Department of Architecture and Building Engineering in 2011

Staffs

Architectural Planning/ City Planning

Jun UENO, Professor / Dr. Eng.
Architectural Planning, Environmental Behavior, Environmental Psychology, Community Facilities Design
Rm. 9-869, +81 426 77 2814, jueno@tmu.ac.jp

Tohru YOSHIKAWA, Prof. / Dr.Eng.
City Planning, Spatial Analysis, Geographical Information System
Rm.9-868, +81 42 677 2813, yoshikawa-tohru@tmu.ac.jp

Motoki TORIUMI, Associate Professor / Dr. in France (Urban Studies)
Urbanism in Paris (from the Renissance to today)
Rm.09-867, +81 42 677 2812,

Naoki KUROKAWA, Assistant Professor / M. Eng.
History of Western Architecture, History of Landscape Architecture, Preservation of Architectural Heritage
Rm. 9-828, +81 042 677 1111 Ext. 4764, kurokawa@tmu.ac.jp

Masumi MATSUMOTO, Assistant Professor
Housing Studies
Rm.9-877, +81 426 77 1111 Ext.4788,

Ryo SANUKI, Research Assistant Professor

Architectural Design and History

Katsuhiro KOBAYASHI, Prof. /Dr. Eng.
Theory of Architectural Design, Architectural Design, Modern and Contemporary Architecture
Rm.27-871, +81 42 677 2816,

Yukimasa YAMADA, Professor / Dr. Eng.
Japanese Architecture, Asian/Islamic Architecture, Cultural Heritage
Rm.9-870, +81 42 677 2815, yyamada@tmu.ac.jp

Masao KOIZUMI, Professor / Dr. Eng.
Design Practice, Architectural Design, Design Methodology
Rm. 27-872, +81 42 677 2817, koizumi@tmu.ac.jp

Akira KINOSHITA, Assistant Prof. /M. Eng.
Theory of Architectural Design, Architectural History, Architectural Design
Rm.27-827, +81 42 677 1111 Ext. 4763,

Jun INOKUMA, Assistant Prof.

Tomohiko AMEMIYA, Research Assistant Professor

Construction Management and Building Materials

Seiichi FUKAO, Professor / Dr. Eng.
Building Construction, Building System Design
Rm.9-873, +81 42 677 2818, sfukao@tmu.ac.jp

Yoshinori KITSUTAKA, Professor / Dr. Eng.
Building Materials, Environmental Materials, Durability Evaluation
Rm.9-775, +81 42 677 2797, kitsu@tmu.ac.jp

Makoto TSUNODA, Prof. /Dr. Eng.
Management and Organization of the Building Process, Durable Building System, Circulating System for Building Components
Rm.27-767, +81 42 677 2807,

Kozo KADOWAKI, Assistant Professor / PH.D.
Building Construction, Building System Design
Rm.9-826, +81 42 677 1111 Ext.4762, kkad@tmu.ac.jp

Koichi MATSUZAWA, Assistant Professor / M. Eng.
Building Materials, Concrete Engineering, Durability Evaluation
Rm.9-730, +81 42 677 1111 Ext.4726, matsuzawa-kouichi@tmu.ac.jp

STRUCTURAL ENGINEERING

Manabu YOSHIMURA, Professor / Dr. Eng.
Reinforced Concrete, Earthquake Engineering, Seismic Design
Rm.9-773, +81 42 677 2800, yoshimura@tmu.ac.jp

Kazuhiro KITAYAMA, Prof. / Dr. Eng.
Reinforced Concrete, Seismic Design, Earthquake Engineering, Seismic Retrofit
Rm.9-771, +81 42 677 2802, kitak@tmu.ac.jp

Jiro TAKAGI, Associate Professor / Ph.D.
Structural Design, Steel Structures, Stability
Rm.27-774, +81 42 677 2798, takagi-jiro@tmu.ac.jp

Kazushige YAMAMURA, Assistant Professor / M.Eng.
Structural Engineering, Load and External Force
Rm.9-728, +81 42 677 1111 Ext.4724,

Susumu MINAMI, Assistant Professor / Dr.Eng.
Structural Engineering, Steel Structure, Fracture Mechanics
Rm.9-727, +81 42 677 1111 Ext. 4723, minamis@tmu.ac.jp

Takaya NAKAMURA, Assistant Professor / Dr. Eng.
Reinforced Concrete
Rm.9-728, +81 426 77 1111 Ext. 4724, takaya@tmu.ac.jp

ENVIRONMENTAL ENGINEERING

Noriyoshi ICHIKAWA, Professor / Dr. Eng.
Building Environment, Water Supply and Drainage System in Buildings
Rm. 9-770, +81 42 677 1111 Ext.4744, nichi@ tmu.ac.jp

Nobuyuki SUNAGA, Professor / Ph.D.(Dr. Eng.)
Architectural Environment, Passive and Low Energy Architecture, Thermal Comfort
Rm.9-768, +81 42 677 2805, sunaga-nobuyuki@tmu.ac.jp

Akihiro NAGATA, Associate Professor / Dr. Eng.

Building Environmental Engineering, Hygrothermal Environment, Building Simulation
Rm.9-769, +81 42 677 2804, ngt@tmu.ac.jp

Masayuki ICHINOSE, Assistant Professor / Dr. Eng.
Architectural Environment, Building facilities, Urban environment, Facade Engineering
Rm. 9-733, +81 42 677 1111 Ext.4731, ichinose@tmu.ac.jp

Nobutaka FUKUDOME, Research Assistant Professor

STRATEGIC RESEARCH CENTER

Shigeru AOKI, Professor / Dr. Eng.
Architectural Design, Recycling Architecture, Refining Architecture, Refining City
Rm.9-772, +81 426 77 2801, shigeruaoki@aokou.jp

Overview of Research Activities

ARCHITECTURAL PLANNING / CITY PLANNING

Jun UENO and Masumi MATSUMOTO

Tohru YOSHIKAWA

Development of Methods for Analyzing Network of Community Facilities

Tohru YOSHIKAWA and Ryo SANUKI

This study aims at developing methods for analyzing network of community facilities suitable for the information, aged and mature society of Japan. To this end, usability and optimal locations of community facilities were analyzed in Tama City, which includes the earliest development of Tama New Town, in Tokyo Metropolis, and in Iwate prefecture. Especially, theoretical and empirical study was conducted in terms of transition in usability and optimal locations in accordance with the change in regional population structure.

Development of Platform for Sharing Regional Information utilizing ASP for Map Delivery

Tohru YOSHIKAWA and Hidenori TAMAGAWA

The purpose of this study is to support to build social infrastructure for sharing regional information by the Internet in the matured information society for which Japan is heading. To this end, an information platform, which is low-cost, flexible and open, is developed based on ASP for map delivery on the Internet. The practicality of the platform is tested using a collaborative experimental web site with municipalities and residents. Especially, an experimental analysis was made on creating links between municipal newsletters and web maps.

Development of Analytical Methods for Regional Grid Data

Tohru YOSHIKAWA

The recent spread of geographical information systems and data development by the Japanese Government has liven up use of regional grid data in regional analysis context again. Taking this into account, analytical methods for regional grid data were developed. Especially, the problem which of von Neumann or Moore neighborhood should be used in adjacent analysis of land use was analyzed based on the random walk model.

Motoki TORIUMI

Naoki KUROKAWA

Historical studies on American Architecture and Landscape Design

Naoki KUROKAWA

Regarding to the Japanese pavilions in the American expositions through the early twentieth century, architectural expression and site plan were outlined per exhibition. Introduction of the architecture and garden on the American soil, and the process of reception were scrutinized, so as to elucidate one part of the architectural/cultural exchange between Japan and the U.S. The author also contributed to publish revised editions of two enlightened books on the American architecture.

ARCHITECTURAL DESIGN AND HISTORY

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 2011, design of resent high-rise buildings, architectural works of Zaha Hadid and so on were analyzed. These studies are to be published in Summaries of Technical Papers of Annual Meeting, A.I.J.

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 work. Thereby theory and practice, in other words, basic research and high-level application would be synthesized. In the academic year of 2011, four master students' design works are made. In addition, a part of the winning design work for architectural competition " the energy-saving next-generation house model" held by Yokohama-city was actually constructed.

Research on Conversion and Renovation of Existing Building Stocks

Katsuhiro KOBAYASHI

It is becoming one of the most important and social subject in architectural field of Japan to find out and create various methods to revitalize the existing building stocks. In the academic year of 2007, from the viewpoint of architectural design, we published books on conversion buildings located in U.S.A., Italy, France, Germany, Australia and Finland. In the academic year of 2011, we executed research trips to investigate conversion buildings in Norway, Netherland, Belgium and Germany and made research reports on these works.

Study on English Baroque Architecture

Akira KINOSHITA

Christopher Wren, Nicholas Hawksmoor, John Vanbrugh are so called "English Baroque Architects". Largely affected by continental classical style, they invented unique architectural style by manipulating original design vocabulary. Especially Vanbrugh's design is characteristic. His usage of medieval elements for the elevation and the arrangement of the plan created unique architectural style. In the academic year of 2011, Vanbrugh's compositional method was analyzed by examining the plans of Blenheim Palace and Castle Howard.

Yukimasa YAMADA

Studies on the Architectural History of Timber-framed Churches in the Northern Vietnam

Yukimasa YAMADA, Ryuta OHASHI (Tokyo Kasei Gakuin Univ.)

Christianity in Vietnam, since its introduction early in the sixteenth century, has been evolving and expanding to an indigenous culture among the different society, convention and thoughts from European countries. We are focusing attention on two Catholic dioceses that have been played most important rolls in the history and culture of Christianity in the Northern Vietnam, Bui-Chu diocese and Phat-Diem diocese. Collaborating with the administration office of each diocese, we attempt to conduct surveys and analysis of existing timber-framed churches, and to show their architectural features and the process of their transition. And also, we try to build up the multi-directionally-operated Database System, through sharing information with religious communities and their supporters for the preservation and activation of culture and tradition in the Northern Vietnamese Christianity. In this fiscal year, we have held a workshop for local believers in the precinct of Phat-Diem Cathedral, and a research conference with the participation of researchers of Religious Institute, Archaeological Institute and Universities in Hanoi, reporting the results from our surveys and discussing the cultural values and preservation of timber-framed churches. We submitted some papers to scientific journals of AIJ, and we edited and published a bilingual booklet in English/Japanese and a report on the results of Grants-in-Aid for Scientific Research 2009-2011.

Surveys and Studies on Preservation and Activation of Historical Environment with Comprehending the Values of Cultural Properties

Yukimasa YAMADA

We should comprehend and maintain the cultural properties including their surroundings, without classifying according to some categories, and we should surely hand over them to the next generation as a nucleus of town planning. Standing by this basic idea, following the surveys made last year in Hinode city, Tokyo and Kanazawa, in this fiscal year, we have conducted a survey in Tera-machi Area in Tokyo. And we have reported some findings from the survey of churches in Nagasaki.

Studies on Historic Architecture and Urbanism in the Islamic World

Yukimasa YAMADA

Although numbers of the historic architecture in the Islamic world have their own peculiar features in the architectural techniques and designs, their nature has not yet been understood adequately in Japan, nor has their urbanism as their agglomeration. In a series of our successive studies on the architectural history and urbanism in Islam, we have conducted a survey of Chinese mosques in Ning Xia to report their architectural features at the

2011 annual meeting of A.I.J.

Surveys and Studies on the Preservation of Traditional Villages in Asia
Yukimasa YAMADA

Since a number of the traditional architecture and villages with historical and cultural values have been disappearing rapidly in the Asian countries, their preservation is an urgent issue. Making surveys and studies from this point of view, in this year, we have made a report on a traditional village, called Phuc-Tich, in Hue province, the central Vietnam, based on the results from the field survey so far, at the 2011 annual meeting of A.I.J.

Masao KOIZUMI

Jun INOKUMA

Tomohiko AMEMIYA

CONSTRUCTION MANAGEMENT AND BUILDING MATERIALS

Seiichi FUKAO and Kozo KADOWAKI

Research on Activation Method of Public Residential Buildings Built in the Mass-housing Era
Seiichi FUKAO and Kozo KADOWAKI

Most of public residential buildings built in the mass-housing era require to be refurbished. In FY2011, we developed a technology to make a new opening in the precast concrete wall panel of the residential buildings. We also investigated the actual conditions of residential building regeneration in European countries.

Research on the Construction of Multi-unit Residential Building
Seiichi FUKAO and Kozo KADOWAKI

S/I housing, of which building system is designed dividing into two parts: skeleton (or support, structural elements) and infill (interior components), is widely noticed as a promising building system of multi-unit residential building. In FY2011, we promoted a research on flexibility of dwelling unit design in residential buildings.

Yoshinori KITSUTAKA and Koichi MATSUZAWA

Study on the pH changes and rebar corrosion of the concrete due to carbonation
Yoshinori KITSUTAKA and Koichi MATSUZAWA

Neutralization is a phenomenon that the pH of the pore solution is reduced because of the carbonation reaction by carbon dioxide penetrating into concrete from the atmosphere. Therefore, it is considered that the rebar corrosion in concrete and the pH of the concrete surrounding are closely related. In this study, it was clarified that the progress of carbonation and pH changes around rebar of concrete, and the effect of Neutralization on rebar corrosion was investigated by using electrochemical method.

Concrete shear crack controlling effect by tile finishing with fiber-reinforced mortar substrate
Yoshinori KITSUTAKA and Koichi MATSUZAWA

In this study, the shear crack controlling effect by tile finishing with fiber-reinforced mortar substrate by four-point shear loading method was investigated. It became clear that the use of four-point shear loading method was useful to examine delamination resistance of attached tile under shear force, and it was also clear that the use of fiber for attaching mortar was effective to reduce the tile and concrete cracking under shear force. In addition, crack propagation analysis on tile multiple layer finishing by three-dimension nonlinear FEM analysis was studied.

Color compounding mixing design method for concrete
Yoshinori KITSUTAKA and Koichi MATSUZAWA

In recent years, the usage of colored concrete was increase because of consideration of landscape. In this research, the color properties of cement and pigment, mixing design on exposed concrete surface was investigated. And the color compounding mixing design method for concrete was proposed by the experimental approach.

