of the various construction system for performance was required in new construction, there is a completely different conditions in terms of

new construction and renovation that are present in a pre-existing condition. And that the work of the components to the contents of the construction methods in new construction is not seen to reflect. Therefore, there is some relationship between the role of members in the construction methods and improved performance as a result of each repair. In the renovation, it is considered that the contents of the construction system are particularly reflected in the constituent members to direct.

In this year, aging by the difference in constitution method that was not able rainy of the edge of the eaves of the wooden roof housing was grasped. The principle of an effective settlement method was clarified for the durability. In addition, in a building reproduction example of the non-building a house, it was clarified about the influence that the change of the planning gave in facade design.

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

Makoto TSUNODA

It is not unusual for an available building to be removed for some reason. As a removal reason, completion original performance cannot maintain and use of building changes. There are various things in reproduction technique to resolve these situations. So far to improve the property values when we extend the life of an existing building, maintenance and improvement of various performances and addition of the new performance that does not hold it are required. Similarly, to improve the utility value, physical changes of the building it and the function changes such as the usage of building are required. These two value improvement does not become independent each, and renovation program of the building should be drafted after having considered the trade-off of both. Various renovation techniques are seen in today, but the technique that included plural value improvement to advance building renovation of building are the urgent need.

In this year, the actual situation kept the dwelling unit repair contents by the old resident under control from a drawing before and after the repair and clarified the quantity of repair work contents. For the management agreement and repair detailed rules of four condominiums, rule contents about the dwelling unit repair were elucidated. Repair detailed rules about the dwelling unit repair have been established in all management agreements. Furthermore, there are a necessary procedure and notice matter in constructing it. Particularly, it was made clear that the construction contents which needed board of directors approval had been listed.

In addition, we arrived at the way of the information sharing method with a designer and the building owner about repair technique in spite of being the messenger in much lease apartment houses of the vacancy.

Yoichiro KUNIEDA

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demolition process and the reduction of noise volume with distance were found. The impact of demolition was able to be calculated as the score with suggested formula in which physical and mental index were applied.

Structural Engineering

Kazuhiro KITAYAMA

1. Axial Collapse Mechanism for Reinforced Concrete Corner Column-Beam 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. There are, however abroad, many buildings suffering from 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 failure.

A concept of the joint-hinging failure at a R/C beam-column joint was proposed by Shiohara in 2008. While laboratory tests were begun to investigate the mechanism in detail, a process leading to axial failure from joint-hinging failure in a beam-column joint is not studied except for a few studies such as horizontal load reversal tests to plane exterior beam-column subassembly specimens under varying axial load (Murakami and Maeda et al. 2017). Actual buildings are subjected to three-directional excitations during an earthquake. A laboratory test was conducted to simulate such actual conditions using a three-dimensional (3D) corner column-beam subassembly specimen with code-satisfied joint hoops subjected to horizontal bi-directional loads and constant axial load (Katae and Kitayama 2015). In the test, buckling of column longitudinal bars in a beam-column joint region was indicative of joint axial failure. Hassan and Moehle in 2012 and 2013 investigated the limit drift of a R/C frame reaching joint axial failure.

This study, therefore, aims to reveal a mechanism leading to joint axial failure from

joint-hinging failure in R/C frames under three-directional earthquake excitations, and estimate the limit drift capacity at joint axial failure for the building. Three 3D corner column-beam subassemblage specimens were loaded statically under horizontal bi-directional load reversals and varying axial force, accompanied by one plane exterior beam-column subassemblage specimen for comparison. A loading history for varying column axial force and an amount of joint lateral hoops (a beam-column joint hoop ratio of 0.27% or 0.61%) were chosen as test parameters. A column-to-beam ultimate flexural capacity ratio was designed to be approximately 1.1 in the tensile loading of the column, and approximately 2.1 in the compressive loading of the column with a compressive axial stress ratio of 0.13 at the upper column in order to cause joint-hinging failure under the tensile loading of the column. Concrete compressive strength was 66.3 MPa.

All specimens reached the peak lateral capacity due to joint-hinging failure at a story drift angle of 1% to 2%, and thereafter the lateral-load-carrying capacity descended. During this lateral load descending branch, a column axial force was sustained up to a story drift angle of 5% for a plane beam-column joint. In contrast, 3D corner joints subjected to tri-directional loading were not able to sustain a column axial force because of remarkable crushing of joint core concrete, pull-out of a 135-degree hook of joint lateral hoops due to dilation of joint concrete, and buckling of column longitudinal bars in the beam-column joint, resulted in joint axial failure at a story drift angle of 3% to 4%. Increase in an amount of joint lateral hoops to twice promoted ductile drift capacity with a delay of joint axial failure. Measured both strain history in column longitudinal bars within a beam-column joint and local deformation of the joint exhibited that buckling of column bars in a joint caused abrupt rotation of an upper column relative to a lower column, leading to axial failure of the beam-column joint.

2. Evaluation of Ultimate Deformation Capacity at Shell Concrete Crushing for R/C Beam

KITAYAMA Kazuhiro

It is necessary for performance-based seismic design to reinforced concrete (R/C) buildings that beam ultimate deformation capacity at the onset of shell concrete crushing after flexural yielding, almost corresponding to reaching a peak strength, can be estimated with a good accuracy. Therefore, three cruciform beam-column subassemblage specimens were tested by Wang and Kitayama (2010). Suzuki and Kitayama (2013) proposed a new method to evaluate beam ultimate deformation capacity at shell concrete crushing based on the test results. However, it was difficult to verify adequacy of the proposed method since only a few specimens were used.

Then, reversed cyclic loading tests of two cruciform beam-column subassemblage specimens were conducted in 2019. Bond condition along beam bars within a beam-column joint was chosen as a test parameter by changing beam bar yielding strength from Grade SD345 (normal-strength) to USD590B (high-strength). Concrete compressive strength was 54 MPa.

After beam longitudinal bars yielded for both specimens, the peak strength was attained by concrete compressive failure at beam ends. Shell concrete crushed at the beam ends at a beam deflection angle of 1.3% to 2.3% or 1.4% to 1.8% for the specimen with normal-strength or high-strength longitudinal bars respectively, being almost equivalent to each other. In contrast, a ductility factor when crushing of beam shell concrete occurred was 3.2 to 4.9 for the specimen with normal-strength longitudinal bars, and 1.4 to 1.8 for high-strength longitudinal bars respectively; the former was 2.5 times greater than the latter.

Using above-mentioned and past test results, measured beam deflection was resolved into four components as follows; A) shear deformation within a hinge region at a beam end, B) deformation derived from an additional rotation at a column face due to slip of beam longitudinal bars at a center of a beam-column joint, C) deformation derived from a rotation at a column face due to pull-out of beam bars from both a joint and a beam hinge region, assuming here that total amount of beam bar elongation from a center of a joint to the outer face of a beam hinge region concentrates on a column face, and D) elastic flexural deformation in a beam region outside of a plastic hinge.

The contribution ratio of these components to beam deflection was evaluated from beam bar yielding to shell concrete crushing for the specimens. The component C) shared 35 to 67 percent of the beam deflection for all specimens, which was greatest among four components. The contribution ratio of the component B), which is attributed to beam bar slip at a joint center, was only 5 percent approximately when beam bar bond within a joint was kept good, whereas ranged from 17 to 35 percent with poor bond along beam bars within a joint.

In order to predict beam ultimate deformation capacity at shell concrete crushing by the summation of the four components, strain distribution along a beam bar within a beam-column joint and an amount of beam bar slip at a joint center are needed. Then, both methods to evaluate the strain distribution and predict the amount of beam bar slip were empirically proposed referring to Suzuki and Kitayama (2013). The proposed method can predict beam ultimate deformation capacity at shell concrete crushing measured by the tests with a good accuracy.

3. Evaluation of Ultimate Deformation Capacity for Beam in Precast Prestressed Concrete Frame Assembled by Post-Tensioning Unbonded Tendons

KITAYAMA Kazuhiro and Jin Kiwoong (Meiji University)

To build moment resisting frames, there is a promising construction method that precast concrete beams and columns are connected by post-tensioning unbonded tendons which pass through these members (called unbonded PCaPC frames). Flexural ultimate strength and deflection of a beam in an unbonded PCaPC cruciform unit frame can be predicted with a good accuracy using a macro-model proposed by Song, Jin and Kitayama (2016) under the condition that flexural ultimate strength of the beam is attained by concrete compressive failure at beam ends without

yielding of tendons.

In this study, a simple method was proposed by multi-regression analyses to evaluate a tensile stress of unbonded tendons and beam deflection at flexural ultimate strength of the unbonded PCaPC beam. Parametric analyses were conducted using the above-mentioned macro-model in 17,280 cases with a variation of a beam depth, concrete compressive strength, a beam span length, and yield strength and initial prestressed force level for tendons. An ultimate state in flexure was defined as when reaching concrete strain of 0.003 at an extreme compressive fiber of the beam section at a beam-column interface.

These parametric analyses indicated that a ratio of an effective prestressed force in tendons to a product of a beam sectional area and concrete compressive strength, called a tendon-ratio hereafter, has a great influence on a tensile stress of tendons and beam deflection at the ultimate state; where an effective prestressed force is defined as a reduced force due to concrete shrinkage induced by dry action and relaxation of a tendon force from an initial force introduced to the tendon. A tensile stress of unbonded tendons at the ultimate state was predicted by an empirical equation formulated through multi-regression analyses taking into account whether tendons remain elastic or exceed elastic limitation. The proposed equation can be used limitedly when a tendon-ratio does not exceed 0.29. Ultimate deformation capacity for unbonded PCaPC beams was also evaluated by an empirical equation with a variation of both a tendon-ratio and a shear-span ratio for the beam, where the beam shear-span ratio ranges from 1.7 to 11.9. These proposed equations can reproduce test results for five specimens conducted by Kitayama Laboratory with a relatively good accuracy.

4. Hinge Relocation of Beams and Prevention of Joint Hinging Failure in Reinforced Concrete Frame using Partially High-Strengthened Steel Bars

KITAYAMA Kazuhiro, KISHIDA Shinji (Shibaura Institute of Technology) and MURATA Yoshiyuki (NETSUREN Co. Ltd.)

Partially high-strengthened steel (called PHS) bars are made by heat treatment to its limited length. The potential plastic hinge regions of beams in a reinforced concrete (R/C) frame can be located away from the column face (called a hinge relocation) by using PHS bars as beam longitudinal reinforcement which passes through a beam-column joint. Kishida and Fukuyama showed in 2016 that this construction technique was able to mitigate damage to a beam-column joint and prevent it from failing in joint hinging.

The beam hinge relocation using PHS bars as longitudinal reinforcement, however, was not well performed, resulting in damage concentration to a beam-column joint for many beam-column subassemblage specimens tested in 2017 and 2018. Therefore, in the 2019 academic year, arrangement of beam longitudinal bars and joint lateral hoops were elaborated as explained below so as to perform a good hinge relocation of beams.