The effect of adhesive on deformation performance of tile facing at ALC panels

Yoshinori KITSUTAKA and Koichi MATSUZAWA

It sometimes causes peeling or chipping of tile when tile facing is used for exterior wall. On the other hand, adhesive used for attaching tile against wall was recently diversified such as organic adhesive is used. In this research, the effect of adhesive on compressive and tensile deformation performance of tile facing at ALC panels was investigated.

Fracture properties of concrete subjected to high temperature heating

Koichi MATSUZAWA and Yoshinori KITSUTAKA

There is a relationship between tensile strength and compressive strength of concrete.

Therefore, the reduction of compressive strength, by the action of factors such as heat, causes a decrease in tensile strength. And decrease in tensile strength reduces the resistance to cracking, cracking resistance development and durability of the structure. In this research, the fracture properties of concrete subjected to the effects of high temperature heating up to 800°C was investigated.

Makoto TSUNODA

Studies on Activation Technique of Public Building Stock

Makoto TSUNODA

In Japan, demolition and new construction based on declining in the durability and increased availability of buildings continues to be practiced. This practice is unfavorable from the viewpoint of utilization of the existing building stock. Activation technique is necessary for leading preservation and improvement of the public property. In this year, we clarified features of the economic and technical characteristics by owner and contractor that elementary and junior high schools in seismic reinforcement have been made. Furthermore, we have presented the requirements for a composite (device) repair method.

Organization of Subcontractor for Stock Housing

Makoto TSUNODA

Contents of improvement, such as reform, were diversified in requirement of residents. Therefore, the details of construction and its cost were complicated. As regards realization stock-based societies, the productive organization of effective utilization for stock housing, especially contribute to residential requirement were in urgent need. And it was necessary to creating the local housing construction network owing to sustainable improvement. In this year, we have to clarify the contents of remodeling roof-work and roof contractor. Furthermore, from the actual condition of subcontractor for residence and specializing remodeling contractor, we have described in the five types of remodeling production system. And we have pointed out the problems of reform contractor, such as building relationships of trust by continuing orders.

Studies on Design Corresponding to the Building Codes in Comprehensive Renovation.

Makoto TSUNODA

Since the Great Hanshin-Awaji Earthquake, under the enforcement of the Law for the Promotion of seismic retrofitting techniques have been developed various types of seismic reinforcement. As a result, the factors that inhibit the conversion to stock-based society is becoming virtually eliminated. However, when viewed from the side of the social system, such as laws and regulations, it can be said in the operation of current law is insufficient. Also, the technical difficulties can lead to cost increases, can be a hinder to promote seismic retrofitting. In this study, we are in the process of designing a comprehensive refurbishment with a higher added value, to clarify the legislation on the one end of the challenge faced by the designer. As a result, we have presented the way of support to the design of construction-related laws and regulations. And, as an inhibitor of renovation, we are shown to quantify the impact the existing matters ineligible grant, are presented the concept of a comprehensive refurbishment based on the time scale.

Research on how to configure the renovation construction methods corresponding to the building stock

Makoto TSUNODA

Although we are supported by using the formulas of the various construction system for performance is 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 is particularly reflected in the constituent members to direct. In this year, we focus on the external wall of the existing building to clarify the respective components and consider the concept of a valid configuration to improve performance.

STRUCTURAL ENGINEERING

Manabu YOSHIMURA and Takaya NAKAMURA

Effect of spandrel and hanging walls on seismic performance of RC buildings designed by old standards

Manabu YOSHIMURA

The effect of spandrel and hanging walls attached to columns on the seismic performance of old RC buildings was studied by the nonlinear dynamic analyses where column strength decay was considered. Several buildings with different heights of spandrel and hanging walls were analyzed for ground motions with 75cm/s maximum velocity. The major findings from the study are as follows, 1) buildings with high walls suffer severe column shear failure implying dangerous building condition, and 2) buildings with low walls or no walls, although escaped from column shear failure, undergo very large lateral drift for which one can not expect to reuse the buildings.

Collapse drifts of RC columns with varied rates of axial load decrease

Manabu YOSHIMURA and Takaya NAKAMURA

When columns reach near-collapse, some of axial load sustained by the columns transfer to neighboring columns. This study was intended to examine the effect of varied rates of the axial load decrease on the column collapse drift. The study has revealed that, 1) columns for which the initial axial load are decreased show larger collapse drift than columns for which the initial axial load are kept constant, and as the greater the rate of axial load decrease, the larger the collapse drift, 2) the computed collapse drifts well agree with the observed ones if deceased axial load is used when one uses the equation that gives collapse drift.

Seismic retrofit of columns with side walls by increasing their width

Takaya NAKAMURA and Manabu YOSHIMURA

The effectiveness of seismic retrofit of columns with side walls by increasing their width was experimentally studied. The major findings from the tests are as follows, 1) the retrofitted specimens show larger strength than the original specimen, and 2) as for the retrofitted specimens, the strength increases by 10% if the embedded length of reinforcement anchored into existing columns is changed from 15d (d: bar diameter) to 30d.

Kazuhiro KITAYAMA

Estimation of Earthquake Resistant Performance for Prestressed Reinforced Concrete Beams in Interior Beam-Column Subassemblages

KITAYAMA Kazuhiro

Performance-based design for earthquake resistance of buildings is aimed in the world, which can control structural behavior of each member and a whole building during earthquakes. It is necessary to evaluate a force-deformation envelope curve and hysteresis loops of a member and grasp damage levels in a member in order to establish performance-based earthquake resistant design methodology. There is, however, few experimental data available to develop such the performance-based design methodology because earthquake resistant performance of prestressed reinforced concrete (PRC) members changes remarkably with many variations of arrangement of steel bars and PC tendons, depending on bond condition along such longitudinal reinforcement surrounded by concrete or grout mortar.

Therefore, four PRC interior beam-column subassemblage specimens which were designed to form beam yielding mechanism were tested under static load reversals to investigate the influence of bond condition along PC tendons on earthquake resistant performance of PRC beams. Hysteretic characteristics, bond along beam longitudinal reinforcement or a PC tendon, plastic hinge length, residual crack width and deformation, different limit states for beams and energy dissipating capacity were studied.

A deformed prestressing bar with a 22 mm diameter, a plain prestressing bar with a 21 mm diameter and a prestressing strand with a 17.8 mm diameter was used for beam longitudinal reinforcement, which was placed with two deformed steel bars with a 13 mm diameter at the top and the bottom of a beam section in respective specimens. A specimen which has two plain steel bars with a 13 mm diameter at the top and the bottom of a beam

section was added to investigate the influence of bond interaction along PC tendons and steel bars.

Concluding remarks drawn from the study are as follows.

(1) Shape of a hysteresis loop in relationship between story shear force and story drift was dominated by bond condition along beam longitudinal bars; good bond along beam bars resulted in fat spindle-shaped hysteresis loops, whereas poor bond along beam bars induced pinching hysteresis loops such as observed in R/C structures. Buckling or rupture of beam longitudinal bars depended on bond performance along PC tendons; these did not happen for good bond along PC tendons, whereas these were observed for poor bond along PC tendons.

(2) When deformed bars were used as a beam longitudinal bar, bond strength along beam bars in a center of a beam-column joint was related to bond condition along PC tendons. Beam bar bond strength was enhanced by confining action to beam bars due to both axial compressive load in a column and radial compressive force originated from bond action on the surface of a sheath tube if good bond was kept along PC tendons in a beam-column joint.

(3) Residual deflection and residual crack width for a PRC beam was governed by bond condition along PC tendons. The better bond condition along PC tendons became, the larger both was.

(4) A service limit state in PRC beams was attained due to beam bar yielding at a beam deflection angle of 0.24 % to 0.59 %. A first restorable limit state was attained due to elastic limitations of PC tendons or slight crushing of concrete at a beam deflection angle of 0.97 % to 1.28 %. A second restorable limit state was attained due to residual deflection angle of 0.5 % or yielding of PC tendons at a beam deflection angle of 1.70 % to 2.71 %. A safety limit state was attained due to core concrete crushing at a beam deflection angle of 2.88 % to 4.36 %.

(5) A skeleton curve in force - deformation relationship for PRC beams predicted by AIJ provisions was able to trace well an envelope curve obtained by the test. Beam deflections at several events such as beam bar yielding and concrete crushing, however, were underestimated by the prediction.

Advanced Estimation Method for Earthquake Resistant Performance of Beams in Reinforced Concrete Frame

KITAYAMA Kazuhiro

Deformation capacity of reinforced concrete (R/C) beams in beam-column moment-resisting frames can be estimated precisely up to yielding of longitudinal reinforcement according to Guidelines for Performance Evaluation of Earthquake Resistant R/C Buildings published by Architectural Institute of Japan in 2004. The proposed method to estimate deformation capacity corresponding to a restorable limit and a safety limit for R/C beams, however, is not verified through laboratory tests.

Therefore, three cruciform beam-column subassemblage specimens were tested in 2010 to investigate deformation capacity of R/C beams, especially focusing on additional deformation due to pullout of a beam longitudinal bar from both a beam-column joint panel and a beam member caused by bond deterioration along beam bars. A diameter of a beam longitudinal bar, i.e., 13 mm or 22 mm and a depth of a beam section, i.e., 400 mm or 250 mm, were varied in the test.

Deformation performance of R/C beams at shell-concrete crushing, which is one of factors governing a restorable limit state, was studied in detail from test results. Estimation method proposed by AIJ Guidelines in 2004 was verified by resolving beam deflection into four components measured in the tests; elastic flexural deformation, shear distortion, additional deformation due to pullout of beam longitudinal bars from a beam-column joint and additional deformation due to bond deterioration along beam bars in a span and flexural cracks, called as 'the strain shift deformation.' Shell-concrete crushing in the test was defined as occurrence of a crack parallel to the beam axis at beam end concrete subjected to compression. Shell-concrete crushing at beam end occurred at a beam deflection angle of 1.6 % to 3.1 % for a beam with a shear span ratio of 4, and 4.2 % to 5.3 % for a beam with a shear span ratio of 7. Conclusions drawn from the study are as follows.

(1) Beam deflection components at shell-concrete crushing varied according to bond condition along beam bars and a shear span ratio of the beam. The strain shift deformation shared 36 % to 63 % of total deflection of beams, which was the greatest among four components above-mentioned. Flexural deformation shared one-third of total deflection of beams when bond deterioration along beam bars occurred due to using of 22 mm diameter deformed bars as beam longitudinal bars. Contribution of additional deformation due to pullout of beam bars from a joint varied with good bond or poor bond; which was 20 % to 25 % of total deflection under poor bond, but merely 10 % under good bond.

(2) Additional deformation due to pullout of beam bars from a joint and the strain shift deformation were overestimated, and flexural deformation and shear distortion were in contrast underestimated at shell-concrete crushing by AIJ Guidelines in 2004.

Shear Performance Estimation of Shear Failing Reinforced Concrete Beams and Perforated Beams

KITAYAMA Kazuhiro

AIJ Standard for Structural Calculation of Reinforced Concrete Structures is available as one of allowable stress design methods in a system of earthquake resistant design regulated by Building Standard Law in Japan. However, standards for calculating lateral load-carrying capacity based on an anticipated deformation of a R/C building designed to form flexural yielding mechanism in beams, columns and walls are not prepared in Architectural Institute of Japan. Therefore as one of pre-works for providing such a standard, accuracy of ultimate shear strength predicted by some estimation formulae was verified for R/C beams and perforated beams failing in shear or bond splitting prior to beam yielding through newly collected test results. Empirical equation was proposed using the product of shear reinforcement ratio and yield strength of shear reinforcement to predict lower bounds of shear distortion angle at ultimate shear strength for R/C beams.

A data-base set was built by surveying previous test results published in literatures in 1990 to 2010, collecting 810 specimens among R/C beams and perforated beams which failed in shear. Following findings was obtained from statistical studies using the data-base.

(1) Arakawa Minimum and Mean Formulae, A Method according to AIJ Design Guidelines for Earthquake Resistant R/C Buildings Based on Inelastic Displacement Concept in 1999 and Hirosawa Formula for perforated beams were conservative for estimating both ultimate shear strength and shear crack strength. These predictions had, however, wide scatter to test results.

(2) Arakawa Mean Formula and A Method provision assuming no plastic rotation at a hinge region were able to predict ultimate shear strength with equal accuracy for beams failing in shear, made of normal-weight concrete with compressive strength ranging from 4.5 to 167 N/mm2.

(3) Arakawa Mean Formula was able to predict shear force for bond splitting failure with same accuracy as that for shear failure for beams made of normal-weight concrete although Arakawa Mean Formula does not take positively bond splitting failure into account.

(4) Proposition by AIJ Design Guidelines in 1999 was more conservative for estimating ultimate shear strength for perforated beams than Hirosawa Formula, but had wide scatter to test results.

(5) The first term in an equation to estimate the long-term allowable shear force for perforated beams underestimated the influence of diameter of an opening in a beam. Then, lower bounds of shear crack strength in test results were adequately estimated by replacing the term (1-H/D) with the term (1-1.61H/D) in the first term of the equation, where H is a diameter of an opening in a beam, and D is an overall depth of a beam section.

(6) Lower bounds of shear distortion angle at ultimate shear strength for R/C beams were formulated as a linear function of the product of shear reinforcement ratio and yield strength of shear reinforcement from least square regression analyses using test results which were presumed to fail in shear-tension.

Failure Mechanism of Reinforced Concrete Cruciform Beam-Column Joint

KITAYAMA Kazuhiro

Shiohara in the University of Tokyo proposed a new mechanics model for joint failure, which has nine degree-of-freedom and shows deformation mechanism based on opening of diagonal cracks and strain distribution in a joint panel. Shiohara also proposed a formulation to estimate joint ultimate strength and a limitation of the reinforcing amount in a joint panel on the basis of this new model. A new model proposed by Shiohara, which reflects quite different concept from current one for joint failure mechanics, indicates that a beam-column joint panel does not fail in shear but fails in flexure.

Based on new failure mechanism proposed by Shiohara, a beam-column joint in a cruciform subassemblage which has almost same ultimate flexural capacity for both sections of beams and columns tends to fail due to a concentration of deformation generated from wide opening of diagonal cracks after yielding of both longitudinal bars of beams and columns. Moreover, the closer is the ultimate flexural capacity in a beam section to that in a column section, the more pinching shape does a hysteretic loop of a force-deformation relation exhibit, representing poor energy dissipation.

However, adequacy of a failure mechanics model of a joint panel newly proposed by Shiohara was not always verified by laboratory tests under different conditions which can simulate actual R/C buildings. Then, static loading tests to five R/C cruciform beam-column subassemblage specimens were carried out to verify adequacy of the new failure model, where following factors related to stiffness, lateral capacity and damage of a joint panel were changed, i.e., the ratio of ultimate flexural capacity of a column section to a beam section, column axial load in tension and compression, beam axial load in compression and an aspect ratio of a height to a depth of a beam-column joint panel. The ultimate flexural capacity ratio of a column section to a beam section ranged from 1.2 to 1.5 in the tests.

Test results were summarized as follows.

(1) First layer of beam longitudinal bars yielded at a story drift angle of 0.6 % to 0.8 %. Lateral hoops in a beam-column joint region yielded at a story drift angle of 0.8 % to 1.0 %. After column longitudinal bars yielded, a beam-column joint panel eventually failed for all specimens although joint shear strength predicted by

AIJ Guidelines in 1999 was 1.4 to 1.9 times as great as joint input shear force at beam bar yielding. Failure process as mentioned-above in the tests agreed almost with a failure mechanics model proposed by Shiohara. Hysteresis loops exhibited a pinching shape, indicating poor energy dissipation. An Unbonded PC tendon to provide compressive force to a beam section did not yield for Specimen J5.

(2) Abeam-column joint with an aspect ratio of 1.1 reached peak strength at a story drift angle of 3 %, whereas a joint with an aspect ratio of 1.7 reached prematurely peak strength at a story drift angle of 1.5 %, and lateral capacity after the peak strength declined remarkably.

(3) A peak story shear force for all specimens was almost equal to a story shear force at ultimate flexural capacity of a beam section. It seems that there is no problem in structural design when lateral capacity in R/C frames which fail in a joint panel after beam yielding is predicted from ultimate flexural capacity of beams. On the other hand, a peak story shear force in the tests was 0.93 to 0.84 times that predicted by a Shiohara's model. This is attributed to following assumptions in a Shiohara's model; wide compressive area width equal to column width at a center of a joint panel and no attention to deterioration of concrete compressive strength due to cyclic reversed loading.

Seismic Performance for Existing Precast Reinforced Concrete Shear Wall Retrofitted around New Opening

KITAYAMA Kazuhiro, MINAMI Susumu and TAKAGI Jiro

Assuming that a new opening is provided to a shear wall in existing buildings constructed by reinforced concrete precast wall system (Called WPC), eight three-dimensional half-scale specimens with slabs and orthogonal walls to a web wall were tested in 2009 under static load reversals to study on influence of a new opening and effect of retrofit on seismic behavior. The effect of retrofit around a new opening to a precast shear wall was investigated in 2011 for three specimens with multi-story openings; a control specimen with no opening (called N5M) and specimens strengthened by reinforced concrete or steel around a new opening (called C5M and S5M respectively) were picked. Specimen N5M without retrofit reached the peak lateral capacity due to yielding of a horizontal steel-joint which connects an upper precast R/C wall panel with a lower one. A lateral force capacity, hereafter, descended to 0.74 times the peak capacity which was caused by the partial rupture of fillet welding at a horizontal steel-joint, concrete crushing around a horizontal steel-joint and spall-off of concrete adjacent to a vertical joint between a precast web panel and a flange panel. Conclusions taken by the study are as follows.

(1) Peak strength for a shear wall with a new opening retrofitted by reinforced concrete or steel members was enhanced to 2.1 times or 1.6 times respectively that for a no-retrofit wall with an opening, and initial stiffness 4.7 times or 2.5 times respectively that for a no-retrofit wall. However, lateral deformation capacity degraded for a retrofitted wall around a new opening. Increase in lateral force carrying capacity due to a retrofit moreover caused shear failure in a precast web wall. It is difficult to use successively WPC buildings retrofitted around a new opening after major earthquakes because of the shear failure of a wall.

(2) A peak in a lateral force capacity was attained due to following reasons; yielding of both a horizontal steel-joint at a second floor and longitudinal bars in tension of attached R/C columns around a new opening for a retrofitted wall by reinforced concrete, and yielding of anchorage bars of a horizontal steel-joint and widening of shear cracks in a web wall for a retrofitted wall by steel members.

(3) Uplift rotation did not occur and in-plane shear deformation was dominant for a precast wall panel in a compression side in a retrofitted specimen by reinforced concrete members because of high integration between existent walls and attached R/C columns and beams for rehabilitation. A steel plate which connected an upper wall to a lower wall for a steel-retrofitted specimen restrained uplift rotation for a precast wall in a compression side, but bent to out-of-plane. Therefore, a precast wall in a compression side rotated around this steel plate, and concrete crushed at the compression side around a horizontal steel-joint in this wall panel. Such different behavior for precast wall panels in a compression side retrofitted by R/C or steel resulted in the difference in peak lateral capacities.

(4) Sum of contributions of anchorage bars in a horizontal steel-joint, vertical connecting steel bars, attached R/C columns or attached steel channels and attached beams to lateral load-carrying capacity almost agreed with peak lateral capacity obtained by the tests. Contribution of attached R/C columns around a new opening to lateral load-carrying capacity was 1.64 times as great as that of attached steel channels.

Field Reconnaissance to School Buildings Damaged by the 2011 East Japan Earthquake

KITAYAMA Kazuhiro, NAKAMURA Takaya, KISHIDA Shinji (Shibaura Institute of Technology) and TAJIMA Yuji (Asiss Co. Ltd.)

Many buildings suffered severe damage by the 2011 East Japan Earthquake in Tohoku district and North Kanto district. Architectural Institute of Japan organized field reconnaissance teams after the earthquake to research damages to school buildings based on a request from the Ministry of Education in Japan. A team organized by Tokyo

Metropolitan University with Shibaura Institute of Technology investigated 18 buildings in Tochigi Prefecture, 1 building in Saitama Prefecture and 20 buildings in Miyagi Prefecture in April, May, June, November and December in 2011. Damage rate to structural members such as a column, a wall, a beam and a brace was determined by researchers, and the damage grade of the building was ranked. An example for the field survey to a damaged school building is shown below.

N junior high school at Sendai City is located at a flat site where the JMA seismic intensity scale was 6- grade due to the earthquake. A reinforced concrete (R/C) school building with four stories, which was built in 1984 after the code revision in 1981 to current level, is supported by a spread foundation mounted on underground unreinforced concrete piers with a height of 4 m. This building consists of R/C 12 bays for a longitudinal direction and one bay for a transverse direction constructed by a cast-in-place prestressed concrete (P/C) structure, achieving a long span of 18.4 m. There is a void space over the full height at a center of the building. There is few shear walls for the transverse direction because of using light-weight steel partitions between class rooms.

A shear wall with an opening at the second floor in the longitudinal direction, having a thickness of 150 mm, failed in shear. Many flexural cracks of Grade 2 were observed for R/C beams of all floor levels. Cover concrete spalled off at the end of beams. Shear cracks of Grade 2 occurred at a plastic hinge region of R/C beams. R/C walls located at an out-of-frame failed remarkably in shear, accompanied with spall-off of concrete and buckling of steel bars. Residual seismic capacity after the earthquake was estimated to descend to 0.69 times the seismic capacity before the earthquake for the second story in the longitudinal direction, regarded as the intermediate damage level.

There was no significant damage for beams, columns and shear walls for the transverse direction, which suffered from slight flexural or shear cracks of Grade 1.

Seismic Performance and Damage by the 2011 East Japan Earthquake to Reinforced Concrete School Building Retrofitted by Steel-braced Frame

KITAYAMA Kazuhiro

The 2011 East Japan Earthquake caused a huge disaster in Tohoku and Kanto areas due to mainly both tsunami and serious accident at a nuclear power plant. In such a social atmosphere, it is inevitable that people does not pay attention to damage of reinforced concrete (R/C) buildings induced by shaking due to earthquake ground motions. However, damage of R/C buildings retrofitted by a steel-braced frame, a R/C shear wall, and so on should not be overlooked.

Seismic capacity evaluation and seismic rehabilitation of existing R/C buildings are carried out actively in Japan after the 1995 Kobe Earthquake. Many school buildings especially have been retrofitted to enhance earthquake resistant performance because of its functions required as both a daily educational and an emergency evacuation facility. Tremendous ground shaking by the 2011 East Japan Earthquake was a new experience for these retrofitted buildings in a very extensive area of East Japan. Therefore, adequacy of recent seismic retrofit design method for existing R/C buildings should be verified through damage survey on R/C school buildings after the 2011 East Japan Earthquake.

This study dealt with damages of a R/C three-story school building retrofitted seismically by multi-story steel-braced frames in Tochigi prefecture. Seismic resisting performance of the building during the earthquake was discussed through the seismic capacity index evaluated according to "Standards for seismic performance evaluation of existing reinforced concrete buildings" comparing with observed damages. A problem concerning the seismic retrofit design method for existing R/C buildings was pointed out in the study.

The reinforced concrete class-room building with three stories, which was retrofitted by steel-braced frames for the first, second and the penthouse stories, suffered moderate damage for the third story, where no seismic retrofits were conducted and four columns failed in shear subjected to the 2011 East Japan Earthquake. Shear failure also occurred in a few columns at the first and second stories with seismic retrofits. The vertical distribution of the seismic capacity indices in a longitudinal direction, which seems to be adequate, can not explain the reason why shear failure of columns concentrated on the third story. It is probable that the actual lateral stiffness in the first and second stories after the retrofit was greater than that predicted according to the evaluation standards because existing drop and spandrel walls adjacent to a steel-braced frame remained without any seismic slits. In other words, irregular story stiffness distribution over the height of the building, generated by the seismic retrofit except for the third story, resulted in the concentration of a large deformation to the third story and caused shear failure of some columns.

R/C piles under footings of the building suffered severe damage such as shear failure, buckling of a longitudinal bar, and many cracks. An inclination of columns which was not observed at the survey in April, 2011 grew gradually during eight months.

Technical Contribution by Sano Toshikata to Evolution of Earthquake Resistant Design of Buildings

KITAYAMA Kazuhiro

Sano Toshikata (1880-1956), a pioneer researcher in earthquake engineering in Japan, published "Earthquake Resistance of Buildings" in 1915, and in the paper advocated earthquake resistant design of buildings using a seismic horizontal coefficient (called Shindo) which was defined as the maximum ground acceleration normalized by gravity acceleration assuming a building to be rigid. Papers and monographs on structural mechanics of buildings involving seismic design, submitted by Sano to Journal of Architecture published by AIJ and Journal of Earthquake Damage Prevention Association in 1905 to 1943, were collected to study on technical contribution made by Sano Toshikata to the evolution of structural mechanics of buildings.

Sano also carried out structural design for several buildings; for instance, the Kokugikan Sumo Arena made of steel, Maruzen Book Store made of steel and the Hall for Bachelors made of concrete reinforced by both steel members and steel bars. The Hall for Bachelors was especially designed in 1928 to a seismic horizontal coefficient of 0.1 according to the Urban Building Law Enforcement Regulations which were revised in 1924 based on a lesson learned from the Kanto Earthquake in 1923.

Sano expressed his apprehensions in 1931 that a seismic horizontal coefficient of 0.1 decided by The Regulations at the time was used like a golden rule for seismic design to all buildings located at any place in Japan only seven years later after the Regulations were established. He warned structural designers not to have wrong conception that all buildings designed to a seismic horizontal coefficient of 0.1 always be safe, which is a mere illusion. It is found that ordinary structural designers in behalf of themselves tended to pick only superficiality from very convenient and simple design protocol called "Shindo Method" proposed by Sano. Note that Sano worried about such circumstance as is frequently seen in current seismic design fields, with a great insight eighty years before.

Jiro TAKAGI

Kazushige YAMAMURA

Development of Methods to Collect, Transmit and Share Disaster Information by Internet

YAMAMURA Kazushige

To collect, transmit and share disaster information by Internet, practical studies are carried out in the East Japan Great Earthquake Disaster. At occurrence of very huge disaster, a decentralized administration system, such as wiki, is valid, and it is also important to decentralize server computers. It is proved that a mailing list system to gear to WWW is effective to get information from general public.

Susumu MINAMI

ENVIRONMENTAL ENGINEERING

Noriyoshi ICHIKAWA

Study on usage of water in consideration of utilization of resources

Noriyoshi ICHIKAWA

This research describes the calculation results of the potential quantity of available water resources in each prefecture. At present, there is only the data of the potential quantity of available water resources which is divided into 14 areas in Japan. It is inadequate discussion about the water resources with a viewpoint from prefecture level, so we adopt new calculation method. We first improved estimation formula for quantities of evapotranspiration based on the Makkink method. The calculation accuracy of improved estimation formula is closer to that of Penman method. This means that estimation accuracy is excellent in general. We also revealed the two coefficients of improved estimation formula to calculate quantities of evapotranspiration at any region in Japan. These coefficients contribute to simplify the improved estimation formula. The estimation accuracy of simplified formula is equivalent to that of the improved estimation method.

Development of Optimal Water Supply System in Buildings

Noriyoshi ICHIKAWA, Hiroshi TAKATA (Hiroshima Univ.), Masayuki MAE (Univ. of Tokyo), Keiko MURO (Ashikaga Institute of Tech.), Tamio NAKANO (Fukui Univ. of Tech.)

Receiving Tank Water Supply system has been adopted in the building which was higher than middle scale. However, Direct Booster Water Supply (DBWS) system method 10 was developed several years ago. Thereafter ten story of DBWS methods became adopt a lot in a building of a class. Recently, Direct Water Supply system is adopted for a building to five story, too. Both water supply method has many advantages, but there are many the

problems that you must examine in future. This year, I examined about the construction of the model of the design quantity of water consumption by the estimated maximum value and so on.