In the 2019 academic year, eight plane beam-column subassembly specimens were designed and tested; seven specimens were made of cast-in-place concrete (three interior joints and four exterior joints) and one interior joint specimen was constructed by a precast method. Test parameters were yield strength of joint lateral hoops (normal-strength of 347 MPa and high-strength of 1257 MPa), none or existence of a second layer for beam longitudinal bar arrangement at a top and bottom of the beam section, a sectional-area amount of beam longitudinal bars in the second layer, none or existence of column intermediate longitudinal bars in an exterior joint, and constant or varying column axial load for an exterior joint. Interior joint specimens did not have column intermediate longitudinal bars. The relocation of potential plastic hinge in beams was designed to be at 400 mm, which was equal to a beam depth, away from the column face. A column-to-beam ultimate capacity ratio of about 2 for interior joint specimens and 2.4 to 3.4 for exterior joint specimens was provided to prevent joint-hinging failure. Six lateral hoops with a diameter of 6 mm and yield strength of 347 MPa, corresponding to a joint reinforcement ratio of 0.39%, or five lateral hoops with a diameter of 7.1 mm and yield strength of 1257 MPa, corresponding to a joint reinforcement ratio of 0.37%, were arranged in a beam-column joint. Concrete compressive strength ranged from 36 MPa to 46 MPa.

Test results for interior joint specimens are described below. Beam longitudinal bars yielded at an expected region to form a relocated hinge at a story drift angle of 1.1% to 1.4% for specimens with a single layer of beam bars and high-strength joint hoops. Joint hoops yielded after reaching peak lateral-load-carrying capacity. For specimens with a second layer of beam bars and normal-strength joint hoops, joint hoops yielded at a story drift angle of 0.8%, and beam longitudinal bars placed at both a first and second layer yielded at a relocated hinge region as expected at a story drift angle of 1.3% to 1.5%. All interior joint specimens reached the peak strength at a story drift angle of 4% approximately, showing remarkable damage to concrete at the hinge relocation region accompanied by a wide opening of flexural and shear cracks. Hysteresis characteristics under reversed cyclic loading resulted in a fat spindle shape which can dissipate much energy induced during earthquake excitations. Lateral-load-carrying capacity was kept almost constant even after the peak strength. Column longitudinal bars remained elastic for all specimens.

An expected beam hinge relocation was well performed for these specimens, and damage to a beam-column joint was mitigated remarkably. Beam longitudinal bars placed at a second layer in a top and bottom of the beam section, which crossed joint diagonal cracks, seemed to contribute to preventing those cracks from opening widely. The mechanism, however, should be studied in detail.

Test results for exterior joint specimens were almost similar to those for interior specimens, developing a good hinge relocation. Column intermediate longitudinal bars played an important role to confine an expansion of concrete within a beam-column joint and reduced a joint deformation.

5. Earthquake Resistant Performance of Reinforced Concrete Building Damaged by the 2011 East Japan Earthquake under Retrofit Construction

KITAYAMA Kazuhiro

A reinforced concrete (R/C) three-story school building located at Nasu town in Tochigi prefecture, which was under construction for seismic rehabilitation using steel-braced frames, suffered moderate damage under the 2011 East Japan Earthquake. A longitudinal length of the building is 108 meters. The first term construction for seismic retrofit to an east half of the building was completed but the second term construction had not yet been conducted when the 2011 Earthquake attacked the building. Damage concentrated on a non-retrofitted area of the building during the earthquake; three R/C columns failed in shear and severe shear cracks classified as Grade 3 were observed for four columns.

Residual seismic capacity after the earthquake was estimated to be 0.77 times the original seismic capacity before the earthquake for the first story in the longitudinal direction. Thus the damage of the building was classified into the moderate level. In contrast, residual seismic capacity to only a non-retrofitted area of the building was re-estimated to be 0.59 times the original seismic capacity, judged to be the heavy damage level.

Non-linear earthquake response analyses were carried out for spatial moment-resisting frames of the school building subjected to tri-directional earthquake motions to investigate the reason why damages concentrated on a non-retrofitted area of the building. An in-plane shear distortion of R/C floor slabs caused by diagonal shear cracks was considered in the analysis to reproduce a difference in the lateral drift between a retrofitted and non-retrofitted area of the building. To model this shear-deformable floor, a floor slab was replaced with two diagonal braces with an elasto-plastic axial spring in a horizontal plane, which can express the restoring force characteristics similar to R/C shear walls.

Shear walls with an opening in the transverse direction were modeled as not a monolithic wall, but an assembly consisting of a column with a long wing-wall and an isolated column, placing multi-springs at a top and bottom of respective columns. Tri-directional earthquake motions with a peak acceleration of 475 gal in the east-west direction, corresponding to the longitudinal direction of the building, 925 gal in the north-south direction and 229 gal in the vertical direction were input to the building. These earthquake motions were obtained at a Nasu City hall adjacent to the school.

Shear failure of first story columns and shear middle damage to columns were traced by the analysis to the building with deformable floor slabs to in-plane shear. A first-story response drift in a non-retrofitted area in the longitudinal direction was greater than that in a retrofitted area, whose difference exceeded 10 mm. This caused remarkable shear damage to columns located at a non-retrofitted area. In-plane shear stiffness of floor slabs decreased in the analysis due to shear cracks in a non-retrofitted area, whereas floor slabs behaved elastically in a retrofitted area. Such an

analysis was able to reproduce concentration of earthquake damage to a non-retrofitted area.

A collapse mechanism of frames in the transverse direction obtained by the analysis was almost consistent with actual damage to those frames. Damage to shear walls with an opening set for a corridor at a north side of the building, however, was overestimated by the analysis.

6. Earthquake Damage and Response Analysis to Prestressed Reinforced Concrete Building Designed Based on Current Building Code in Japan

KITAYAMA Kazuhiro

Building Standard Law in Japan was revised to the present form in 1980 and was enforced from 1981. A reinforced concrete (R/C) building suffered middle damage under the 2011 East Japan Earthquake although the building was designed according to the current seismic code in Japan. Therefore, a push-over and earthquake response analyses were carried out to the building to investigate the reason of such earthquake damage.

The building with four stories, which was built at 1984 and used for a junior-high school, is located at Sendai City attacked by the 2011 Earthquake with a JMA seismic intensity scale of 6(-). The building consists of R/C frames having shear walls with twelve bays of a span length of 4.5 m in the longitudinal direction, whereas many long beams with a span length of 18.4 m were made of prestressed cast-in-place concrete with steel reinforcement (called PRC) in the transverse direction. Shear walls in the transverse direction were less placed because partitions between class-rooms were made of not reinforced concrete, but thin steel plates. The building is supported by a spread foundation mounted on unreinforced concrete slabs with a depth of 4 m. The building has a void space over the full height at a center of the north side. A staircase building adjacent to the void was separated from the class-room building by a seismic joint.

Typical columns have rectangular sections with a depth of 750 mm and a width of 900 mm to the longitudinal direction, passing through a first to fourth story with the same section, and arranging eighteen longitudinal bars with a 25 mm diameter and four shear-reinforcing bars with a 13 mm diameter at a center-to-center distance of 100 mm in a first story. All PRC beams with an 18.4 m span have a common section with a depth of 950 mm and a width of 600 mm at beam ends and 450 mm at a beam center. A PRC beam contained respective four longitudinal steel bars with a 25 mm diameter at a top and bottom of the beam section at both ends, and seven post-tensioning strands, where each strand consists of nine bundles made by twisting seven steel strings with a 9.3 mm diameter. Two shear-reinforcing bars with a 13 mm diameter were placed as stirrups at a center-to-center distance of 150 mm at beam ends and 250 mm at a beam center.

The building suffered damages by the 2011 Earthquake as expressed below; flexural cracks classified into Grade 2 occurred for both an end and a center of beams for all stories in the longitudinal direction. Spall-off of shell concrete at beam ends and shear cracks at a beam hinge

region were also observed. A shear wall, having a thickness of 150 mm, with an opening at the second story failed in shear in the longitudinal direction. Slight hair cracks due to flexure and shear occurred in many columns at the first and second stories.

R/C non-structural walls suffered severe damage by shear, resulting in spall-off of concrete and buckling of vertical bars. Although a partial slit was placed between a column or a wing-wall and a spandrel wall at the first story of a north frame, the gap length of the slit was quite small or none. Then, spall-off of shell concrete occurred due to a pounding of the both members, and some longitudinal bars of a wing-wall were exposed. R/C beams with a 500 mm depth and a 300 mm width in inside frames in the longitudinal direction vibrated up and down with orthogonal PRC beams, resulting in a pounding between those beams and partition walls. There was no significant damage for beams, columns and shear walls in the transverse direction, which suffered from slight flexural or shear cracks classified into Grade 1.

Residual seismic capacity after the earthquake was estimated to descend to 0.69 times an original seismic capacity before the earthquake for the second story in the longitudinal direction, classified into the intermediate damage level.

Static push-over analysis with incremental lateral loads and Non-linear earthquake response analysis were conducted to three-dimensional frames in the study using the software called SNAP. A PRC beam was divided into five parts where an inelastic rotational spring was placed at both ends of a respective part since post-tensioning strands were placed in a curved line along the PRC beam.

From the push-over analysis using an Ai-type lateral-load distribution provided to each of floors, a base-shear coefficient was 0.64 for the longitudinal direction and 0.82 for the transverse direction at a first story drift angle of 2%. Flexural cracks occurred at a center of PRC beams, but yielding did not occur for PRC beams.

Shear failure of a R/C shear wall with an opening in the second story and non-structural walls was reproduced by the earthquake response analysis inputting bi-lateral earthquake accelerations measured at K-NET Sendai Observatory. Flexural cracks occurred at a center of PRC beams for the analysis, whereas actual PRC beams had no significant damage. Shear walls at both ends of the building and short connecting beams located between multi-story dual walls failed in shear for the analysis. This was, however, not consistent with an actual situation that these members suffered no damage by the earthquake.

Jiro TAKAGI

Toshikazu KABEYASAWA

A study on damage of reinforced concrete column reinforced with SRF sheet

Static loading tests were conducted on four column specimens designed by the recent building code for reinforced concrete buildings. The test specimens have normal strength or high strength. SRF fiber reinforced sheet was applied in order to reduce the damage of columns. The concrete compression cracking occurs in high-strength test specimens due to large axial force, and It was clarified experimentally that SRF sheet covers this damage.

A study on allowable inundation depth of existing tsunami evacuation building

Based on the design guidelines for evacuation facilities designated by the tsunami after the Great East Japan Earthquake, A visible sheet has been invented that can derive the inundation depth that gives the minimum value when the building collapse, overturns and drifts. Based on the building information of the existing tsunami evacuation buildings given by the local government, the accuracy of this method was examined and the validity of the decision table was confirmed.