Investigation of Energy Consumption including Hot Water in Hospital

Noriyoshi ICHIKAWA

There is very much quantity of energy used for hot water supply facilities in buildings. Now it is an urgent problem to clarify the use reality of hot water supply. However, for a hospital institution, there are an extremely few data for designs. In this study, we really measured it for quantity of hot water use in a hospital institution, quantity of energy use. In addition, we analyzed managed related data. We examined it for problems of an existing hot water supply system, volume of hot water storage tank, pipe diameter, heat loss, and recovery or utilization of heat.

Nobuyuki SUNAGA

Research on Comfortable Bioclimatic Architecture

Nobuyuki SUNAGA

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 to popularize Bioclimatic Architectures which are buildings designed by considering energy conservation and natural energy utilization, it is necessary to clarify the actual performance of them and to establish evaluation methods which are simple and widely acceptable for the public. We have been engaged in the research of these themes, and, in recent years, we give high priority to improve building stocks.

In this academic year, we mainly carried out following studies and activities.

1. Environmentally Friendly School (Eco-School)

a) Actual Performance of Eco-School; We measured and examined the actual thermal performance of three Eco-Schools opened from 2009 to 2011 in Tokyo, which were designed with heat/cool pit, out-side thermal insulation, horizontal louvers and so on. Result of the comparison of them, it is shown that the appropriate length of heat/cool pit is about 50 m.

b) Architectural Standard for School Building; We verified the appropriateness of "the performance standard", which we proposed in last year, by using the monitoring data of the three Eco-School above mentioned. Also we examined "the specification standard" by carrying out a simulation studies about TSS-S (Typical Solution Sets for School) that is suitable for the climate conditions of each district. As results of the studies it is shown 'south corridor' is effective, and so on.

c) Energy Consumption of High Schools in Tokyo; Air conditioning (cooling) system was installed in all classrooms of all high schools in Tokyo till 2008 academic year. In order to consider the effective energy conservation methods for them, we examined the tendency of energy consumption and the influence of installing cooling systems using about 200 high schools' data, and also PAL and CEC. As results of them it is clarified the thermal insulation performance is improved but the eave is not installed in recent years, and so on.

d) Contribution to IBEC (Institute for Building Environment and Energy Conservation); Using the results of the series of Eco-School studies, N. Sunaga wrote an article titled "Current Environmental Performance and Next Step of School Building" to the special issue, 'Energy Conservation of School Building', IBEC No.187,

2. Development of Insulated Door at Inside of Window (IDiW)

We have been showing the high thermal performance of IDiW, that is the insulated doors installed at the inside of windows from 2008. In this year we examined the effects of holes of IDiW for lighting by experiments using subjects. Other hand we manufactured several IDiW by the way of trial for an actual house. They are introduced by one of visitors at http://aijkbd.blog.fc2.com/.

3. Effect of Home Energy Management System (HEMS)

We have been studying the effect of HEMS on the energy conservation in detached houses with PV system by filed measurement and questionnaire survey, collaborating with a house maker from 2010. In this academic year, it is clarified that the energy consumption of houses with HEMS are 7.4 % (average) lower than that without HEMS, and so on.

4. Actual Condition and Energy Saving of Lighting System in University Building

In order to reduce the energy consumption of university, we clarified the illumination in classrooms is over the standard and the effect of the sliding switch of lighting system on the keeping proper environment and saving energy. We proposed a few strategies to reduce the lighting energy, but it is clarified to keep the proper environment is difficult in the actual using condition.

5. Refinement of Japanese Wooden House

We designed a refinement of Japanese wooden house built 28 years ago. In this design a new thermal insulation method was adopted. That is to put up insulation boards with non-burning paper directly on the inside surface of the old wall. This method is easy, low cost and giving high thermal performance. Furthermore the surface of the non-burning paper looks like traditional sand wall in Japanese Tatami room, so that gains favorable reception.

6. Promoting Sustainable Improvement of residential buildings in China

[International Agreement with Northwestern Polytechnic University (NPU), China]

Based on the joint research titled 'Promoting Sustainable Improvement of residential buildings in China', we are considering the improvement methods for the typical residences in the north part (very cold region) and the middle part (cold region) in Shaanxi province. In this academic year we presented the results of this study at the international conference in Lushun, China.

7. Other outcome (Appointment)

1) "Architectural Environment Book -Find out / Design Bioclimatic Architecture" edited by N. Sunaga, as the head of a committee of AIJ, is published in May 2011.

2) N. Sunaga organized as a member of the bioclimatic design committee the 41th Thermal Environment Symposium of AIJ.

3) N. Sunaga took the chair at the panel discussion of the forum titled 'From Net-Zero Energy House to Energy Self-Supported House' in the Renewal Energy Exhibition 2011.

4) It was decided that two master course students will win the Student Encourage Award from Japan Solar Energy Society.

Akihiro NAGATA

Uncertainty Modeling of Building Utilization

Akihiro NAGATA

Actual Utilization of buildings is varies a great deal and raises a variety of heat load and energy consumption of buildings. This study aims to develop a method to incorporate this uncertainty into heat load calculations. This year again, we measured a diversity of utilization (occupancy, lighting and OA appliance, setpoint temperature and humidity) in a large government office building. Especially, the results of the electricity saving measures are clarified.

Thermal Performance of the Window

Akihiro NAGATA

The thermal performance of the window has been evaluated by laboratory test, but it is very difficult to check for all types of windows because there exists a huge combination of sizes, frames and glazings. For this reason, JIS A2102 which stipulates the calculation method based on ISO 10077 has been published in March 2011. But there is concern about a possible discrepancy between measured and calculated performance and it is assumed to cause the size effect by the influence of the distribution of heat transfer coefficient. Last year, we developed the device for measuring the distribution of heat transfer coefficient. This year, a round robin test using this device was conducted in the six representative laboratories in Japan.

Masayuki ICHINOSE

Development of integration of Building Information Modeling and architectural environmental simulation

Masayuki ICHINOSE, Masashi IMANO (The University of Tokyo), Yoji ISHIZAKI (Obayashi Corp.), Yoshinobu ADACHI (SECOM Co., Ltd.) and Makoto Oura (Autodesk Inc.)

Integrated scheme for HVAC design including heat load simulation, studying system and stream of air was investigated and verified. This scheme includes the process that convert from building model described by International Foundation Classes to elements for the architectural environmental simulation including heat load and Computation Fluid Dynamics. In this process, the versatile method is found out and the desired elements supposed for integrating with the architectural environmental simulation.

Investigation of practical calculation model for solar heat and light considering spectral characteristics of solar and building facade

Masayuki ICHINOSE

This research suggest practical and accurate calculation model. This model reflect spectral characteristics of solar and building facades by using color temperature of black body for visible radiation and two wave-bands

including Ultra violet and visible and Near infrared for overall solar heat radiation. Approximate method of color temperature and two wave-bands are verified in the various conditions of solar altitude and climate. This study is based on the long-term spectral solar irradiance data that is separated to direct and diffuse components.

Verification of the high-performance building facades and HVAC system at Marunouchi Park Building

Tomoaki TAKASE (Mitsubishi Jisho Sekkei Inc.), Takashi INOUE (Tokyo University of Science) and Masayuki ICHINOSE

In the revival project of Mitsubishi Ichigokan includes Marunouchi Park Building that is a super high-rise office building. This building is planned to equip high-performance facades and high-efficiency HVAC system for achieving the low-emission. To estimate and evaluate effect of these elements, numerical simulation and examination using full-size model are performed in initial phase of the planning. From these studies, the facade's specification is applied Air Flow Window with Low-E glass which is the first case in such scale and built-in automatic control blind. After completion of construction, long-term commissioning including control of air flow integrating window and HVAC system and Variable Air Volume is executed. Through commissioning process, desired operation is realized and verified the performances.

Fundamental study on realization of the lighting planning method considering spectral characteristics of lighting and surface reflectivity

Nozomu YOSHIZAWA (Tokyo University of Science) and Masayuki ICHINOSE

This research investigates actual estimation method of the visible color rendering that consider spectral characteristics of light source and surface reflectivity. Because common compute graphic method for example RGB involves relatively large error in the process of multiple reflection, multi-band model based on the principle component analysis is suggested and verified.

Practical research on the utilization of daylight

Takashi INOUE (Tokyo University of Science) and Masayuki ICHINOSE

Multidisciplinary and practical approach to realize utilization of daylight and solar shielding is studied. These include collaborative control of automatic control blind and dimming lighting system, newly developed control of color temperature illumination system, retro reflective solar shielding film, and so on. Some of them come to be supplied as commercially available systems.

Observational study on the actual performance of central HVAC systems

Ryuji YANAGIHARA (The University of Tokyo), Yuzo SAKAMOTO (The University of Tokyo) and Masayuki ICHINOSE

It still be major for the large scale of the office buildings to be equipped with central HVAC system. It is necessary to operate appropriately these systems. From such point of view, dynamic characteristics of load factor, handling chilled or hot water and air are studied at mainly the buildings of The University of Tokyo. Especially, influence of the excessive capacity of the facilities on the energy consumption and indoor environment is indicated.

Study on the ideal concept for the regulatory and system of architectural environment and building facility

Takaharu KAWASE (Chiba University), Akira TAKAKUSAGI (Toyo University), Masayuki ICHINOSE, et al.

Current Building Standards law of Japan and relevant law have many problems in aging, discrepancy between regulatory and so on. Particularly, because department of architectural environment and building facility have been increasing the social importance and priority in practical business since the regulatory established, it is desired to study from academic aspect immediately about these problems. In this study, fundamental elements of the building facility for protecting human life, health and property are investigated. Form these points of view, issues as bellows are studied; 1 Ideal concept for regulatory of outside and indoor environment, 2 Ideal concept for regulatory of energy conservation and global environment problem and 3 Ideal concept for system of facility engineers. The detailed items are segmentalized and listed to corresponding current regulatory. From these studies, lack of items and overlapping or discrepant points are visualized.

Study on the buildings of subsequent generation corresponding to the global climate change

Kazuhiro SOGA (Kagoshima University), Taro MORI (Hokkaido University), Satoshi NAKAYAMA (Okayama

University of Science), Masayuki ICHINOSE, Hayato HOSOBUCHI (Akita Prefectural University) and Kohki KIKUTA (Hokkaido University)

By using future forecast weather data estimated by Japan Meteorological Agency, the ideal concept of the environmental buildings in 30 to 50 years later is studied. When the case of aggressive warmer climate of IPCC is assumed, cooling load for HVAC system will occupied in whole year that is varied from current status. Detailed investigation including changing of the balance of sensible and latent heat remain to be studied.

STRATEGIC RESEARCH CENTER

Shigeru AOKI

The practical studies on refining of housing complexes and cities are progressed steadily with Leading Project II budget.

- Supervising on the refining of a JKK's housing complex by young architects.
- Teaching 7 businesspeople on the refining methodology of a housing complex.
- Surveys on two housing complexes of UR Kyushu are completed to be published as a book in October 2012.
- Surveys and refining proposal on old cities are completed to be published as a book in May 2012. The design proposals are mainly based on SMART technology applied to old shopping streets called 'Shouten-gai'.

List of Research Activities

ARCHITECTURAL PLANNING / CITY PLANNING

Jun UENO and Masumi MATSUMOTO

Tohru YOSHIKAWA

1. Refereed Articles

Ryou SANUKI and Tohru YOSHIKAWA, Evaluation of Accessibility to Gas Station and Effects of Closedown A Case Study in Iwate Prefecture, Journal of Architecture, Planning and Environmental Engineering (Transaction of Architectural Institute of Japan), vol.77(673), pp.639-648, (Mar. 2012), (in Japanese).

HAGA Masakazu and YOSHIKAWA Tohru, The Influences of Micro-Topography on The Distribution of Stores-A Case Study on Shimokitazawa-, Journal of the City Planning Institute of Japan, No.46-1, pp.55-62, (Apr. 2011), (in Japanese).

2. Proceedings of Oral Presentations

YOSHIKAWA Tohru, "Analysis of Weights of Neighboring Cells in Adjacency Analysis of Land Use Using Grid Data Based on Random Walk Models", Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, F-1, pp.835-836, (Aug 2011), (in Japanese).

SANUKI ryou and YOSHIKAWA Tohru, The Modifi able Areal Unit Problem in Network Analysis Comparing Data of National Census between Small Areas and Basic Unit Blocks- Study in Kitakami Basin and Echigo Plain -, Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, F-1, pp.555-556, (Aug 2011), (in Japanese).

YOSHIDA Yuto and YOSHIKAWA Tohru , A study on changes of the metropolitan suburbs focused on tenant replacement-A case study of Sakura city-, Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, F-1, pp.143-144, (Aug 2011), (in Japanese).

KANEKO Hiroyuki and YOSHIKWA Tohru, Study on characteristics of space outside of the dwelling units in an apartment housing estate from the viewpoint of assessment by residents, Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, F-1, pp.467-468, (Aug 2011), (in Japanese).

KAWAMURA Yosuke and YOSHIKAWA Tohru, The study of spatiotemporal distortions of traffic network in the central urban area, Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, F-1, pp.819-820, (Aug 2011), (in Japanese).

MATSUKAWA Yu and YOSHIKAWA Tohru, An evaluation method of public open space in terms of length of glance, Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, F-1, pp.637-638, (Aug 2011), (in Japanese).

NARIMOTO Yuki and YOSHIKAWA Tohru, A method to analyze street spaces in terms of the depth of view, Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, F-1, pp.333-334, (Aug 2011), (in Japanese).

SUZUKI Tatsuya, YOSHIKAWA Tohru and SANUKI Ryo, Spatiotemporal structure analysis focusing on the facilities to replace function of houses, Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, F-1, pp.601-602, (Aug 2011), (in Japanese).

3. Others

3-2 Research Reports

Tatsuya SUZUKI, Ryo SANUKI and Tohru YOSHIKAWA, Spatio-temporal StructureAnalysis on Locations of Facilities to Replace Functions of Houses and Residential Population, Reports of the City Planning Institute of Japan, No.10-2, pp.103-108, (Aug.2011), (in Japanese).

Motoki TORIUMI

Naoki KUROKAWA

Naoki KUROKAWA, Japanese Pavilions in the American Expositions through the Early Twentieth Century -Annotation upon Architecture and Sites-, Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, Vol. F, pp. 741-742, 2011.

Naoki KUROKAWA (Editor in chief/ Co-author), Guide to the World Architectur e and Townscape, Volume 6, America/Canada/Mexico, Renewed Edition, Xknowledge, 207 p., 2011.

Naoki KUROKAWA (Coauthor), Encyclopedia to Discover America, New Edition, Heibonsha, 880 p., 2011.

ARCHITECTURAL DESIGN AND HISTORY

Katsuhiro KOBAYASHI

2. Proceedings of Oral Presentations

KOBAYASHI katsuhiro, MITAMURA Tetsuya, KADONO Sho, OGAWA Hitoshi: Studies on the Architectural Conversion in Shanghai, Part 1- Conversion from Commertial, Residential Public Facilities-, Summeries of Technical Papers of Annual Meeting, A.I.J.(Aug. 2011), pp.157-158 (in Japanese)

KADONO Sho, KOBAYASHI katsuhiro, MITAMURA Tetsuya, OGAWA Hitoshi: Studies on the Architectural Conversion in Shanghai, Part 2 Design Methods of Conversion from Industrial Facilities-, Summeries of Technical Papers of Annual Meeting, A.I.J.(Aug. 2011), pp.159-160 (in Japanese)

SATO Shimpei, KOBAYASHI katsuhiro, MITAMURA Tetsuya, KADONO Sho, TAKEMURA Yusuke, OKAZAKI Shinya, KONO Taizo, KOSHIMIZU Kazuma, SEKIGUCHI Shohei, MOMOSE Yuke: Studies on the Architectural Conversion in Denmark,Part 1 -Design Method in Conversion from Industrial Facilities-, Summeries of Technical Papers of Annual Meeting, A.I.J.(Aug. 2011), pp.145-146 (in Japanese)

MOMOSE Yusuke, KOBAYASHI katsuhiro, MITAMURA Tetsuya, KADONO Sho, TAKEMURA Yusuke, OKAZAKI Shinya, KONO Taizo, KOSHIMIZU Kazuma, SEKIGUCHI Shohei, SATO Shimpei: Studies on the Architectural Conversion in Denmark, Part 2 -Building Feature in Conversion from Public, Cultural, Office and Military Facilities-, Summeries of Technical Papers of Annual Meeting, A.I.J.(Aug. 2011), pp.147-148 (in Japanese)

SEKIGUCHI Shohei, KOBAYASHI katsuhiro, MITAMURA Tetsuya, KADONO Sho, TAKEMURA Yusuke, OKAZAKI Shinya, KONO Taizo, KOSHIMIZU Kazuma, MOMOSE Yusuke, SATO Shimpei: Studies on the Architectural Conversion in Sweden, Part 1 -Conversion from Public and Industrial Facilities in Stocholm -, Summeries of Technical Papers of Annual Meeting, A.I.J.(Aug. 2011), pp.149-150 (in Japanese)

KONO Taizo, KOBAYASHI katsuhiro, MITAMURA Tetsuya, KADONO Sho, TAKEMURA Yusuke, OKAZAKI Shinya, KOSHIMIZU Kazuma, SEKIGUCHI Shohei, MOMOSE Yuke, SATO Shimpei: Studies on the Architectural Conversion in Sweden, Part2 -Conversion from Residential, Public and Industrial Facilities in Gteborg and Malm , Summeries of Technical Papers of Annual Meeting, A.I.J.(Aug. 2011), pp.151-152 (in Japanese)

KOSHIMIZU Kazuma, KOBAYASHI katsuhiro, MITAMURA Tetsuya, KADONO Sho, TAKEMURA Yusuke, OKAZAKI Shinya, KONO Taizo, SEKIGUCHI Shohei, MOMOSE Yuke, SATO Shimpei: Studies on the Architectural Conversion in Vienna -Design Method in Conversion of Large Facilities -, Summeries of Technical Papers of Annual Meeting, A.I.J.(Aug. 2011), pp.153-154(in Japanese)

OKAZAKi Shinya, KOBAYASHI katsuhiro, MITAMURA Tetsuya, KADONO Sho, TAKEMURA Yusuke, KONO Taizo, KOSHIMIZU Kazuma, SEKIGUCHI Shohei, MOMOSE Yuke, SATO Shimpei: Studies on the Architectural Conversion in Switzerland - Recent Tendencies and Design Method in Typical Works -, Summeries of Technical Papers of Annual Meeting, A.I.J.(Aug. 2011), pp.155-156(in Japanese)

KINOSHITA Akira, KOBAYASHI Katsuhiro: A Study on the Design Method of Sir John Vanbrugh's Early Works Castle Howard and Blenheim Palace-, Summaries of Technical Papers of Annual Meeting, AIJ, pp.167-168 (Sept. 2011) (in Japanese)

3. Others

3-1 Monographs / Technical books

KOBAYASHI katsuhiro et al., [New Edition] Guidebook on Architecture and Citiy in the WorldVol.6 Americ-Canada, Mexico, X-Kowledge, March 2012 (in Japanese)

KOBAYASHI katsuhiro et al., Form and Design of Architecture, kimoongang, Soeul, March (in Korean)

3-2 Research Reports

KOBAYASHI Katsuhiro, et al.: Date Base of Architectural Conversion Norway, Netherland and Belgium (in Japanese), March 2012

3-3 Manuals / Reviews

KOBAYASHI Katsuhiro,: Jury Comments, Architectural Prize of Tokyo (in Japanese), Core Tokyo, Sept.2011

3-4 Works / Products, etc.

KOBAYASHI Katsuhiro (master architect), et al: Entry for Design Competition of Future Residential Area in Yokohama (First Prize), Dec.2011, MINA GARDEN ToukaichibaShinkenchiku Dec.2012, pp.152-153

Yukimasa YAMADA

1. Refereed Papers

Tomoharu KATANO, Yukimasa YAMADA: A Study on the Timber Framework of Churches in the Northern Vietnam, Bui Chu, Thai Binh, and Phat Diem Diocese, Journal of Architecture and Planning (Transaction of AIJ), Vol.76, No.667, pp.1685-1692, Sep.2011 (in Japanese)

2. Proceedings of Oral Presentations

Kaori IWAI, Yukimasa YAMADA: Antecedent Architecture of Catholic Churches in Nagasaki, Summaries of Technical Papers of Annual Meeting, A.I.J., F-2, pp.381-382, Aug.2011 (in Japanese)

Yukimasa YAMADA, Tomoharu KATANO, Ryuta OHASHI (Tokyo Kasei Gakuin Univ.): Architectural Features from Planning and Elevational View in Phat-Diem Churches Studies on Wooden Catholic Churches in the Northern Vietnam (8), Summaries of Technical Papers of Annual Meeting, A.I.J., F-2, pp.437-438, Aug.2011 (in Japanese)

Tomoharu KATANO, Yukimasa YAMADA, Ryuta OHASHI (Tokyo Kasei Gakuin Univ.): Architectural Features from Structural View in Phat-Diem Churches Studies on Wooden Catholic Churches in the Northern Vietnam (9), Summaries of Technical Papers of Annual Meeting, A.I.J., F-2, pp.439-440, Aug.2011 (in Japanese)

Li TAO, Yukimasa YAMADA: History and Contemporay Conditions of Yinchuan Central Mosques in Ning Xia, Chaina, Summaries of Technical Papers of Annual Meeting, A.I.J., F-2, pp.447-448, Aug.2011 (in Japanese)

Mikako YAMADA, Yukimasa YAMADA, Hiromichi TOMODA (Showa Women Univ.): A Study on Residence Spaces of Traditional Houses in a Village Case Study of Vietnamese Village Phuc-Tich, Summaries of Technical Papers of Annual Meeting, A.I.J., E-2, pp.57-58, Aug.2011 (in Japanese)

3. Others

3-2 Research Reports

Yumasa YAMADA: Timber-framed Churches in Northern Vietnam, Nov.2011 (bilingual edition in English and Japanese)

Yukimasa YAMADA: Study on the Architectural History of Timber-framed Churches in Northern Vietnam, Report on the results of Grants-in-Aid for Scientific Research 2009-2011, Mar.2012 (in Japanese)

Masao KOIZUMI

Akira KINOSHITA

2. Proceedings of Oral Presentations

KINOSHITA Akira, KOBAYASHI Katsuhiro: A Study on the Design Method of Sir John Vanbrugh's Early Works Castle Howard and Blenheim Palace-, Summaries of Technical Papers of Annual Meeting, AIJ, pp.167-168 (Sept. 2011) (in Japanese)

Jun INOKUMA Tomohiko AMEMIYA

CONSTRUCTION MANAGEMENT AND BUILDING MATERIALS

Seiichi FUKAO

Yoshinori KITSUTAKA

1. Refereed Papers

Koichi Matsuzawa, Yoshinori Kitsutaka, Masayuki Tsukagoshi and Kie FunakoshiEstimation of mortar strength based on pore structure cured under various temperatures, Proceedings of the Japan Concrete Institute, Vol.33, No.1, pp.347-352, 2011.7 (in Japanese)

Yoshinori Kitsutaka, Le Phong Nguyen, Masayuki Tsukagoshi and Koichi MatsuzawaRelation between the amount of rust and the crack occurrence in reinforced concrete, Proceedings of the Japan Concrete Institute, Vol.33, No.1, pp.1145-1150, 2011.7 (in Japanese)

Naoki Ishikawa, Yoshinori Kitsutaka and Koichi MatsuzawaStudy on concrete shear crack control effect of tile finishing, Proceedings of the Japan Concrete Institute, Vol.33, No.1, pp.1167-1672, 2011.7 (in Japanese)

Koichi Matsuzawa, Yoshinori KitsutakaSTRENGTH DEVELOPMENT PROPERTIES OF MORTAR SUBJECTED TO TRIAXIAL STRESS UNDER DIFFERENT TEMPERATURE AND HUMIDITY CONDITIONS IN HARDENING PROCESS, Transactions, SMiRT 21, 6-11 November, 2011, New Delhi, India, Div-I: Paper ID# 251, 2011.11

Yoshinori KITSUTAKA, Masayuki TSUKAGOSHI : METHOD ON THE AGING EVALUATION IN NUCLEAR POWER PLANT CONCRETE STRUCTURES, Transactions of the 21st International Conference on Structural Mechanics in Reactor Technology (SMiRT 21), 6-11 November, 2011,CD, Div-VIII: Paper ID# 119

Naoki TAKESUE, Yoshinori KITSUTAKA, Masayuki TSUKAGOSHIMETHODOLOGY AND FRAMEWORK OF THE SECONDARY INTEGRITY EVALUATION OF DETERIORATED CONCRETE STRUCTURES, Transactions of the 21st International Conference on Structural Mechanics in Reactor Technology (SMiRT 21), 6-11 November, 2011,CD, Div-VII: Paper ID#249

2. Proceedings of Oral Presentations

Yoshinori KitsutakaAccelerated Aging Apparatus, International Workshop on Advances in Cool Roof Research, July 28 - July 29, 2011, Doubletree Hotel at Berkeley Marina, Berkeley, California USA

SAKURADA Ritsuko, KITSUTAKA Yoshinori, MATSUZAWA KoichiThe effects that combinations of exterior materials have on their aged change, Summaries of Technical Papers of Annual Meeting, AIJ, A-1, pp.143-144, 2011.8 (in Japanese)

MATSUZAWA Koichi, KITSUTAKA YoshinoriStudy on Properties of Concrete subjected to Three-dimensional Stress in controlled Temperature and Humidity Conditions Part3Strength Properties of Mortar subjected to different Temperature, Humidity and Three-dimensional Stress in Hardening Process up to Three Days, Summaries of Technical Papers of Annual Meeting, AIJ, A-1, pp.525-526, 2011.8 (in Japanese)

ISHIKAWA Naoki, KITSUTAKA Yoshinori, MATSUZAWA KoichiConcrete Shear Crack Control Effect of Tile Finishing by Reinforced Mortar, Summaries of Technical Papers of Annual Meeting, AIJ, A-1, pp.535-536, 2011.8 (in Japanese)

OTA Takashi, KITSUTAKA Yoshinori, MATSUZAWA KoichiStudy on the Carbonation of Concrete under Various Temperature and Moisture Conditions, Summaries of Technical Papers of Annual Meeting, AIJ, A-1, pp.557-558, 2011.8 (in Japanese)

KITSUTAKA Yoshinori and TSUKAGOSHI MasayukiPrediction of crack occurrence due to reinforcing-bar corrosion by salt damage, Summaries of Technical Papers of Annual Meeting, AIJ, A-1,p.581-582, 2011.8 (in Japanese)

FUNAKOSHI Kie, KITSUTAKA Yoshinori, MATSUZAWA KoichiStudy on the Strength Estimate Method from Pore Structure of High Temperature Cured Concrete, Summaries of Technical Papers of Annual Meeting, AIJ, A-1, pp.625-626, 2011.8 (in Japanese)

IMAGAWA Tomoyuki, NAGATA Akihiro, YAMADA Yukimasa, KITSUTAKA Yoshinori, NAKAYAMA Satoshi, MATSUZAWA KoichiA Study on Evaluation of cover rate by wall and fence in detached house outdoor facility, Summaries of Technical Papers of Annual Meeting, AIJ, D-1, pp.185-186, 2011.8 (in Japanese)

TAMADA Ryunosuke, NAGATA Akihiro, YAMADA Yukimasa, KITSUTAKA Yoshinori, NAKAYAMA Satoshi, MATSUZAWA KoichiField survey of wall and fence in the slope of residential areas, Summaries of Technical

Papers of Annual Meeting, AIJ, F-1, pp.1501-1502, 2011.8 (in Japanese)