A study on slab cooperation width of reinforced concrete three-dimensional frame

It proposes a formula to roughly estimate the slab cooperation width of T-shape beam according to the deformation drift by calculating out-of-plane bending deformation and torsional deformation of the orthogonal beam attached to the floor slab. The slab cooperation width with respect to the deformation in the proposed model was compared with that in the past assemble frame tests. It confirms that the analytical results are consistent with the test results.

A study on the pile moment reduction in the base-sliding building

In a building with base-sliding drift, the reduction of the pile moment under the concrete base is evaluated in the analysis. The soil-structure interaction system was idealized by a modified Penzien model. The earthquake response analysis was carried out with the number of floors, ground soil type, and the friction coefficient of the base slides as variables. It was clarified that the pile moment was greatly reduced according to the friction coefficient.

Noriko TAKIYAMA

Restoring Force Estimation of Fitting-Type Joint of Japanese Traditional Wooden Structure Based on Full-scale Loading Test

Noriko TAKIYAMA

According to regional characteristics and cultural differences, there are various specifications in SASHIGAMOI joint in Japan. In the limit strength calculation which is one of calculation methods used in the seismic performance evaluation of traditional wooden residents, the shear forces of all earthquake resistant elements are simply added and the restoring force is given for each seismic element without

considering the different detail of SASHIGAMOI joint. In past study, to figure out the fracture mode and the restoring force characteristic, we performed cyclic loading test on 4 specimens with same external dimension method but different joint shape. Moreover, we also aimed to construct the evaluation formula to estimate the restoring force and compare with results of experiment. From last year, to simulate the experiment, we modeled the specimens, and compared the results of simulation with the experiment to investigate the accuracy of the simulation. In this year, we also tried to estimate the restoring force of wooden frame by the proposed estimation method.

Verification Experiment on Reinforcement Method by Aramid Fiber Sheet for Column Base of Existing Wooden House

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. From last year, we have kept to conduct the loading test of full-scale frame, to understand seismic property of frame.

Seismic Property of Traditional Wooden House in IPDGHB, Fukushima

Noriko TAKIYAMA

The Ouchi-Juku and Maesawa district of the inland Fukushima prefecture, which was registered as an IPDGHB (Important Preservation District for Groups of Historic Buildings), contains many traditional thatched houses. A low-five-intensity earthquake on the Japanese seven-stage seismic scale was recorded near these preservation district; nevertheless, none of the thatched houses suffered any damage. Hence, it is very important to understand their construction and structural characteristics. The purpose of this study was to analyze the structural and vibration characteristics of a thatched house in Ouchi-Juku and Maesawa district. From last year, we also investigate the mud-wall townhouses in Kitakata city.

Kazushige YAMAMURA

Environmental Engineering

Nobuyuki SUNAGA

Research on Comfortable Bioclimatic Architecture

For the benefit of preserving global environment, the effective use of energy consumed in architecture and the utilization of natural energy are indispensable factors for architectural design. Furthermore, it is needed to popularize Zero Energy Building (ZEB) and Bioclimatic Architecture (BA) which is designed by considering energy conservation, natural energy utilization and comfortable environment, and it is necessary to clarify the actual performance of ZEB and BA. We have been engaged in the research of these themes, and, in recent years, we concentrate on building stock improvement and residents' energy-saving awareness and behavior.

In this academic year (2019/04 – 2020/03), we mainly carried out following studies and activities.

1. Relationship between Thermal Insulation Performance and Life Quality [Collaboration with Project Researcher Hiroko Onodera]

When the thermal insulation performance of residence leaps to the highest level, it is considered the comfortableness of residents is improved and the residents' behavior and awareness will be changed. This research examines the effect of high-level thermal insulation by actual measurement, evaluating experiment, questionnaire survey and Web survey, collaborating with Asahi Kasei Construction Materials Corporation.

In this academic year, we examined the relax of residents by new Web surbey and made the draft of an enlightenment book about the high thermal insulation of residence. This book will be published at the end of May, 2020.

2. Refinement of Residential Building on the Theme of Environmental Performance Improvement [Collaboration with Project Researcher Hiroko Onodera]

We have been studying about this theme, for example, Insulated Door at Inside of Window (IDiW), a Japanese wooden house refine project 2011 and so on. In this academic year, we carried out a simulation study about the effect of the partial thermal insulation improvement of wooden detached house with considering its cost.

3. Residents' awareness about heatstroke dangerness [Collaboration with Project Researcher Hiroko Onodera]

We have been conducting the indoor climate measurement and the questionnaire survey for residents' awareness about heatstroke dangerness since 2017, at Okinawa, Kochi and Tokyo. In this academic year we carried out the measurement and questionnaire survey at Niigata and Hokkaido.

As the results, we show the residents' awareness about the heatstroke dangerousness is lower than the actual dangerousness, the dangerousness is different by climate condition and so on.

4. Improvement of Thermal Environment at the Outside Space of Architecture and Urban Quarter [Collaboration with a former Assistant Professor, Eiko Kumakura]

We have been conducting the analysis about the thermal environment of Marathon course area at the 2020 Tokyo Olympics. In this academic year, we examined about the performance of special pavements and carried out a simulation analysis about the thermal environment of Tokyo Marathon course and newly announced Sapporo course.

5. The Effect of Green in Residential Area and the Residents' Awareness [Collaboration with a former Assistant Professor, Eiko Kumakura]

We studied the outside thermal environment which has much green and a soil pass way in a residential area and the awareness of residents at five years ago. In this year we examine the effect of growth of the green by measurement and questionnaire survey.

6. The appropriate area by the combination of the color temperature and the illuminance for actions in residence

In this study, we carried out a literature research and a subject examination using actual room about the lighting condition in residence. As a result, we illustrated the appropriate area combined the color temperature and the illuminance for residents' action.

7. Other outcome, social contribution and award

1) N. Sunaga is played as **the President of Japan Solar Energy Society** and as a member of committee in AIJ and so on.

2) N. Sunaga is played as a member of committees of Tokyo Metropolitan Government, Mizuho town in Tokyo and Environmentally Symbiotic Housing Promotion Council.

3) Mr. Yuichiro Tanaka selected **the Student Encouragement Prize 2019 of Japan Solar Energy Society**.

4) Mrs. Hiroko Onodera and Miss Risa Kawakami were presented **the doctoral degree**.

Akihiro NAGATA

A Study on the Performance of Shut-Off of Heat and Air Flow of Air Curtain

Akihiro NAGATA

We performed 1/10 scale model experiments and CFD simulations in order to clarify the shut-off

performance of nonuniform air curtain (AC) flows.;

- 1) Non-uniform AC, which has increased edge wind speed is more effective than uniform AC, and the effect is greater at the blowing wind speed than at the blowing length under small pressure difference.
- 2) We propose a simple approximation of the shut-off performance of non-uniform AC flows by steady-state analysis.
- 3) The shut-off performance of AC can be improved by controlling the distribution of the blowing speed according to the timing of the passage of persons.

A Study on Induction Ventilation through Openings

Akihiro NAGATA

1/2 Scale Model Experiments and Performance Evaluation of Induction Ventilation Devices were conducted.

Masayuki ICHINOSE

- (1) Practical study on the building façade and building system for improving solar/energy budget in the urban environment
- (2) Architectural and urban study on the sustainable built environment
- (3) Performance verification of a combination HVAC system utilizing exhaust heat recovery in through-wall units
- (4) Climate Adaption Technology and Evaluation Method for Green Building Components in Asia
- (5) Survey for building energy base-line in ASEAN
- (6) Improvement of built environment in the metropolis in Asia

LIST OF RESEARCH ACTIVITIES

Architectural Planning / City Planning

Kenji TAKEMIYA

1. *Refereed Papers*

Bae Minjung, Takemiya Kenji, Fujiwara Yuki

Usefulness of the new layout at Center K -Comparative analysis of actual facility usage in the transition from a facility for children with motional disabilities to a medical-type facility for children with disabilities-

International Journal of Japan Architectural Review for Engineering and Design, Vol.2, No.4, pp.507-521, May 29, 2019

Bae Minjung, Takemiya Kenji

Research on the Trend of Welfare of Children with Disabilities and Facility Reorganization in Japan
Korea Institute of Healthcare Architecture, Vol.25, No.2, pp.67-74, 2019.9

Tsushima Takehumi, Takemiya Kenji

Research on facility planning of medical centers for dementia, Actual condition analysis of management and planning in designated medical institutions

AIJ J. Technol. Des. Vol. 26, No.62, 233-238, Feb., 2020

2. *Proceedings of Oral Presentations*

IRIE Miharū, TAKEMIYA Kenji

Utilization analysis of the community centers in Musashino City

Summaries of technical papers of annual meeting E-1, AIJ, pp.5-6, 2019 (in Japanese)

TAWARA Shihomi, TAKEMIYA Kenji

Study on the facility operation and utilization characteristics of the facilities for the elderly independent people -Targeting the Musashino City Tenmillion House Business-

Summaries of technical papers of annual meeting E-1, AIJ, pp.161-162, 2019 (in Japanese)

Bae Minjung, TAKEMIYA Kenji

Analysis on actual use of children by room type in which children are arranged at the medical-type facility K for children with disabilities

Summaries of technical papers of annual meeting E-1, AIJ, pp.211-212, 2019 (in Japanese)

ASAI Haruka , TAKEMIYA Kenji

Current condition and change of the facility planning of neonatal intensive care units

Summaries of technical papers of annual meeting E-1, AIJ, pp.253-254, 2019 (in Japanese)

ICHIKURA Kenta, SHIMADA Koki,WATANABE Reina, TAKEMIYA Kenji

A study on how to be used the conference room and the training room

- Characteristic of the staff area located between wards of cancer center O (Part1) -

Summaries of technical papers of annual meeting E-1, AIJ, pp.259-260, 2019 (in Japanese)

SHIMADA Koki, ICHIKURA Kenta, WATANABE Reina, TAKEMIYA Kenji

Utilization analysis of the open space and the staff stairs

- Characteristic of the staff area located between wards of cancer center O (Part2) -

Summaries of technical papers of annual meeting E-1, AIJ, pp.261-262, 2019 (in Japanese)

SEO Seokjun, TAKEMIYA Kenji

Research on the planning of day service facilities for The elderly with Independence -Analysis of the current state of facility management and planning of day service(type A) in Tokyo-

Summaries of technical papers of annual meeting E-1, AIJ, pp.143-144, 2019 (in Japanese)

TAKEMIYA Kenji, TSUSHIMA Takafumi

Research on facility planning of medical centers for dementia -Actual condition analysis of management and facility planning in designated medical institutions-

Summaries of technical papers of annual meeting E-1, AIJ, pp.235-236, 2019 (in Japanese)

ABE Hikaru, TAKEMIYA Kenji

Consideration about the Planning and the Way of Using Rooms of Day Care Units for Psychiatric Patients, - Study on the Improvement of the Living Environment in Day Care Units for Psychiatric Patients Part 2 -

Summaries of technical papers of annual meeting E-1, AIJ, pp.237-238, 2019 (in Japanese)

ODA Koji, TAKEMIYA Kenji

A research on the popularization of palliative care unit in Japan

Summaries of technical papers of annual meeting E-1, AIJ, pp.255-256, 2019 (in Japanese)

Tohru YOSHIKAWA

1. *Refereed Papers*

Hidetsugu SAKODA, Tohru YOSHIKAWA, Ryo SANUKI, Relationship between Anxiety and Location Confirmation by Mobile Devices during Route Searches in Urban Spaces-Empirical Study by Application of Protocol Analysis-, Urban and Regional Planning Review, Vol.6, pp.96-110, 2019.