ISHIKAWA Naoki, KITSUTAKA Yoshinori, MATSUZAWA KoichiConcrete shear crack development control effect by reinforced mortar tile finishing, Concrete shear crack development control effect by reinforced mortar tile finishing, Kanto chapter, , pp.9-12, 2012.3 (in Japanese)

3. Others

3-3 Manuals / Reviews

KITSUTAKA YoshinoriComments as a President, Japan Reinforcing Bar Joints Institute, Reinforcing Bar Joints, Vol.46, No.2, p.1, 2011

KITSUTAKA YoshinoriUses of the Methodology for Health Monitoring of Building External Wall Degradation, Japan Society for Finishing Technology, FINEX, p.3,2011.9/10

Makoto TSUNODA

2. Proceedings of Oral Presentations

Kentaro FUJITA , Makoto TSUNODA: A Study on the Actual Condition of Reform Work for Wooden Detached House on Comprehensive Efficiency Improvement, Summaries of Technical Papers of Annual Meeting, AIJ, E-1, pp.989-990, 2011.8 (in Japanese)

Yuta AKASAKI, Makoto TSUNODA: A Study on Entire Renovation Works of Exclusively-owned Areas in Second-hand Apartments. Part2 The Actual Condition of Demolition Work for Renovation, Summaries of Technical Papers of Annual Meeting, AIJ, E-1, pp.995-996, 2011.8 (in Japanese)

Masahiro KANEHARA, Makoto TSUNODA: A Study on a Renovation of Residential Building from the Layout of Water Sections and Partitions, Summaries of Technical Papers of Annual Meeting, AIJ, F, pp.1367-1368, 2010.9 (in Japanese)

3. Others

3-2 Research Reports

Makoto TSUNODA, Hitomi WATANABE: A Study on the Productive Organization of Housing Renovation Requirement of Resident and Content of Business -, Annual Report of Housing Renovation in 2011, Promotion Committee for Remodeling, pp.164-167, 2011.3 (in Japanese)

Kozo KADOWAKI

Koichi MATSUZAWA

1. Refereed Papers

Koichi Matsuzawa, Yoshinori Kitsutaka, Masayuki Tsukagoshi and Kie FunakoshiEstimation of mortar strength based on pore structure cured under various temperatures, Proceedings of the Japan Concrete Institute, Vol.33, No.1, pp.347-352, 2011.7 (in Japanese)

Yoshinori Kitsutaka, Le Phong Nguyen, Masayuki Tsukagoshi and Koichi MatsuzawaRelation between the amount of rust and the crack occurrence in reinforced concrete, Proceedings of the Japan Concrete Institute, Vol.33, No.1, pp.1145-1150, 2011.7 (in Japanese)

Naoki Ishikawa, Yoshinori Kitsutaka and Koichi MatsuzawaStudy on concrete shear crack control effect of tile finishing, Proceedings of the Japan Concrete Institute, Vol.33, No.1, pp.1167-1672, 2011.7 (in Japanese)

Koichi Matsuzawa, Yoshinori KitsutakaSTRENGTH DEVELOPMENT PROPERTIES OF MORTAR SUBJECTED TO TRIAXIAL STRESS UNDER DIFFERENT TEMPERATURE AND HUMIDITY CONDITIONS IN HARDENING PROCESS, Transactions, SMiRT 21, 6-11 November, 2011, New Delhi, India, Div-I: Paper ID# 251, 2011.11

2. Proceedings of Oral Presentations

SAKURADA Ritsuko, KITSUTAKA Yoshinori, MATSUZAWA KoichiThe effects that combinations of exterior materials have on their aged change, Summaries of Technical Papers of Annual Meeting, AIJ, A-1, pp.143-144, 2011.8 (in Japanese)

MATSUZAWA Koichi, KITSUTAKA YoshinoriStudy on Properties of Concrete subjected to Three-dimensional Stress in controlled Temperature and Humidity Conditions Part3Strength Properties of Mortar subjected to different Temperature, Humidity and Three-dimensional Stress in Hardening Process up to Three Days, Summaries of Technical Papers of Annual Meeting, AIJ, A-1, pp.525-526, 2011.8 (in Japanese)

ISHIKAWA Naoki, KITSUTAKA Yoshinori, MATSUZAWA KoichiConcrete Shear Crack Control Effect of Tile Finishing by Reinforced Mortar, Summaries of Technical Papers of Annual Meeting, AIJ, A-1, pp.535-536, 2011.8 (in Japanese)

OTA Takashi, KITSUTAKA Yoshinori, MATSUZAWA KoichiStudy on the Carbonation of Concrete under Various Temperature and Moisture Conditions, Summaries of Technical Papers of Annual Meeting, AIJ, A-1, pp.557-558, 2011.8 (in Japanese)

FUNAKOSHI Kie, KITSUTAKA Yoshinori, MATSUZAWA KoichiStudy on the Strength Estimate Method from Pore Structure of High Temperature Cured Concrete, Summaries of Technical Papers of Annual Meeting, AIJ, A-1, pp.625-626, 2011.8 (in Japanese)

IMAGAWA Tomoyuki, NAGATA Akihiro, YAMADA Yukimasa, KITSUTAKA Yoshinori, NAKAYAMA Satoshi, MATSUZAWA KoichiA Study on Evaluation of cover rate by wall and fence in detached house outdoor facility, Summaries of Technical Papers of Annual Meeting, AIJ, D-1, pp.185-186, 2011.8 (in Japanese)

TAMADA Ryunosuke, NAGATA Akihiro, YAMADA Yukimasa, KITSUTAKA Yoshinori, NAKAYAMA Satoshi, MATSUZAWA KoichiField survey of wall and fence in the slope of residential areas, Summaries of Technical Papers of Annual Meeting, AIJ, F-1, pp.1501-1502, 2011.8 (in Japanese)

ISHIKAWA Naoki, KITSUTAKA Yoshinori, MATSUZAWA KoichiConcrete shear crack development control effect by reinforced mortar tile finishing, Concrete shear crack development control effect by reinforced mortar tile finishing, Kanto chapter, , pp.9-12, 2012.3 (in Japanese)

STRUCTURAL ENGINEERING

Manabu YOSHIMURA and Takaya NAKAMURA

1. Refereed Papers

Katsuhiko SHIBUICHI, Manabu YOSHIMURA and Takaya NAKAMURA: Research on Ductility Index of Reinforced Concrete Columns with Shear Mode, Proceedings of the Japan Concrete Institute, Vol.33, No.2, pp.139-144, 2011 (in Japanese)

Takaya NAKAMURA, Manabu YOSHIMURA and Naoki KANO: Relation between Displacement in Lateral Strength Deterioration Region and Collapse Displacement, Proceedings of the Japan Concrete Institute, Vol.33, No.2, pp.193-198, 2011 (in Japanese)

Kazuaki HOKI and Manabu YOSHIMURA: Seismic Performance Improvement for Old R/C Medium-rise Residential Buildings by Putting Slits, Journal of Structural and Construction Engineering, AIJ, No.667, pp.1685-1694. (in Japanese)

2. Proceedings of Oral Presentations

Takaya NAKAMURA, Satoru MUTO, Syo ITO and Manabu YOSHIMURA: Effect of Longitudinal Reinforcement Ratio on Seismic Performance of RC Columns with Shear Mode -Collapse Test of RC Short Columns with Large Hoop Ratio-, Summaries of Technical Papers of Annual Meeting, AIJ, C-2, pp.161-162, 2011 (in Japanese)

Kazuhiro ITO, Manabu YOSHIMURA and Takaya NAKAMURA: Collapse Drift of old Reinforced Concrete Columns, Summaries of Technical Papers of Annual Meeting, AIJ, C-2, pp.163-164, 2011 (in Japanese)

Syo ITO, Satoru MUTO, Takaya NAKAMURA and Manabu YOSHIMURA: Collapse Behavior of Reinforced Concrete Columns with Decreased Axial Load Part1 Experimental Plan, Summaries of Technical Papers of Annual Meeting, AIJ, C-2, pp.175-176, 2011 (in Japanese)

Satoru MUTO, Syo ITO, Takaya NAKAMURA and Manabu YOSHIMURA: Collapse Behavior of Reinforced Concrete Columns with Decreased Axial Load Part2 Experimental Results, Summaries of Technical Papers of Annual Meeting, AIJ, C-2, pp.177-178, 2011 (in Japanese)

Masatoshi OOBA, Yasushi MIURA and Manabu YOSHIMURA:Research on effect of earthquake-proof repair of

layer housing complex in RC by installation of slit and oil damper using together (part1), Summaries of Technical Papers of Annual Meeting, AIJ, C-2, pp.385-386, 2011 (in Japanese)

Yasushi MIURA, Masatoshi OOBA and Manabu YOSHIMURA:Research on effect of earthquake-proof repair of layer housing complex in RC by installation of slit and oil damper using together (part2), Summaries of Technical Papers of Annual Meeting, AIJ, C-2, pp.387-388, 2011 (in Japanese)

Kazuhiro KITAYAMA

1. Refereed papers

SAKASHITA Masanobu, ISHIKAWA Yuji, TABATA Taku, KISHIMOTO Takeshi and KITAYAMA Kazuhiro : Evaluation of Ultimate Deformation of Ductile Reinforced Concrete Beams, Journal of Structural Engineering, Architectural Institute of Japan, Vol.57B (March, 2011), pp.597-6092011, March (in Japanese).

TAKAGI Jiro, KITAYAMA Kazuhiro and MINAMI Susumu : Numerical Analysis Models of Existing Wall-Type Precast Reinforced Concrete Shear Walls with Reinforcement for New Openings, Journal of Structural and Construction Engineering, Architectural Institute of Japan, Vol. 76, No.663, 2011, May, pp.1015-1024 (in Japanese).

SHIRAI Haruka and KITAYAMA Kazuhiro : Seismic Performance of Mid-rise Reinforced Concrete Building Surviving 1995 Hyogo-ken Nanbu Earthquake, Proceedings of the Japan Concrete Institute, Vol.33, No.2, pp.1093-1098, 2011, July (in Japanese).

SHIMADA Yosuke and KITAYAMA Kazuhiro : Limit States of Prestressed Reinforced Concrete Beam in Cruciform Beam-Column Subassemblages, Proceedings of the Japan Concrete Institute, Vol.33, No.2, pp.523-528, 2011, July (in Japanese).

TAKAGI Jiro, SHIMONISHIKIDA Satoshi, KITAYAMA Kazuhiro and MINAMI Susumu : Development of Static Analysis Models of Existing Wall-Type Precast Reinforced Concrete Residential Buildings - Seismic performance evaluation of existing wall-type precast reinforced concrete residential buildings with new openings in shear walls part 1 , Journal of Structural and Construction Engineering (Transaction of AIJ), Volume 77, Number 671, pp.113-120, 2012, January (in Japanese).

2. Oral presentation

SHIOHARA Hitoshi, KITAYAMA Kazuhiro, MATSUMOTO Yuka et.al. : Quick Report for Damage Reconnaissance of Buildings in Kanto Area by The 2011 East Japan Earthquake, Architectural Institute of Japan, pp.13-18, 2011, April 6 (in Japanese).

SHIRAI Haruka, KITAYAMA Kazuhiro and AOKI Shigeru : Seismic Performance Estimated by Seismic Capacity Evaluation and Earthquake Response Analysis of Mid-rise Reinforced Concrete Building Surviving 1995 Hyogo-ken Nanbu Earthquake, Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, C-2, Structures IV, pp.763-764, 2011, August (in Japanese).

SHIMADA Yosuke and KITAYAMA Kazuhiro : Analytical Study on Limit States of Prestressed Reinforced Concrete Beam in Cruciform Beam-Column Subassemblages (Part1 Test specimens and outline of analysis), Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, C-2, Structures IV, pp.839-840, 2011, August (in Japanese).

KITAYAMA Kazuhiro and SHIMADA Yosuke : Analytical Study on Limit States of Prestressed Reinforced Concrete Beam in Cruciform Beam-Column Subassemblages (Part2 Discussion), Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, C-2, Structures IV, pp.841-842, 2011, August (in Japanese).

OCHIAI Hitoshi, SHIMADA Yousuke, SHIRAI Haruka, and KITAYAMA Kazuhiro : Evaluation of Cracking and Ultimate Shear Strength for RC Beams and Perforated Beams, Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, C-2, Structures IV, pp.397-398, 2011, August (in Japanese).

WANG Lei, KITAYAMA Kazuhiro and MINAMI Susumu : Evaluation of Earthquake Resistant Performance for Reinforced Concrete Beam in Interior Beam-Column Subassemblages, Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, C-2, Structures IV, pp.425-426, 2011, August (in Japanese).

HASEGAWA Shunichi, KITAYAMA Kazuhiro, TAKAGI Jiro and MINAMI Susumu : Performance Evaluation of Existing Wall-type Precast Reinforced Concrete Shear Walls with New Openings Vol. 1 Deformation Components in Shear Wall, Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, C-2, Structures IV, pp.889-890, 2011, August (in Japanese).

SUZUKI Kiyohisa, KITAYAMA Kazuhiro, TAKAGI Jiro and MINAMI Susumu : Performance Evaluation of Existing Wall-type Precast Reinforced Concrete Shear Walls with New Opening Vol. 2 Analyses on Deformation Behavior and Evaluation of Restoring Force Characteristics, Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, C-2, Structures IV, pp.891-892, 2011, August (in Japanese).

TAKAGI Jiro, KITAYAMA Kazuhiro and MINAMI Susumu : Performance Evaluation of Existing Wall-type Precast Reinforced Concrete Shear Walls with New Openings Vol. 3 Analytical Models for Shear Wall Experiment , Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, C-2, Structures IV, pp.893-894, 2011, August (in Japanese).

GOMIBUCHI Takashi, TAKAGI Jiro, KITAYAMA Kazuhiro and MINAMI Susumu : Performance Evaluation of Existing Wall-type Precast Reinforced Concrete Shear Walls with New Openings Vol. 4 Full-scale 5-Story 1-Span Analysis Models , Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, C-2, Structures IV, pp.895-896, 2011, August (in Japanese).