2. *Proceedings of Oral Presentations*

Tohru YOSHIKAWA, Comparison of the Indexes to Evaluate Buildings for Public Facilities with Distance Decay of the Utilization Ratio in Sequential Building Removal Process, Conference Proceedings, 2019 Asian Conference of Management Science & Applications (ACMSA 2019), pp.311-313, 2019.

Tohru YOSHIKAWA, Comparison of the indexes to evaluate buildings for public facilities with distance decay of the utilization ratio based on a real city, Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, F-1, pp.417-418, (in Japanese), 2019.

Tohru YOSHIKAWA, Comparison of the Indexes to Evaluate Buildings for Public Facilities with Distance Decay of the Utilization Ratio in a Real Suburban Area, Proceedings of 2019 International Conference of Asian-Pacific Planning Societies, pp.127-140, 2019.

3. *Others*

3-2 *Research Reports*

Takuya KUSUNOKI, Tohru YOSHIKAWA, Analysis of trends in the distribution of long-term care beds and psychiatric beds in secondary and first medical areas, Reports of the City Planning Institute of Japan, No.18, pp.363-368, (in Japanese), 2020.

Yasuhiro YOSHIDA, Tohru YOSHIKAWA, Personality along the railway as seen from the characteristics of advertisements in front of the station, Reports of the City Planning Institute of Japan, No.18, pp.182-184, (in Japanese), 2019.

Maki SATO, Tohru YOSHIKAWA and Ryo SANUKI, Research on the characteristics of facilities such as the location of public libraries with space for diverse activities, Reports of the City Planning Institute of Japan, No.18, pp.178-181, (in Japanese), 2019.

Junya OGAWA, Tohru YOSHIKAWA and Ryo SANUKI, Analysis of the impact of the difficulty to reach on purchasing motivation - A case study of an outlet mall located around the metropolitan area-, Reports of the City Planning Institute of Japan, No.18, pp.72-77, (in Japanese), 2019.

3-3 *Manuals / Reviews*

YOSHIKAWA Tohru, The opening of TMU gallery in Tokyo Metropolitan University, Studies on Tama New Town, No.21, pp.125-126, (in Japanese), 2019.

YOSHIKAWA Tohru, An autobiographical composer who was too good at symphonies, Studies on Tama New Town, No.21, pp.155-156, (in Japanese), 2019.

Motoki TORIUMI

Masumi MATSUMOTO

1. *Refereed Papers*

Y. UETAKE, T. OTSUKI, Y. SHIKI and M. MATSUMOTO, The Design Process of “YOTSUYA CO-OPERATIVE HOUSE,” the Condominium Sold by NIPPON SHINYO HANBAI in 1956, Journal of Technology and Design, AIJ, Vol. 25, No.61, 1209-1214, 2019.10. (in Japanese)

Y. UETAKE, T. OTSUKI, Y. SHIKI and M. MATSUMOTO, Study on Architectural Planning Features and Backgrounds of "CO-OPERATIVE HOUSE SERIES," Condominium Projects Designed by KEIICHI KIMURA, Journal of Architecture and Planning, AIJ, Vol. 85, No. 769, 485-491, 2020.3. (in Japanese)

Ryo SANUKI

1. *Refereed Papers*

1. Hiroki TSUTSUMI, Ryo SANUKI : The Necessity of Regional Sectioning Based on the Actual Distribution of Vacant Houses in a Local City, Proceedings of the Architectural Institute of Japan, Vol.84, No,759, pp.1201-1208, 2019.5
2. Kasane YUASA, Shih-Hung YANG, Ryo SANUKI, Hong-Wei HSIAO, Ching-Fang YU : A Study on Public Space Management Focusing on Establishment Process and Operation of Urban Garden in Taipei City, Papers on Property Management, Taiwan Institute of Property Management, , 2019.6
3. Ryo SANUKI, Hong-Wei HSIAO, Kasane YUASA, Ching-Fang YU, Shih-Hung YANG : A Study on Public Space Management by Location Analysis of Urban Farms in Taipei City, Papers on Property Management, Taiwan Institute of Property Management, , 2019.6
4. Kasane YUASA, Ching-Fang YU, Ryo SANUKI, Hong-Wei HSIAO, Shih-Hung YANG : A Study on Public Space Management Focusing on Urban Farms in Taipei City Part 1 - Basic

- Investigation on the Actual Conditions of Establishment Process and Operation, 2019 International Conference on Architecture Engineering and Environmental Design, A1, pp.1-8, 2019.6
5. Ryo SANUKI, Hong-Wei HSIAO, Kasane YUASA, Ching-Fang YU, Shih-Hung YANG : A Study on Public Space Management Focusing on Urban Farms in Taipei City Part 2 - A Location Analysis of Urban Farms focusing on Population and Accessibility, 2019 International Conference on Architecture Engineering and Environmental Design, A2, pp.1-8, 2019.6
 6. Hidetsugu Sakoda, Tohru Yoshikawa, Ryo Sanuki : Relationship between Anxiety and Location Confirmation by Mobile Devices during Route Searches in Urban Spaces - Empirical Study by Application of Protocol Analysis, Urban and Regional Planning Review, Vol.6, pp.96-110, 2019.7
 7. Chie Nozawa, Shin Aiba, Ryo Sanuki, Masahiko Nakanishi, Haruka Mochizuki : Issues on the Measures to Induce Residence and Urban facilities with Formulating the Location Normalization Plan, Papers on city planning, City Planning Institute of Japan, No.54-3, pp.840-847, 2019.11

2. *Proceedings of Oral Presentations*

1. Tomoya HIROSE, Hiroki Tsutsumi, Ryo Sanuki : Approach to Public Facility Management for Sustainable Regions Part.4 - Investigation of Area Classification for Appropriate Location of Public Facilities, Summaries of technical papers of Annual Meeting, Architectural Institute of Japan, pp.15-16, 2019.9

3. *Others*

1. Junya Ogawa, Tohru Yoshikawa, Ryo Sanuki : Analysis of the Impact of the Difficulty to Reach on Purchasing Motivation : A Case Study of an Outlet Mall Located around the Metropolitan Area, Reports of City Planning Institute of Japan, No.18, pp.72-77, 2019.6
2. Maki Sato, Tohru Yoshikawa, Ryo Sanuki : Research on the Characteristics of Facilities such as the Location of Public Libraries with Space for Diverse Activities, Reports of City Planning Institute of Japan, No.18, pp.178-181, 2019.6
3. <Best Paper Award> A Study on Public Space Management Focusing on Establishment Process and Operation of Urban Garden in Taipei City
4. <Publication> Hiroki Tsutsumi, Yukio Komatsu, Ryuzo Ikezawa, Ryo Sanuki, Hiroki Terasawa, Junnki Tsunekawa : How to Close Public Facilities -Municipal Asset Strategy for Town Development-, Gakugei Publishers, 2019.11

Architectural Design and History

Masao KOIZUMI

2. *Proceedings of Oral Presentations*

Masao KOIZUMI and others, Exhibition 「 FUTURE SCAPE PROJECT Activity Models/KOZOU-NO-IE」 , Zou-No-Hana terrace, 2019.6 (in Japanese)

3. *Others*

3-1. *Monographs / Technical books*

Masao KOIZUMI, 「Kotobukicho, Yokohama-shi health welfare interchange center / Municipal housing Kotobukicho sky apartment house」 , Shinkenchiku , August, pp120-128, 2019.8

Masao KOIZUMI, Focus on Architecture 「attraction of the inhabitation 『balcony of the town』」 , Shinkenchiku , August, pp60-65, 2019.8

Masao KOIZUMI, 「Kotobukicho, Yokohama-shi health welfare interchange center / Municipal housing Kotobukicho sky apartment house」 , BOUSUI journal , Shinjyusya, 574, pp1-2, 2019.9

Masao KOIZUMI and others, Konan Word Office, Heating Piping & Air Conditioning, JAPAN INDUSTRIAL PUBLISHING, 382, pp70-72, 2019.10

Masao KOIZUMI, 「Kotobukicho, Yokohama-shi health welfare interchange center / Municipal housing Kotobukicho sky apartment house」 , Kenchikugijutsu, Kenchikugijutsu, December, pp12-22, 2019.11

Masao KOIZUMI and others, Konan Word Office, Building Equipment and Elevator, The Japan Building Equipment and Elevator Center Foundation, JAPAN INDUSTRIAL PUBLISHING, 143, pp21-27, 2019.10

Masao KOIZUMI, Form of modern age, Cultural Encyclopedia of Japanese Architecture, Maruzen, pp486-487, 2020.1

3-2 *Research Reports*

Masao KOIZUMI, Lecture 「OPEN ENDED HOUSE」 , gallery IHA, 2019.7

Masao KOIZUMI and others, Kick-off talk, 「FUTURE SCAPE PROJECT」 , Zou-No-Hana terrace,

2019.6

Masao KOIZUMI, Lecture 「design the environment」, Waseda University, 2019.6

Masao KOIZUMI and others, Symposium, 「FUTURE SCAPE in public space」, Zou-No-Hana terrace, 2019.6

Masao KOIZUMI and others, Lecture 「environmental design of architecture and SDGs for architect」, Study Group on Climadesign, 2019.10

Masao KOIZUMI, OECD GNEELE Meeting 2019 observation of Ashihara elementary school, School Visit, The Ministry of Education, Culture, Sports, Science and Technology, 2019.11

Masao KOIZUMI and others, Forum 「School with community」, JIA Kanagawa, 2019.11

Masao KOIZUMI, Lecture 「SDGs and architecture」, Council for Great Tokyo Area, 2019.11

Masao KOIZUMI and others, Symposium 「future of Yokohama」, consortium in the future of Yokohama, 2019.12

Masao KOIZUMI, LCCM Demonstration House, Enemane House, Energy Conservation House, Kanagawa Architectural Safety Organisation, 2020.3

3-3 Manuals / Reviews

Masao KOIZUMI, My Insulation standard, Kenchiku-gijutsu, pp132-133, 2019.7

Masao KOIZUMI and others, University dormitory as learning place, Bunkyo-shisetsu, pp68-69, 2019.7

Masao KOIZUMI, Kibi and Izumo from Koizumi's point of view, Trace of Kazuhiro Kojima, A.D.A EDITA TOKYO, pp50-53, 2019.9

3-4 Works / Products, etc.

Masao KOIZUMI and others, The 17th Environmental and Equipment

Design Award winning prize 「Konan Word Office」, Association of Building Engineering and Equipment, 2019.5

Masao KOIZUMI, 「Kotobukicho, Yokohama-shi health welfare interchange center / Municipal housing Kotobukicho sky apartment house」, japan-architects blog, 2019.6

Masao KOIZUMI, Hhealth welfare center in Yokohama, Sanyo Shimbun, Tokushima Shimbun, Ryukyu Shinpo, Akita Sakigake Shimpō, Nihonkai Shimbun, Sanin Shimbun, 2019.9

Masao KOIZUMI, Zou-No-Hana Park, Yokohama, pp18-19, 2019.10

Masao KOIZUMI and others, This year :Architecture, Mainichi Newspapers, The Mainichi Newspapers Co.,Ltd, 2019.12

Masao KOIZUMI, Kotobukicho health welfare center and apartment house, 2019

Masao KOIZUMI, JR Kannai Station north exit working support facilities, 2019

Masao KOIZUMI, Warehouse for the expansion of Naka Civil Engineering Office, 2019

Katsuhiro KOBAYASHI

2. *Proceedings of Oral Presentations*

KOBAYASHI Katsuhiro, Oral Presentation, *Considering Morphology of Environmental Architecture*, A.I.J. Symposium, “Theory of Environmental Design”, July 2019

KAWASHIMA Tatsuya, KOBAYASHI Katsuhiro, KINOSHITA Akira et al., *Studies on the Architectural Conversion in Bangkok, Part 1, - Design Methods of Conversion from Public Facilities*, Summaries of Technical Papers of Annual Meeting, A.I.J., pp., 277-278, Sept. 2019 (in Japanese)

OKA Takashi, KOBAYASHI Katsuhiro, KINOSHITA Akira et al., *Studies on the Architectural Conversion in Bangkok, Part 2, - Design Methods of Conversion from Residential Facilities -*, Summaries of Technical Papers of Annual Meeting, A.I.J., pp., 279-280, Sept. 2019 (in Japanese)

NISHIMURA Kazuki, KOBAYASHI Katsuhiro, KINOSHITA Akira et al., *Studies on the Architectural Conversion in Bangkok, Part 3, - Design Methods of Conversion from Office Facilities and Commercial Facilities -*, Summaries of Technical Papers of Annual Meeting, A.I.J., pp., 281-282, Sept. 2019 (in Japanese)

SAKIYOSHI Masaki, KOBAYASHI Katsuhiko, KINOSHITA Akira et al., *Studies on the Architectural Conversion in Bangkok, Part 4, - Design Methods of Conversion from Industrial Facilities -*, Summaries of Technical Papers of Annual Meeting, A.I.J., pp., 283-284, Sept. 2019 (in Japanese)

3. Others

3-3 Manuals / Reviews

KOBAYASHI Katsuhiko, *Pilgrimage to Architectural Conversion of the World, Part 15, Riga and Vilnius, Conversion Works that Respect the Character of Architectural Stock*, Core Tokyo, April 2019, pp.13-17

KOBAYASHI Katsuhiko, *Pilgrimage to Architectural Conversion of the World, Part 16, Helsinki, Conversion as an Effective Method for Compact City*, Core Tokyo, August 2019, pp.21-25

KOBAYASHI Katsuhiko, *Pilgrimage to Architectural Conversion of the World, Part 17, Harbin, Chong-shun, Shenyang, Diverse Conversion Practice According to Urban History and Building Stock of each City*, Core Tokyo, October 2019, pp.12-17

KOBAYASHI Katsuhiko, *Pilgrimage to Architectural Conversion of the World, Part 18, Hamburg and Berlin, Rebirth of the Largest City of Commerce and Capital of Politics and Culture*, Core Tokyo, December 2019, pp.17-22

KOBAYASHI Katsuhiko, *Pilgrimage to Architectural Conversion of the World, Part 19, Prague, Successful Transformation to Touristic Destination through the Adaptive Reuse of Historical and Industrial Heritage*, Core Tokyo, February 2020, pp.11-16

Jun INOKUMA

Akira KINOSHITA

2. Proceedings of Oral Presentations

KINOSHITA Akira, *Dynamic Composition of Blenheim Palace, -an Analysis Focusing on Visual Effect of Motion Parallax*, Summaries of Technical Papers of Annual Meeting, A.I.J., pp., 139-140, Sept. 2019 (in Japanese)

KAWASHIMA Tatsuya, KOBAYASHI Katsuhiro, KINOSHITA Akira et al., *Studies on the Architectural Conversion in Bangkok, Part 1, - Design Methods of Conversion from Public Facilities*, Summaries of Technical Papers of Annual Meeting, A.I.J., pp., 277-278, Sept. 2019 (in Japanese)

OKA Takashi, KOBAYASHI Katsuhiro, KINOSHITA Akira et al., *Studies on the Architectural Conversion in Bangkok, Part 2, - Design Methods of Conversion from Residential Facilities -*, Summaries of Technical Papers of Annual Meeting, A.I.J., pp., 279-280, Sept. 2019 (in Japanese)

NISHIMURA Kazuki, KOBAYASHI Katsuhiro, KINOSHITA Akira et al., *Studies on the Architectural Conversion in Bangkok, Part 3, - Design Methods of Conversion from Office Facilities and Commercial Facilities -*, Summaries of Technical Papers of Annual Meeting, A.I.J., pp., 281-282, Sept. 2019 (in Japanese)

SAKIYOSHI Masaki, KOBAYASHI Katsuhiro, KINOSHITA Akira et al., *Studies on the Architectural Conversion in Bangkok, Part 4, - Design Methods of Conversion from Industrial Facilities -*, Summaries of Technical Papers of Annual Meeting, A.I.J., pp., 283-284, Sept. 2019 (in Japanese)

3. Others

3-3 Manuals / Reviews

KINOSHITA Akira, *Urban Renew and Spread by Renovating Existing Buildings in Overseas Cities, Ever-changing City, Bangkok, Architectural Conversion and Identity Search*, The Building Letter a Monthly Journal for Building Engineers, No. 651, March 2020, pp.13-25

Construction Management and Building Materials

Yoshinori KITSUTAKA

1. Refereed Papers

- 1) Hideki IGAWA, Hideo EGUCHI and Yoshinori KITSUTAKA : Water Shielding Performance of Shielding Containers Made Using Heavyweight Concrete, AIJ Journal of Technology and Design, Vol. 25, No. 60, pp.567-572, 2019.6. (in Japanese)
- 2) Koichi IMASAWA, Masatoshi HORIGUCHI and Yoshinori KITSUTAKA: Study on cement based xonotlite synthesis and performance evaluation, Proceedings of the Japan Concrete Institute, Vol.41, No.1, pp.1511-1516,2019.7 (in Japanese)

2. *Proceedings of Oral Presentations*

- 1) Miki HASEGAWA, Yoshinori KITSUTAKA, Mirai SONODA and Yoichiro KUNIEDA: Study of Improvement of Performance on cementitious materials by Simply-made graphene Part1, Fresh properties, Summaries of Technical Papers of Annual Meeting, AIJ, Construction Materials, pp.97-98, 2019.9 (in Japanese)
- 2) Mirai SONODA, Yoshinori KITSUTAKA, Yoichiro KUNIEDA and Miki HASEGAWA: Study of Improvement of Performance on cementitious materials by Simply-made graphene Part2, Bending failure of Fiber Reinforced Specimen, Summaries of Technical Papers of Annual Meeting, AIJ, Construction Materials, pp.99-100, 2019.9 (in Japanese)
- 3) Yuichi HIRABAYASHI, Yoshinori KITSUTAKA and Yoichiro KUNIEDA: Basic study on cyclic fatigue method of post-installed anchor bolt for concrete, Summaries of Technical Papers of Annual Meeting, AIJ, Construction Materials, pp.665-666, 2019.9 (in Japanese)
- 4) Haruka OGAWA, Yoshinori KITSUTAKA and Yoichiro KUNIEDA: Study on damage of the gymnasium flooring caused by the wheelchair sports Part6 Impression evaluation of the degree of damage, Summaries of Technical Papers of Annual Meeting, AIJ, Construction Materials, pp.863-864, 2019.9 (in Japanese)
- 5) Yasuko KUMANO, Masaki UEMURA and Yoshinori KITSUTAKA: Study on the influence of hardening accelerator on hardening time of primer material for plaster at low temperature, Part2, Summaries of Technical Papers of Annual Meeting, AIJ, Construction Materials, pp.1335-1336, 2019.9 (in Japanese)
- 6) Yoshinori KITSUTAKA and Yoichiro KUNIEDA: 4D Model of Damage to Residence Simulating Disaster Rubble Part1 Evaluation on the risk of external wall tile falling based on the earthquake response of building, Summaries of Technical Papers of Annual Meeting, AIJ, Construction Materials, pp.1361-1362, 2019.9 (in Japanese)
- 7) Sunami ANDO, Yoshinori KITSUTAKA and Yoichiro KUNIEDA: 4D Model of Damage to Residence Simulating Disaster Rubble Part 2, Destruction assessment of anchor bolt involved in earthquake, Summaries of Technical Papers of Annual Meeting, AIJ, Construction Materials, pp.1363-1364, 2019.9 (in Japanese)
- 8) Keigo YOSHIDA, Yoshinori KITSUTAKA, Yoichiro KUNIEDA and Satoshi SASAKI: On the falling of uplifted rectangular tile finish caused by joint failure, Summaries of Technical Papers of Annual Meeting, AIJ, Construction Materials, pp.1397-1398, 2019.9 (in Japanese)
- 9) Ryo Enomoto, Yoshinori KITSUTAKA and Yoichiro KUNIEDA: Dynamic Vertical Test with Partial Specimen of Steel Ceilings, Summaries of Technical Papers of Annual Meeting, AIJ, Construction Materials, pp.1451-1452, 2019.9 (in Japanese)
- 10) Kimiko ARIYAMA, Yoshinori KITSUTAKA and Yoichiro KUNIEDA: Study on the estimation of exterior material degradation by thermal simulation of building external walls, Summaries of