FUKUSHIMA Hiroko, TAKAGI Jiro, KITAYAMA Kazuhiro and MINAMI Susumu : Structural Issues to be Considered for Placing New Openings in Floor Slabs in Existing Wall-type Precast Reinforced Concrete Buildings, Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, C-2, Structures IV, pp.897-898, 2011, August (in Japanese).

ISHIKI Kenshiro, HIRABAYASHI Yukihiro, KITAYAMA Kazuhiro, KONDO Keiichi, FUKUYAMA Hiroshi and KABEYASAWA Toshikazu : Test for Failure Mechanism of R/C Interior Beam-Column Joint, Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, C-2, Structures IV, pp.497-498, 2011, August (in Japanese).

KITAYAMA Kazuhiro et.al. : Structural Performance Evaluation for PRC Beams and Columns, Handout of Panel Discussion in PC Section in Annual Meeting, Architectural Institute of Japan, pp.24-40, 2011, August (in Japanese).

KITAYAMA Kazuhiro, ISHIKAWA Yuji and SAKASHITA Masanobu : Structural Performance Evaluation for Reinforced Concrete Beams and Columns, Handout of Panel Discussion in RC Section in Annual Meeting, Architectural Institute of Japan, pp.24-35, 2011, August (in Japanese).

KITAYAMA Kazuhiro : Damage by The 2011 East Japan Earthquake of Reinforced Concrete School Building in Tochigi Retrofitted by Steel-Braced Frame, One year after 2011 Great East Japan Earthquake International Symposium on Engineering Lessons Learned from the Giant Earthquake -, Proceedings, 2012, pp. 1226-1237, 1-4, March.

3. Text book

Architectural Institute of Japan : Preliminary Reconnaissance Report of the 2011 Tohoku-Chiho Taiheiyo-Oki Earthquake, (Shared writing), Section 4.1.3 (pp.265-268), Section 4.3.6 (pp.322-329), Section 4.4.2 (pp.337-339) and Section 6.2.3 (pp.414-415), 2011, July (in Japanese).

Jiro TAKAGI

Kazushige YAMAMURA

3. Others

“Activities of Collection and Transmission of Information by AIJ”, The Preliminary Reconnaissance Report of the 2011 off the Pacific Coast of Tohoku Earthquake and a Sequence of Earthquakes, 2011.4

Susumu MINAMI

ENVIRONMENTAL ENGINEERING

Noriyoshi ICHIKAWA

1. Refereed Papers

Sadanori KODERA, Keiko MURO Hiroshi TAKATA, Noriyoshi ICHIKAWA: Consideration of Influence Factors on Annual Water Consumption in Housing Complex, Journal of environmental engineering, AIJ, No.673, pp.167-

184, 2012.3 (in Japanese)

Satoru OZAWA, Toshiya IWAMATSU, Motoyasu KAMATA, Noriyoshi ICHIKAWA: Examination of Simplified Estimation Method for evapotranspiration, Study on the potential quantity of available water resources in consideration of regional characteristics of each prefecture (Part 2), Journal of environmental engineering, AIJ, No.675, 2012.5 (Publication decision, in Japanese)

2. Proceedings of Oral Presentations

Shunsuke MOROOKA, Noriyoshi ICHIKAWA, Study on Optimum Design for the Direct Pressure Water Supply System, Proceeding of CIB-W062 International Symposium, pp.59-70,2011.9

Tamio NAKANO, Noriyoshi ICHIKAWA, Hiroshi TAKATA, Masayuki MAE, Sadanori KODERA, Kaori HORI, Tsutomu NAKAMURA, Research on standard of water supply system for best design in multiple dwelling house, Summaries of Technical Paper of Annual Meeting AIJ, D-1, pp567-568, 2011.8 (in Japanese)

Shota SIMAZAKI, Noriyoshi ICHIKAWA, Asao INADA, Shizuka HORI, Tamio NAKAMNO, Satoru OZAWA, Azumi OINUMA, Sunsuke MOROOKA, Study on City-Pressure Water Supply System, Part2 Examination of the calculating method for water supply demands, Summaries of Technical Paper of Annual Meeting AIJ, D-1, pp569-570, 2011.8 (in Japanese)

Sunsuke MOROOKA, Noriyoshi ICHIKAWA, Shota SIMAZAKI, Azumi OINUMA, Shingo NAKA, Takesi SAKAMOTO, Estimation of the water flow rate in supply systems of buildings based on the analysis of the operating frequency of the supply pumps, Summaries of Technical Paper of Annual Meeting AIJ, D-1, pp571-572, 2011.8 (in Japanese)

Azumi OINUMA, Shota SIMAZAKI, Ysutomo YAMAMOTO, Noriyoshi ICHIKAWA, Investigation of Energy Consumption including Hot Water in Hospital Building, Summaries of Technical Paper of Annual Meeting AIJ, D-1, pp579-580, 2011.8 (in Japanese)

Satoru OZAWA, Motoyasu KAMATA, Noriyoshi ICHIKAWA, Toshiya IWAMARTSU, Study on Regional Characteristics of the Quantity of Available Water Resources,Part3. Examination of the Simple Method to Calculate Quantity of Evapotranspiration, Summaries of Technical Paper of Annual Meeting AIJ, D-2, pp475-476, 2011.8 (in Japanese)

Tamio NAKANO, Noriyoshi ICHIKAWA, Hirosi TAKATA, Masayuki MAE, Sadanori KODERA, Shizuka HORI, Tsutomu NAKAMURA, Research on the Best Design of Water Supply System for Variable Life Style in Housing Complex. Part1 Study on the Process of Calculation of Water Supply System by the Standard in Changing, Technical Papers of Annual Meeting, SHASE, pp.1-4, 2011.9(in Japanese)

Shota SHIMAZAKI, Noriyoshi ICHIKASWA, Asao INADA, Shizuka HORI, Tamio Nakano, Shunsuke MOROOKA, Study on City-Pressure Water Supply System(Part 3) Survey on the water usage of apartment housing with city-pressure water supply system, Technical Papers of Annual Meeting, SHASE, pp.5 -8, 2011.9(in Japanese)

Shunsuke MOROOKA, Noriyoshi ICHIKASWA, Shota SHIMAZAKI, Takesi SAKAMOTO, Kouji YASUMOTO, Estimation of the Water Flow Rate in Supply Systems of Buildings based on the Analysis of the Operating Frequency of the Supply Pumps, Technical Papers of Annual Meeting, SHASE, pp.9 -12, 2011.9(in Japanese)

Noriyoshi ICHIKAWA, Keiko SAITO, Study on Preventive Measures for Legionella pneumophilia at Spa Facility -Flow Phenomenon in Bathtub-, 39th Technical Papers of Annual Meeting, BMEC, pp.70-71, 2012.1(in Japanese)

3. Others

3-1 Monographs / Technical books

Fumitosi KIYA, Noriyoshi ICHIKAWA, et al, Water Environment Facilities Handbook, Ohmsha, 2011.11

3-3 Manuals / Reviews

Noriyoshi ICHIKAWA, Hydraulics for Air Conditioning and Sanitary Engineers : (1) Outline of Fluid and Dynamics of Stationary, Journal of Heating, Air-Conditioning and Sanitary Engineers, SHASE, Vol.85.no.10, pp.63-70, 2011.11(in Japanese)

Noriyoshi ICHIKAWA, Hydraulics for Air Conditioning and Sanitary Engineers : (2) Basics Theory of Water Flow, Journal of Heating, Air-Conditioning and Sanitary Engineers, SHASE, Vol.85.no.11, pp.59-63, 2011.12(in Japanese)

Noriyoshi ICHIKAWA, The Technical Problem and Prospects of Water Supply / Hot Water Supply System, Journal

of Building and Environment, BMEC, No.136, pp.23-28, 2012.3(in Japanese)

Nobuyuki SUNAGA

1Refereed Papers

Yu Liu, Nobuyuki Sunaga, Zhongxian Fang and Hitoshi Takeyama, Investigation on Thermal Performance of Rural House in the Guanzhong Region of North China, Proc. of International Conference on Electric Technology and Civil Engineering (Lushan, China, 2011), Vol. 8, pp.6675-6678, Apr., 2011

2Proceedings of Oral Presentations

SATO Miho and SUNAGA Nobuyuki, Study on the Thermal Performance of Houses in Cold Region of China, Summaries of Technical Papers of Annual Meeting, A.I.J., D-2, pp.243-244, Aug., 2011

OIKAWA Kazumasa and SUNAGA Nobuyuki, Effect of the Window Improvement on the Thermal Performance, in Mitaka City Hall, Summaries of Technical Papers of Annual Meeting, A.I.J., D-2, p p.251-252, Aug., 2011

ASANUMA Yuya and SUNAGA Nobuyuki, Literature Data Analysis on the Energy Conservation Performance of Non-Residential Buildings, Summaries of Technical Papers of Annual Meeting, A.I.J., D-2, p p.253-254, Aug., 2011

MATSUI Yumi and SUNAGA Nobuyuki, Proposal for Environmental Design Standard of School Building, Summaries of Technical Papers of Annual Meeting, A.I.J., D-2, pp.275-276, Aug., 2011

Yasuhiko HATA, Yuki KUWABARA, Jun NAGAKI, Masato OOTA and Nobuyuki SUNAGA, Research on a communication type of HEMS in solar houses (Part.1) Outline of research and energy consumption, Summaries of Technical Papers of Annual Meeting, A.I.J., D-2, p p.281-282, Aug., 2011

KUWABARA Yuki, HATA Yasuhiko, NAGAKI Jun, OOTA Masato and SUNAGA Nobuyuki, Research on a communication type of HEMS in solar houses, (Part.2) Frequency of monitoring and the effect of energy-saving, Summaries of Technical Papers of Annual Meeting, A.I.J., D-2, p p.283-284, Aug., 2011

Jun NAGAKI, Yasuhiko HATA, Yuki KUWABARA, Masato OOTA and Nobuyuki SUNAGA, Research on a communication type of HEMS in solar houses (art.3) Effect of perusal frequency and consultation, Summaries of Technical Papers of Annual Meeting, A.I.J., D-2, p p.285-286, Aug., 2011

IWAMATSU Toshiya, NAKAYAMA Satoshi and SUNAGA Nobuyuki A Study on the Thermal Environment of Occupants' and Thermal Cognition in a Summer Season, Summaries of Technical Papers of Annual Meeting, A.I.J., D-2, p p.293-294, Aug., 2011

NAKAMURA Mihoko, SUNAGA Nobuyuki, OTSUKA Hiroki and ICHIBOJI Hideo, Effect of the Window-Inside Door Made of Super Insulation Board Considered from Experimental survey in Summer and Questioner Survey, Summaries of Technical Papers of Annual Meeting, A.I.J., D-2, p p.569-570, Aug., 2011

KUMAGAI Shun, SUNAGA Nobuyuki and YAMAMOTO Yasutomo Study on Energy Saving for High Schools in Tokyo Part 1 Energy Consumption at Present and Influence of Equipping Normal Classroom with Cooling System, Summaries of Technical Papers of Annual Meeting, A.I.J., D-2, p p.1341-1342, Aug., 2011

Yuki KUWABARA, Nobuyuki SUNAGA, Shohei Suzuki, Yasuhiko HATA, Jun NAGAKI and Masato OOTA, The effect of energy saving by a communication type of HEMS in solar houses, Proceedings of JSES/JWEA Joint Conference, pp.89-92, Sept., 2011

Daiki MUTO, Nobuyuki SUNAGA and Masahiro KINOSHITA, Experimental Study on the Effect of Cool/Heat Pit in School Building in Tokyo Part 2Comparison of thermal performance of the Different Cool/Heat Pit Systems, Proceedings of JSES/JWEA Joint Conference, pp.305-308, Sept., 2011

KUMAGAI Shun, SUNAGA Nobuyuki, Kazuo Kodama and YAMAMOTO Yasutomo, Study on Energy Saving for High Schools in Tokyo, Proceedings of JSES/JWEA Joint Conference, pp.309-312, Sept., 2011

3. Others

3-1 Technical Book

Nobuyuki Sunaga, Architectural Environment Theories for Design of Architecture - Find and Built the Bio-Climatic Architecture -, Shokokusha Co. Ltd., General Editor, pp.3-5, 50-53, 110-115, 121, May, 2011

3-2 Manuals / Reviews

Nobuyuki Sunaga, Current Environmental Performance and Next Step of School Building, IBEC, No.187, pp.2-5, Nov., 2011

Akihiro NAGATA

2. Proceedings of Oral Presentations

Ryunosuke TAMADA, Akihiro NAGATA et al., Field survey of wall and fence in the slope of residential areas, Summaries of Technical Papers of Annual Meeting, AIJ, F, pp.1501-1502, 2011 (in Japanese)

Tomoyuki IMAGAWA, Akihiro NAGATA et al., A Study on Evaluation of cover rate by wall and fence in detached house outdoor facility, Summaries of Technical Papers of Annual Meeting, AIJ, D-1, pp.185-186, 2011 (in Japanese)

Kanako OHYA and Akihiro NAGATA, A Study on the Residents' Consciousness to the Ecological Restoration by CVM in Urban Area, Summaries of Technical Papers of Annual Meeting, AIJ, D-1, pp.1067-1068, 2011 (in Japanese)

Toshiro KIMURA, Akihiro NAGATA et al., Validation and verification test of the standard calculation of the window insulation efficiency, Summaries of Technical Papers of Annual Meeting, AIJ, D-2, pp.325-326, 2011 (in Japanese)

Akihiro NAGATA, Approximation of Thermal Response of Earth-Buried Tube, Summaries of Technical Papers of Annual Meeting, AIJ, D-2, pp.347-348, 2011 (in Japanese)

Yu OHSUMI, Akihiro NAGATA and Yasutomo YAMAMOTO, A Study on the Use and Internal Heat Gains in a Large Government Office Buildings, Summaries of Technical Papers of Annual Meeting, AIJ, D-2, pp.483-484, 2011 (in Japanese)

Toshiki IMAMURA, Akihiro NAGATA et al., Field Surveys on the Internal Heat Gains of Non-residential Buildings Part 1 Results of the Survey on Hall and Pubs, Summaries of Technical Papers of Annual Meeting, AIJ, D-2, pp.485-486, 2011 (in Japanese)