- Technical Papers of Annual Meeting, AIJ, Construction Materials, pp.1483-1484, 2019.9 (in Japanese)
- 11) Kouichi IMASAWA, Masatoshi Horiguchi, Ryota SATO, Taisuke YAMASHITA and Yoshinori KITSUTAKA: Autoclaved Lightweight Aerated Concrete including Xonotlite made by Cementitious Materials Part1 Experimental Study for Casting, Summaries of Technical Papers of Annual Meeting, AIJ, Construction Materials, pp.1503-1504, 2019.9 (in Japanese)
 - 12) Masatoshi Horiguchi, Kouichi IMASAWA, Ryota SATO, Taisuke YAMASHITA and Yoshinori KITSUTAKA: Autoclaved Lightweight Aerated Concrete including Xonotlite made by Cementitious Materials Part2 Experimental Study for Properties, Summaries of Technical Papers of Annual Meeting, AIJ, Construction Materials, pp.1505-1506, 2019.9 (in Japanese)
 - 13) Ryota SATO, Kouichi IMASAWA, Masatoshi Horiguchi, Taisuke YAMASHITA and Yoshinori KITSUTAKA: Autoclaved Lightweight Aerated Concrete including Xonotlite made by Cementitious Materials Part3 Experimental Study on Drying Shrinkage Properties, Summaries of Technical Papers of Annual Meeting, AIJ, Construction Materials, pp.1507-1508, 2019.9 (in Japanese)
 - 14) Yukinori KAI, Yoichiro KUNIEDA and Yoshinori KITSUTAKA: Study on appropriate distribution in waste treatment of large scale disaster using GIS, Summaries of Technical Papers of Annual Meeting, AIJ, Urban Planning, pp.859-860, 2019.9 (in Japanese)
 - 15) Yoichiro KUNIEDA and Yoshinori KITSUTAKA: Study of population change impact on concrete suppliers with GIS simulation —Case study: Hokkaido—, Summaries of Technical Papers of Annual Meeting, AIJ, Architectural Social System, pp.83-84, 2019.9 (in Japanese)

Makoto TSUNODA

1. *Refereed Papers*

Study of construction contents and process of renovation work while using lease apartment house -The vase of H6 building refining project-, Toru AKIYAMA, Makoto TSUNODA, Shigeru AOKI, AIJ Journal of Technology and Design, Vol.25, No.61, p1263-1268, Oct., 2019 (in Japanese)

2. *Proceedings of Oral Presentations*

SAKAMOTO Naoko, TSUNODA Makoto, Study on the possibility of utilization in pilotis of existing apartment ho, Summaries of Technical Papers of Annual Meeting, AIJ, E-1, pp.913-914, Sep. 2019 (in Japanese)

ONO Chieko, TSUNODA Makoto, Research on the improvement technique of the Public Library, Summaries of Technical Papers of Annual Meeting, AIJ, E-1, pp.915-916, Sep. 2019 (in Japanese)

SUZUKI Tomoya , CHO Toshiki, TSUNODA Makoto, A Study on Design for Renovation of Public Hall Building. -Actual Condition of Renovation Design Contents-, Summaries of Technical Papers of Annual Meeting, AIJ, F, pp.9-10, Sep. 2019 (in Japanese)

CHO Toshiki, TSUNODA Makoto, A Study on Design for Renovation of Public Hall Building. -Proposal of Renovation Design Process-, Summaries of Technical Papers of Annual Meeting, AIJ, F, pp.11-12, Sep. 2019 (in Japanese)

3. Others

3-1. Monographs / Technical books

Makoto TSUNODA, Architecture that Supported Modernization of Japan -100selected building technologies- 66.Reuse/Recycling of Building Materials, The Building Center of Japan, pp180-181, Jun.2019 (in Japanese)

Yoichiro KUNIEDA

1. Refereed Papers

- 1) Yoichiro KUNIEDA and Ricardo CODINHOTO: Increasing the Efficiency and Efficacy of Demolition Through Computerised 4D Simulation, Engineering Construction & Architectural Management, 26(10), pp.2186–2205, 2019.11.

2. Proceedings of Oral Presentations

- 1) Miki HASEGAWA, Yoshinori KITSUTAKA, Mirai SONODA and Yoichiro KUNIEDA: Study of Improvement of Performance on cementitious materials by Simply-made graphene Part1, Fresh properties, Summaries of Technical Papers of Annual Meeting, AIJ, Construction Materials, pp.97-98, 2019.9 (in Japanese)
- 2) Mirai SONODA, Yoshinori KITSUTAKA, Yoichiro KUNIEDA and Miki HASEGAWA: Study of Improvement of Performance on cementitious materials by Simply-made graphene Part2, Bending failure of Fiber Reinforced Specimen, Summaries of Technical Papers of Annual Meeting, AIJ, Construction Materials, pp.99-100, 2019.9 (in Japanese)
- 3) Yuichi HIRABAYASHI, Yoshinori KITSUTAKA and Yoichiro KUNIEDA: Basic study on cyclic fatigue method of post-installed anchor bolt for concrete, Summaries of Technical Papers of Annual Meeting, AIJ, Construction Materials, pp.665-666, 2019.9 (in Japanese)
- 4) Haruka OGAWA, Yoshinori KITSUTAKA and Yoichiro KUNIEDA: Study on damage of the gymnasium flooring caused by the wheelchair sports Part6 Impression evaluation of the degree of damage, Summaries of Technical Papers of Annual Meeting, AIJ, Construction Materials,

- pp.863-864, 2019.9 (in Japanese)
- 5) Yoshinori KITSUTAKA and Yoichiro KUNIEDA: 4D Model of Damage to Residence Simulating Disaster Rubble Part1 Evaluation on the risk of external wall tile falling based on the earthquake response of building, Summaries of Technical Papers of Annual Meeting, AIJ, Construction Materials, pp.1361-1362, 2019.9 (in Japanese)
 - 6) Sunami ANDO, Yoshinori KITSUTAKA and Yoichiro KUNIEDA: 4D Model of Damage to Residence Simulating Disaster Rubble Part 2, Destruction assessment of anchor bolt involved in earthquake, Summaries of Technical Papers of Annual Meeting, AIJ, Construction Materials, pp.1363-1364, 2019.9 (in Japanese)
 - 7) Keigo YOSHIDA, Yoshinori KITSUTAKA, Yoichiro KUNIEDA and Satoshi SASAKI: On the falling of uplifted rectangular tile finish caused by joint failure, Summaries of Technical Papers of Annual Meeting, AIJ, Construction Materials, pp.1397-1398, 2019.9 (in Japanese)
 - 8) Masahiro YOSHIOKA, Yoichiro KUNIEDA and Shinnosuke SEKI: Survey on Color Difference Occurred at Tile Re-placement, Summaries of Technical Papers of Annual Meeting, AIJ, Construction Materials, pp.1401-1402, 2019.9 (in Japanese)
 - 9) Ryo Enomoto, Yoshinori KITSUTAKA and Yoichiro KUNIEDA: Dynamic Vertical Test with Partial Specimen of Steel Ceilings, Summaries of Technical Papers of Annual Meeting, AIJ, Construction Materials, pp.1451-1452, 2019.9 (in Japanese)
 - 10) Kimiko ARIYAMA, Yoshinori KITSUTAKA and Yoichiro KUNIEDA: Study on the estimation of exterior material degradation by thermal simulation of building external walls, Summaries of Technical Papers of Annual Meeting, AIJ, Construction Materials, pp.1483-1484, 2019.9 (in Japanese)
 - 11) Yukinori KAI, Yoichiro KUNIEDA and Yoshinori KITSUTAKA: Study on appropriate distribution in waste treatment of large scale disaster using GIS, Summaries of Technical Papers of Annual Meeting, AIJ, Urban Planning, pp.859-860, 2019.9 (in Japanese)
 - 12) Yoichiro KUNIEDA and Yoshinori KITSUTAKA: Study of population change impact on concrete suppliers with GIS simulation —Case study: Hokkaido—, Summaries of Technical Papers of Annual Meeting, AIJ, Architectural Social System, pp.83-84, 2019.9 (in Japanese)

Structural Engineering

Kazuhiro KITAYAMA

1. Refereed Papers

- (1) JIN Kiwoong and KITAYAMA Kazuhiro : Evaluation Method of Backbone Curve for Unbonded PCaPC Beam Member in Exterior Beam-Column Joint Subassemblage, Proceedings of the Japan

Concrete Institute, Vol.41, No.2, July 2019, pp. 481-486 (in Japanese).

(2) LI Mengdan and KITAYAMA Kazuhiro : Ultimate Joint-Hinging Moment for Unbonded PCaPC Interior Beam-Column Joint, Proceedings of the Japan Concrete Institute, Vol.41, No.2, July 2019, pp. 277-282 (in Japanese).

2. Proceedings of Oral Presentations

(1) LI Mengdan and KITAYAMA Kazuhiro : Analytical Study on Beam-Column Joint Hinging Failure for Precast Pre-stressed Concrete Frame Assembled by Post-tensioning Unbonded Tendon (Part 1 Ultimate Joint-Hinging Moment for Interior Beam-Column Joint), Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, Structures IV, September 2019, pp. 89-90 (in Japanese).

(2) KITAYAMA Kazuhiro and LI Mengdan : Analytical Study on Beam-Column Joint Hinging Failure for Precast Pre-stressed Concrete Frame Assembled by Post-tensioning Unbonded Tendon (Part 2 Verification of Proposed Method and Parametric Analyses), Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, Structures IV, September 2019, pp. 91-92 (in Japanese).

(3) IWATA Ayumu and KITAYAMA Kazuhiro : Earthquake response analyses using superstructure-pile-soil system for retrofitted R/C building, Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, Structures IV, September 2019, pp. 167-168 (in Japanese).

(4) TANAKA Koichi, OGITANI Atsushi, and KITAYAMA Kazuhiro : Earthquake Response of Reinforced Concrete Building under Retrofit Construction Damaged by the 2011 East Japan Earthquake (Part 2 Earthquake Response Analysis Assuming Rigid Floor under Tri-directional Earthquake Motions), Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, Structures IV, September 2019, pp. 169-170 (in Japanese).

(5) OGITANI Atsushi, TANAKA Koichi and KITAYAMA Kazuhiro : Earthquake Response of Reinforced Concrete Building under Retrofit Construction Damaged by the 2011 East Japan Earthquake (Part 3 Earthquake Response Analysis Assuming In-plane Shear-deformable Floor), Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, Structures IV, September 2019, pp. 171-172 (in Japanese).

(6) YANG Dichen, KITAYAMA Kazuhiro and JIN Kiwoong : Evaluation of Tensile Stress of Post-Tensioning Unbonded Tendon for Beam in PCaPC Frame Reaching Ultimate Flexural Capacity,

Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, Structures IV, September 2019, pp. 825-826 (in Japanese).

(7) MURAKAMI Ken, ISHIKAWA Takuma, YAMAYA Yusuke, KISHIDA Shinji, KITAYAMA Kazuhiro and MURATA Yoshiyuki : Seismic Performance Evaluation of Reinforced Concrete Beam-Column Subassembly with Partially High-Strengthened Reinforcing Bar (Part 4 : Outline of Tests), Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, Structures IV, September 2019, pp. 135-136 (in Japanese).

(8) ODA Minoru, ISHIKAWA Takuma, MURAKAMI Ken, KISHIDA Shinji, KITAYAMA Kazuhiro and MURATA Yoshiyuki : Seismic Performance Evaluation of Reinforced Concrete Beam-Column Subassembly with Partially High-Strengthened Reinforcing Bar (Part 5 : Test Results for Interior Beam-Column Subassemblies), Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, Structures IV, September 2019, pp. 137-138 (in Japanese).

(9) ISHIKAWA Takuma, MURAKAMI Ken, ODA Minoru, KITAYAMA Kazuhiro, KISHIDA Shinji and MURATA Yoshiyuki : Seismic Performance Evaluation of Reinforced Concrete Beam-Column Subassembly with Partially High-Strengthened Reinforcing Bar (Part 6 : Test Results for Exterior Beam-Column Subassemblies), Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, Structures IV, September 2019, pp. 139-14 (in Japanese).

(10) Hu Wen-Jing and KITAYAMA Kazuhiro : Evaluation for Deformation Capacity at Cover Concrete Crushing in Reinforced Concrete Beams, Proceedings of the 2019 Annual Meeting of Japan Association for Earthquake Engineering, September 2019, No.P1-21, CD-Rom, pp.1-10.

3. *Others*

3-1. *Monographs / Technical books*

(1) Architectural Institute of Japan, Performance Evaluation of Reinforced Concrete Members (Leading- edge and Future Prospects), co-authors to “2.2 Deformation and Lateral-Load-Carrying Capacity at Shear Failure for Beam and Column”, “3.3 Beam-Column Joint under Bi-Lateral Loading”, “3.4 Axial-Load-Carrying Ability for Beam-Column Joint” and “8 Conclusions”, September 2019 (in Japanese).

Jiro TAKAGI

Toshikazu KABEYASAWA

1. *Refereed Papers*

- 1) Toshikazu Kabeyasawa, Toshimi Kabeyasawa, Li Yutong : A Study on the response of RC Structures under damming load by the waterborne debris, Proceedings of the Japan Concrete Institute, Vol.41, pp769-774, 2019.7
- 2) Ziling Xiao, Toshikazu Kabeyasawa, Toshimi Kabeyasawa, Toshiki Kinoshita : A static loading test of assemble outer frame with flat beam section, Proceedings of the Japan Concrete Institute, Vol.41, pp781-786, 2019.7
- 3) Li Yutong, Toshimi Kabeyasawa, Toshikazu Kabeyasawa, Takeaki Kubo: Numerical fluid simulation of collapsing test of RC building by the continuous wave load, Proceedings of the Japan Concrete Institute, Vol.41, pp811-816, 2019.7
- 4) Toshikazu Kabeyasawa, Toshimi Kabeyasawa, Effective Width of Slab at a Span End in Reinforced Concrete Frames, Proceedings of International Conference in Commemoration of 20th Anniversary of the 1999 Chi-Chi Earthquake, Paper No. G0-013, reviewed, 2019.9
- 5) Ziling Xiao, Toshikazu Kabeyasawa, Toshimi Kabeyasawa, A Study on the Damming Effect of a Water Borne Debris to the Reinforced Concrete Buildings, Proceedings of International Conference in Commemoration of 20th Anniversary of the 1999 Chi-Chi Earthquake, Paper No. G0-018, reviewed, 2019.9
- 6) Toshikazu Kabeyasawa, An Calculation Method of Tsunami Load on Buildings, Proceedings of JCOSSAR2019, OS12-1A, 2019.10

2. *Proceedings of Oral Presentations*

- 1) Takeaki Kubo, Ayana Tomii, Toshikazu Kabeyasawa : An analytical study on the damage of the building with the beam side sway mechanism, Proceedings of Annual AIJ Conference, AIJ, pp.173-174, 2019.9 (in Japanese)
- 2) Koichi Kajiwara, Jae-Do Kang, Kunio Fukuyama, Eiji Sato, Takahito Inoue, Toshimi Kabeyasawa, Hitoshi Shiohara, Takuya Nagae, Toshikazu Kabeyasawa, Hiroshi Fukuyama, Tomohisa Mukai, Yusuke Tosauchi : A shaking test of the full-scale 10-story reinforced concrete building at E-Defense (2018) Part 1 Outline of the test, Proceedings of Annual AIJ Conference, AIJ, pp.605-606, 2019.9 (in Japanese)
- 3) Kunio Fukuyama, Jae-Do Kang, Koichi Kajiwara, Eiji Sato, Takahito Inoue, Toshimi Kabeyasawa, Hitoshi Shiohara, Takuya Nagae, Toshikazu Kabeyasawa, Hiroshi Fukuyama, Tomohisa Mukai, Yusuke Tosauchi : A shaking test of the full-scale 10-story reinforced concrete building at E-Defense (2018) Part 2 design of the specimen, Proceedings of Annual AIJ Conference, AIJ, pp.607-608, 2019.9 (in Japanese)
- 4) Jae-Do Kang, Koichi Kajiwara, Kunio Fukuyama, Eiji Sato, Takahito Inoue, Toshimi Kabeyasawa,

- Hitoshi Shiohara, Takuya Nagae, Toshikazu Kabeyasawa, Hiroshi Fukuyama, Tomohisa Mukai, Yusuke Tosauchi : A shaking test of the full-scale 10-story reinforced concrete building at E-Defense (2018) Part 3 Result of the test, , Proceedings of Annual AIJ Conference, AIJ, pp.609-610, 2019.9 (in Japanese)
- 5) Toshiki Kinoshita, Toshikazu Kabeyasawa, Ittetsu Kotobuki, Toshimi Kabeyasawa, Ziling Xiao : Effective Width of Slab on Reinforced Concrete Beams at Span End (Part3) Outline of Experimental Design and Results of Frame with Flat Beam, Proceedings of Annual AIJ Conference, AIJ, pp.689-690, 2019.9 (in Japanese)
 - 6) Ziling Xiao, Toshikazu Kabeyasawa, Toshimi Kabeyasawa, Ittetsu Kotobuki, Toshiki Kinoshita : Effective Width of Slab on Reinforced Concrete Beams at Span End (Part4) Comparison between 2018 test and 2017 test, Proceedings of Annual AIJ Conference, AIJ, pp.691-692, 2019.9 (in Japanese)
 - 7) Ittetsu Kotobuki, Toshimi Kabeyasawa, Toshikazu Kabeyasawa, Ziling Xiao, Toshiki Kinoshita : Effective Width of Slab on Reinforced Concrete Beams at Span End (Part5) Approximate formula for yielding rate of slab reinforcement using simplified model, Proceedings of Annual AIJ Conference, AIJ, pp.693-694, 2019.9 (in Japanese)
 - 8) Hiromi Hashimoto, Toshikazu Kabeyasawa : Study on the reduction effect of pile moment in the building with the base sliding, Proceedings of Annual AIJ Conference, AIJ, pp.713-714, 2019.9
 - 9) Li Yutong, Toshimi Kabeyasawa, Toshikazu Kabeyasawa, Takeaki Kubo : Tsunami collapse tests on reinforced concrete frame buildings by continuous wave and floating wreckage Part5 Analysis results, Proceedings of Annual AIJ Conference, AIJ, pp.719-720, 2019.9 (in Japanese)
 - 10) Toshikazu Kabeyasawa, Toshimi Kabeyasawa, Li Yutong, Takeaki Kubo : Tsunami collapse tests on reinforced concrete frame buildings by continuous wave and floating wreckage (Part 5 A Study on Buoyancy acting on Buildings), Proceedings of Annual AIJ Conference, AIJ, pp.721-722, 2019.9 (in Japanese)

3. Others

3-1. Monographs / Technical books

- 1) Performance Evaluation of Reinforced Concrete Members (Leading Edge and Future Prospects), AIJ, (Joint Work), 2019.9

3-2 Research Reports

- 1) Reconnaissance Report on the 2017 Mexico Puebla Earthquake, AIJ, (Joint Work), 2019.12

Noriko TAKIYAMA

1. *Refereed Papers*

- 1) Xinyan Chen and Noriko Takiyama: The modeling and simulation analysis of SASHIGAMOI Joint in traditional wooden house, *Proceeding of The 4th International Conference on Preservation, Maintenance and Rehabilitation of Historic Buildings and Structures (REHAB2019)*, Guimaraes, Portugal, July, 2019

2. *Proceedings of Oral Presentations*

- 1) Xinyan Chen and Noriko Takiyama: The Modeling and Simulation Analysis of Different SASHIGAMOI Joint in Traditional Wooden Residents. Architectural Institute of Japan Kanto Chapter Research Meeting, 89(I), pp.273-276, 2019.3.
- 2) Kosei Kawashima, Kosuke Fujisaki, Xinyan Chen and Noriko Takiyama: Characteristics and Seismic Property of Traditional Thatched House in Ouchi-juku, Fukushima. Architectural Institute of Japan Kanto Chapter Research Meeting, 89(I), pp.277-280, 2019.3.
- 3) Yuna Asaoka, Sho Koike, Xinyan Chen and Noriko Takiyama: Improvement of Deformation Performance of Pillar-Base Joint of Wooden Houses with Aramid Fiber Sheet Reinforcement Method. Architectural Institute of Japan Kanto Chapter Research Meeting, 89(I), pp.289-292, 2019.3.
- 4) Kosei Kawashima, Sunwook Kim, Hiromi Sato, Alejandro Martinez and Noriko Takiyama: Seismic Damage in 2016 Myanmar Earthquake and Structural Property of Cultural Heritage Buildings at Bagan Archaeological Zone, Part II: Vibration Property Based on Microtremor Measurement. Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, pp.897-898, 2018.9.
- 5) Xinyan Chen, Mitsuhiro Miyamoto, Noriko Takiyama and Mikio Koshihara: Seismic Damage in 2016 Myanmar Earthquake and Structural Property of Cultural Heritage Buildings at Bagan Archaeological Zone, Part III: Material Test of Brick Prism and Joint Mortar. Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, pp.899-900, 2018.9.
- 6) Noriko Takiyama, Xinyan Chen and Sunwook Kim: Seismic Damage in 2016 Myanmar Earthquake and Structural Property of Cultural Heritage Buildings at Bagan Archaeological Zone, Part IV: Compressive Test of Brick Unit. Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, pp.901-902, 2018.9.

Kazushige YAMAMURA

Environmental Engineering

Nobuyuki SUNAGA

1. Refereed Papers

Hiroko ONODERA, Nobuyuki SUNAGA and Miyuu BANZAI, RESIDENT CONSCIOUSNESS AND PROMOTION MEASURES FOR ACHIEVING HIGH THERMAL INSULATION OF THE DETACHED HOUSES, *Journal of Environmental Engineering (Transactions of AIJ)*, Vol.84, No.766, pp.1085-1094 Dec. 2019

2. Proceedings of Oral Presentations

Eiko Kumakura, Ryousuke Iwanaga and Nobuyuki Sunaga, Influence of Skyterrace Greenery on Thermal Environment and Psychological Effect, *Summaries of Technical Papers of Annual Meeting, A.I.J., Environmental Engineering I*, pp.737-738, Sept., 2019

ITO Kanoko, SUNAGA Nobuyuki, SHIRAISHI Shinji, OOTSUKA Hiroki, HAMADA Kaori and ONODERA Hiroko, A study on improvement methods of winter thermal environments in dressing rooms and bathrooms considering the residents' consciousness, *Summaries of Technical Papers of Annual Meeting, A.I.J., Environmental Engineering II*, PP.197-198, Sept., 2019

OTUKA Hiroki, CHIBA Keisuke, SUNAGA Nobuyuki, SHIRAISHI Shinji, HAMADA Kaori and ONODERA Hiroko, Influence of high heat insulation on indoor light environment in detached houses Part1 Analysis of questionnaire survey, *Summaries of Technical Papers of Annual Meeting, A.I.J., Environmental Engineering II*, pp.207-208, Sept., 2019

CHIBA Keisuke, SUNAGA Nobuyuki, OTUKA Hiroki, SHIRAISHI Shinji, HAMADA Kaori and ONODERA Hiroko, Influence of high heat insulation on indoor light environment in detached houses Part2 Analysis of impression evaluation experiment, *Summaries of Technical Papers of Annual Meeting, A.I.J., Environmental Engineering II*, pp.209-210, Sept., 2019

ONODERA Hiroko, SUNAGA Nobuyuki, SHIRAISHI Shinji, OOTSUKA Hiroki and HAMADA Kaori, Consciousness of the detached house residents about thermal insulation performance, *Summaries of Technical Papers of Annual Meeting, A.I.J., Environmental Engineering II*, pp.211-212, Sept., 2019

KITSUDA Yoko, HAMADA Kaori, OTUKA Hiroki, SUNAGA Nobuyuki, and ONODERA Hiroko, Actual condition and satisfaction survey of thermal environment of house Part3 – Winter Living

value of high thermal performance residence -, Summaries of Technical Papers of Annual Meeting, A.I.J., Environmental Engineering II, pp.271-272, Sept., 2019

HAMADA Kaori, KITSUDA Yoko, OTUKA Hiroki, SUNAGA Nobuyuki, and ONODERA Hiroko, "Actual condition and satisfaction survey of thermal environment of house Part4 -Factors affecting the satisfaction of the thermal environment of the house and the actual thermal environment, Summaries of Technical Papers of Annual Meeting, A.I.J., Environmental Engineering II, pp.273-274, Sept., 2019

Koji HAMA and Nobuyuki SUNAGA, Storage Room1 Kumamoto Prefectural Museum of Art: Estimation of Temperature/Humidity/Air-Conditioning Airflow in Summer after Improvement, Summaries of Technical Papers of Annual Meeting, SHASE, Vol.6, pp.97-100, Sept.,2019

Yuuichirou TANAKA, Nobuyuki SUNAGA, Masaya SAITO, Satoshi BODA, Kei Shimonosono, Yuji SASAKI and Daisuke HARA, Research for the residents' thermal sense and perception of heatstroke risk by investigation on Hokkaido and Niigata in summer, Summaries of Technical Papers of Annual Meeting, JSES, pp.258-261, 2019

Shimon OKAZAKI, Eiko KUMAKURA, Nobuyuki SUNAGA and Kazuaki NAKAOHKUBO, Thermal environment at the Tokyo 2020 Olympic Marathon Course - Study on WBGT by moving measurement -, Summaries of Technical Papers of Annual Meeting, JSES, pp.266-269, Oct., 2019

Hiroki Otsuka, Shinji Shiraishi, Kaori Hamada, Yoko Kitsuda, Nobuyuki Sunaga and Hiroko Onodera, Thermal Insulation Level of Residence and Life-style of Residents, Proceedings of the 49th HEAT ENVIRONMENT SYMPOSIUM of AIJ, pp.69-74, Oct., 2019

Hiroko Onodera and Nobuyuki Sunaga, Change in Awareness of Residents Living in High-performance Detached Houses, Proceedings of the 49th HEAT ENVIRONMENT SYMPOSIUM of AIJ, pp.75-80, Oct., 2019

Akihiro NAGATA

1. *Refereed Papers*

1) Isamu Gomi, Sachiko Nishikawa, Shun Katsumata, Hiroya Kamata, Taito Kinoshita, Eiji Sakuma and Akihiro Nagata: Study on Air Flow Characteristics and Natural Convection Heat Transfer around Window Glass and Indoor Blinds, J. Environ. ENg. AIJ, vol.84, No.763, pp.835-843,

2019-09 (in Japanese)

2. *Proceedings of Oral Presentations*

1) Takuma Okada and Akihiro Nagata: A Study on Induction Ventilation through Openings, Summaries of Technical Papers of Annual Meeting, AIJ, D-2, pp.257-258, 2019-09(in Japanese).

2) Shun Katsumata, Hiroya Kamata, Shoko Nishikawa, Isamu Gomi, Akihiro Nagata, Eiji Sakuma and Taito Kinoshita: A study on the evaluation method of thermal performance for combination of glazing and shading devices. Part14 Comparison of airflow by slat angle, Summaries of Technical Papers of Annual Meeting, AIJ, D-2, pp.313-316, 2019-09(in Japanese).

3) Hiroya Kamata, Isamu Gomi, Shun Katsumata, Shoko Nishikawa, Akihiro Nagata, Taito Kinoshita and Eiji Sakuma: A study on the evaluation method of thermal performance for combination of glazing and shading devices. Part15 Wind speed and air flow Comparison between CFD analysis and experiment, Summaries of Technical Papers of Annual Meeting, AIJ, D-2, pp.317-320, 2019-09(in Japanese).

4) Shoko Nishikawa, Shun Katsumata, Isamu Gomi, Hiroya Kamata, Akihiro Nagata, Taito Kinoshita and Eiji Sakuma: A study on the evaluation method of thermal performance for combination of glazing and shading devices. Part16 Comparison of convective heat flux between experiment and CFD , Summaries of Technical Papers of Annual Meeting, AIJ, D-2, pp.321-324, 2019-09(in Japanese).

5) Akihiro Nagata: A Study on Effective Transmittance Capacities of Exterior Walls, Summaries of Technical Papers of Annual Meeting, AIJ, D-2, pp.363-364, 2019-09(in Japanese).

6) Takuma Okada and Akihiro Nagata: Grasp air flow characteristics of air curtain which has wind speed distribution by PIV, Summaries of Technical Papers of Annual Meeting, SHASEJ, vol.5, pp.173-176, 2019-09(in Japanese).

7) Makoto Sato, Hisashi Miuram Akihiro Nagata and Tatsuo Nagai: Study on the evaluation method of heat transfer via the ground on detached houses with insulated foundation, Summaries of Technical Papers of Annual Meeting, SHASEJ, vol.5, pp.205-208, 2019-09(in Japanese).

3. *Others*

3-3 *Manuals / Reviews*

1) Akihiro Nagata: ISO 52019 Hygrothermal performance of building components and building elements, Journal of JABMEE, vol. 51, No.9, p.57, 2019-09(in Japanese).

Masayuki ICHINOSE

2. Proceedings of Oral Presentations

1) M. Martin,, M. Ichinose, N H Wong, Impact of Retro-Reflective Glass Facades on Surface Temperature of Street Pavements in Tropics, Sustainable Built Environment conference, The University of Tokyo, Japan, 2019.8

2) T. Sikram, M. Ichinose, R. Sasaki, Thermal adaptive behavior of occupants in air-conditioned office buildings in Thailand, Sustainable Built Environment conference, The University of Tokyo, Japan, 2019.8

3) K. Chaloeystoy, M. Ichinose, R. Sasaki, Comparing the occupants' comfort between perimeter zone and interior zone in Asian office, Sustainable Built Environment conference, The University of Tokyo, Japan, 2019.8

4) R. Yamauchi, M. Ichinose, Y. Fukawa, Survey on the actual condition of thermal environment and energy consumption of office buildings in the tropic Asia, Sustainable Built Environment conference, The University of Tokyo, Japan, 2019.8

5) Y. Mabuchi, M. Ichinose, Influence of air leakage from building facade on the energy efficiency of air conditioning system in Tropic Asia, Sustainable Built Environment conference, The University of Tokyo, Japan, 2019.8

6) F. Nagai, R. Sasaki, M. Ichinose, Investigating the performance guarantee system for building envelope glass and frames in Thailand, Sustainable Built Environment conference, The University of Tokyo, Japan, 2019.8

7) S Tsukami, H. Kubo, M. Ichinose, T Kato, A New Through-Wall Air Conditioning System with Improved Performance for High-Rise Office Buildings, Sustainable Built Environment conference, The University of Tokyo, Japan, 2019.8

8) H. Kubo, S Tsukami, M. Ichinose, T Kato, A New Through-Wall Air Conditioning System with Improved Performance for High-Rise Office Buildings, Sustainable Built Environment conference, The University of Tokyo, Japan, 2019.8

9) T Kato, M. Ichinose, S Tsukami, H. Kubo, A New Through-Wall Air Conditioning System with Improved Performance for High-Rise Office Buildings, Sustainable Built Environment conference, The University of Tokyo, Japan, 2019.8

10) T. Sikram, M. Ichinose, R. Sasaki, Effect of Changing Temperature Setpoints on Sensation and Comfort in Tropical Region: A Case Study of Air-conditioned Offices in Thailand, pp. 5-8, SHASE2019, 2019.9

- 11) K. Chaloeitoy, M. Ichinose, R. Sasaki, Potential of glazing facades with shading devices for energy savings and occupant comfort in office buildings in hot-humid climates, pp.69-72, SHASE2019, 2019.9
- 12) C. Liu, M. Ichinose, M. Ikegami, R. Yamauchi, A Study on Environmental Information Expressibility for BIM-based Commissioning, pp.73-76, SHASE2019, 2019.9
- 13) T. Sikram, M. Ichinose, and R. Sasaki, Field Study of Thermal Performance towards Perception and Symptoms in Air-conditioned Offices in Tropical Region; A Case Study in Thailand, D-01, APCBE2019, Kaohsiung, Taiwan, 2019.10
- 14) M. Ichinose, R. Yamauchi, H. Alkhalaf, Local Elements of Green Building Performance for IEQ and EUI in Hot and Humid Asia, D-05, APCBE2019, Kaohsiung, Taiwan, 2019.10

3. *Others*

3-2 *Research Reports*

- 1) Retro-Reflective Facade for Inside/Outside Built Environment, Cool Building Solutions Workshop, Lawrence Berkeley National Laboratory, USA, 2019.7 (Nominated Lecture)
- 2) Climate Adaption Technology and Evaluation Method for Green Building Components in Asia, BEX Asia, Singapore, 2019.9 (Nominated Lecture)
- 3) BIM Utilization to Commissioning and Facility Management for Resolution of Performance Gap, ICEED conference, Solo City Indonesia, 2019.11 (Invited Lecture)
- 4) Consideration of Local Factor of ZEB in the Tropics Asia, Training for Dissemination and Promotion of Zero Energy Building (ZEB) and ZEB Family Concept, Putrajaya Malaysia, 2020.2 (Invited Lecture)

3-4 *Works / Products, etc.*

- 1) Best Oral Presentation Award, Sustainable Built Environment conference, M. Martin, M. Ichinose, N H Wong, Impact of Retro-Reflective Glass Facades on Surface Temperature of Street Pavements in Tropics, 2019.8
- 2) SABED Environment Simulation Design Award 2019, DIA Gate Ikebukuro, 2019.12