Satomi ITO, Sinwon JEONG, Takaharu KAWASE, Akihiro NAGATA et al., Field Surveys on the Internal Heat Gains of Non-residential Buildings Part 2 Results of the Survey on the Educational Facility, Summaries of Technical Papers of Annual Meeting, AIJ, D-2, pp.487-488, 2011 (in Japanese)

Tatsuo NAGAI, Takaharu KAWASE, Tatsuo INOOKA, Akihiro NAGATA et al., Comprehensive Study on Equipment Use and on Energy Consumption for Purpose of Revision of the Energy Conservation Standards (Part 10) Investigation on Internal Gain, , Technical Papers of Annual Meeting, SHASEJ, pp.2421-2424, 2011(in Japanese)

Akihiro Nagata: Internal Heat Gains and Operations of Buildings, International Seminar 2012 -Green Process for Realization of Low-Carbon City, Busan, Korea, 2012.3.(invited lecture)

3. Others

3-1 Monographs / Technical books

"Look/Use/Learn Green Building"(1.3 biotope, pp.10-13, 3.3 vegetation, pp.34-37, 6.3 earth tube, pp.70-73), edited by AIJ, ohmsha, 2011 (in Japanese)

3-3 Manuals / Reviews

Akihiro NAGATA: Trend of the Standards for Thermal Performance and Heat Shielding Performance, pp.2-7, JTCCM Journal, Vol.47, 2011.10 (in Japanese)

Masayuki ICHINOSE

1. Refereed Articles

Ryohei KONO, Yoji ISHIZAKI, Masayuki ICHINOSE, et al., Integration of BIM and Modularization of Elements for CFD in CAE Software Tools for Architectural Environment, Technical Papers of The Society of Heating, Air-Conditioning and Sanitary Engineers of Japan, No.174, pp.15-21, Sep. 2011

2. Proceedings of Oral Presentations

IWASAKI Daiki, INOUE Takashi, ICHINOSE Masayuki, TANAKA Katsuhiko and ISHIKAWA Taichi, Study on

daylighting and blind control to reflect changes in external light environment, Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, D-1, pp.461-462, Aug.2011 (in Japanese)

TSUBOI Yuma, INOUE Takashi, ICHINOSE Masayuki, TAKAHASHI Yu and FUJITA Sho, Thermal effect of high reflective facade on the urban environment, Part1 Performance of high-reflectivity exterior panels and effect of openings of a building, Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, D-1, pp.655-656, Aug.2011 (in Japanese)

TAKAHASHI Yu, INOUE Takashi, ENOMOTO Masashi, NAGAHAMA Tsutomu, ICHINOSE Masayuki, TSUBOI Yuma and FUJITA Sho, Thermal effect of high-reflective facade on the urban environment, Part2 Proposal of retroreflective film with wavelength selective property, Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, D-1, pp.657-658, Aug.2011 (in Japanese)

Masayuki Ichinose, Masashi Kawano, Yuzo Sakamoto, Ryuji Yanagihara, and Kazuki Yajima, Investigation of Energy Consumption and Proposal for Energy Savings in the University of Tokyo, Part 4 Occupant behavior and indoor environment of the laboratory building, Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, D-2, pp.933-934, Aug.2011 (in Japanese)

Kazuki Yajima, Masashi Kawano, Masayuki Ichinose, Yuzo Sakamoto, and Ryuji Yanagihara, Investigation of Energy Consumption and Proposal for Energy Savings in the University of Tokyo, Part 5 Proposal for improvement that consider the operative actual situation of the heat source equipment, Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, D-2, pp.935-936, Aug.2011 (in Japanese)

Yuka ORIHARA, Takashi INOUE, Masayuki ICHINOSE, Katsuhiko TANAKA, Taichi ISHIKAWA,Yoshinori KAIGUCHI, Chikako YABE and Shou OKUHASHI, A study on blind control system responsive to surrounding conditions, Part1 Investigation based on automatic blind, Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, D-2, pp.1039-1040, Aug.2011 (in Japanese)

Chikako YABE, Takashi INOUE, Masayuki ICHINOSE, Katsuhiko TANAKA, Taichi ISHIKAWA, Yoshinori KAIGUCHI, Shou OKUHASHI and Yuka ORIHARA, A study of blind control system responsive to surrounding conditions, Part2 Effect of daylight use and consideration of simple sensor of individual blind control, Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, D-2, pp.1041-1042, Aug.2011 (in Japanese)

Shou OKUHASHI, Takashi INOUE, Masayuki ICHINOSE, Katsuhiko TANAKA, Taichi ISHIKAWA,Yoshinori KAIGUCHI, Chikako YABE and Yuka ORIHARA, A study of blind control system responsive to surrounding conditions, Part3 Investigation of individual blind control and operation test, Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, D-2, pp.1043-1044, Aug.2011 (in Japanese)

FUJITA Sho, INOUE Takashi, ICHINOSE Masayuki, TAKASE Tomoaki, TSUTSUMI Yuki, SASAJIMA Yuki and TAKAHASHI Yu, Effect of high performance window system on indoor environment and primary energy consumption, (Part4) Thermal,Optical performance and thermal environment, Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, D-2, pp.1119-1120, Aug.2011 (in Japanese)

TSUTSUMI Yuki, INOUE Takashi, ICHINOSE Masayuki,TAKASE Tomoaki, KUWANO Hiroshi, SASAJIMA Yuki and FUJITA Sho, Effect of high performance window system on indoor environment and primary energy consumption, (Part5) Investigation of effective control method of air conditioning and light, Summaries of Technical Papers of Annual Meeting, Architectural Institute of Japan, D-2, pp.1121-1122, Aug.2011 (in Japanese)

Yuka ORIHARA, Takashi INOUE, Masayuki ICHINOSE, Katsuhiko TANAKA, Taichi Ishikawa, Yoshinori KAIGUCHI, Chikako YABE, Daiki IWASAKI and Shou OKUHASHI, A study of blind control system responsible to surrounding conditions, Part1 Investigation based on automatic blind and effect of daylight use, Summaries of Technical Papers of Annual Meeting, The Society of Heating, Air-Conditioning and Sanitary Engineers of Japan, pp.943-946, Sep.2011 (in Japanese)

Shou OKUHASHI, Takashi INOUE, Masayuki ICHINOSE, Katsuhiko TANAKA, Taichi Ishikawa, Yoshinori KAIGUCHI, Chikako YABE, Daiki IWASAKI and Yuka ORIHARA, A study of blind control system responsive to surrounding conditions, Part2 Proposal of stand-alone type blind control and operation test, Summaries of Technical Papers of Annual Meeting, The Society of Heating, Air-Conditioning and Sanitary Engineers of Japan, pp.947-950, Sep.2011 (in Japanese)

Sho FUJITA, Takashi INOUE, Masayuki ICHINOSE, Yuki TSUTSUMI and Yuki SASAJIMA, Effect of automatic exterior blinds on indoor environment and primary energy consumption, Summaries of Technical Papers of Annual Meeting, The Society of Heating, Air-Conditioning and Sanitary Engineers of Japan, pp.975-978, Sep.2011 (in

Japanese)

Kazuki YAJIMA, Masashi KAWANO, Masayuki ICHINOSE, Ryuji YANAGIHARA and Yuzo SAKAMOTO, A Study of Environmental Load Reduction Technique for University Facilities, Part7 Investigation of Energy Consumption for Air-conditioning and Indoor Environment in an Actual Building, and Proposal for Energy Savings, Summaries of Technical Papers of Annual Meeting, The Society of Heating, Air-Conditioning and Sanitary Engineers of Japan, pp.1303-1306, Sep.2011 (in Japanese)

Yuki TSUTSUMI, Takashi INOUE, Masayuki ICHINOSE, Tomoaki TAKASE, Yoichi YAMAGATA, Sho FUJITA and Yu TAKAHASHI, Verification of HVAC systems and indoor environment in large-scale complex building, Part6 Evaluation of actual performance of window system and indoor environment, Summaries of Technical Papers of Annual Meeting, The Society of Heating, Air-Conditioning and Sanitary Engineers of Japan, pp.561-564, Sep.2011 (in Japanese)

Masayuki ICHINOSE, Takashi INOUE, Tomoaki TAKASE, Shunsuke NAKAMURA, Katsumi SATO, Hiroshi KUWANO, Yuki TSUTSUMI and Sho FUJITA, Verification of HVAC systems and Indoor Environment in large-scale complex Building, (Part 7) Effect of energy conservation by control system of air conditioning and lighting, Summaries of Technical Papers of Annual Meeting, The Society of Heating, Air-Conditioning and Sanitary Engineers of Japan, pp.565-568, Sep.2011 (in Japanese)

Yu TAKAHASHI, Takashi INOUE, Masashi ENOMOTO, NAGAHAMA Tsutomu, Masayuki ICHINOSE, Yuma TSUBOI and Sho FUJITA, Effect of retroreflective film with wavelength selective property to the urban environmental improvement, Summaries of Technical Papers of Annual Meeting, The Society of Heating, Air-Conditioning and Sanitary Engineers of Japan, pp.1615-1618, Sep.2011 (in Japanese)

Takayoshi SHIBAHARA, Shuzo MURAKAMI, Hisaya ISHINO, Kimiko KOHRI and Masayuki ICHINOSE, Development of an Integrated Energy Simulation Tool for Buildings and MEP Systems, the BEST, (Part 86) Thermal Load Calculation Method of the Room that Introduces Lighting Control, Summaries of Technical Papers of Annual Meeting, The Society of Heating, Air-Conditioning and Sanitary Engineers of Japan, pp.1707-1710, Sep.2011 (in Japanese)

Masayuki ICHINOSE: Cool Facade - An option for cities in tropical climate zones, Proceedings of the International Symposium on Sustainable Urban Environment 2011, pp.85-86, Tokyo Metropolitan University, Nov. 2011

3. Others

3-1 Monographs / Technical books

Handbook of water environment and facilities, Chapter 3: Science of water, 12pages / 580pages, Nov. 2011, Ohmsha

3-2. Research Reports

Masayuki Ichinose, Evaluation of actual performance of cool roof and cool facade, International Workshop on Advances in Cool Roof Research: Protocols, Standards & Policies for Accelerated Aging, Lawrence Berkeley National Laboratory, Berkeley, CA USA, July 2011 (Invited lecture)

Masayuki Ichinose, Actual status and prospect of penetration to the international market, 44th Annual conference of the technology of the building facility, Tokyo Big Site, Sep. 2011 (Coordinator)

Masayuki Ichinose, Integration of BIM and heat load simulation, Application of CFD and BIM for the design of air conditioning, Public lecture of The Society of Heating, Air-Conditioning and Sanitary Engineers of Japan, Nov. 2011 (Nominative lecture)

Masayuki Ichinose, Survey of attitude of the regulatory in the department of the building environment and facility, 12th Sequence symposium of architecture and social system Issue and prospect of the regulatory for the building environment and facility, Architectural Institute of Japan, Nov. 2011 (Nominative lecture)

Masayuki Ichinose, Possibility of the commissioning by utilizing BIM, Public symposium of the Building Services Commissioning Association, Dec. 2011 (Nominative lecture)

3-4 Works/Products, etc.

Mitsubishi Jisho Sekkei, Takashi Inoue, Masayuki Ichinose, et al., Construct of the facility system of the Marunouchi Park Building and Mitsubishi Ichigokan

Masayuki Ichinose, Encouragement prize of the Architectural Institute of Japan, Observational study on effect of the peremeterless air conditioning system integrated with the whole building, Aug. 2011

Masayuki Ichinose, The highest award of the 2nd encouragement prize for the research of the city, Practical study on the optimal building facade for solar heat budget on the urban architecture, Mar. 2012

STRATEGIC RESEARCH CENTER

Shigeru AOKI

2. Proceedings of Oral Presentations

Shigeru AOKI, 2011.8.23, Tokyo, Summaries of Technical Papers of Annual Meeting, AIJ

Shigeru AOKI, 2011.9.28, Tokyo, UIA Tokyo Congress

Lecture

Shigeru AOKI, 2010.2.23, Tokyo, Resonabank

Shigeru AOKI, 2011.04.28, Chiba, Ichikawa City

Shigeru AOKI, 2011.05.12, Fukuoka, Aica Design Seminar 2011

Shigeru AOKI, 2011.05.11, Kanagawa, Yokohama City

Shigeru AOKI, 2011.05.30, Tokyo, Taisei Forum

Shigeru AOKI, 2011.07.08, Aichi, Nagoya City

Shigeru AOKI, 2011.07.29, Aichi, MESH

Shigeru AOKI, 2011.10.12, Hyogo, Kobe Design University

Shigeru AOKI, 2011.10.21, Ibaragi, Kenchikubunka

Shigeru AOKI, 2011.11.09, Kanagawa, Meiji University

Shigeru AOKI, 2012.01.24, Tokyo, The Real Estate Companies Association of Japan

Shigeru AOKI, 2012.01.31, Chiba, Nihon University

Shigeru AOKI, 2012.03.06, Tokyo, Ministry of Land, Infrastructure, Transport and Tourism

Shigeru AOKI, 2012.03.15, Tokyo, Japan Facility Management Association

Shigeru AOKI, 2012.03.16, Tokyo, Danchi Saisei Sien Kyokai

Shigeru AOKI, 2010.4.28, China, Dalian University of Technology

Shigeru AOKI, 2011.08.02, Thailand, Chulalongkorn University

Shigeru AOKI, 2011.11.03, Korea, KFMA

Shigeru AOKI, 2011.11.19, China, Dalian University of Technology

3. Others

3-1Monographs / Technical books

Shigeru AOKI, 2011.06, Refining Housing Complexes, Kenchiku Shiryo Kenkyusha CO., LTD

3-2. Research Reports

Shigeru AOKI, 2012.5, Refining CitySmart City, Leading Project of Tokyo Metropolitan University Study on Development of Refining architecture

3-4 Works / Products, etc.

Architecture

Shigeru AOKI, 2011.2, Tokyo, YS BLD.(Refining Architecture)

Shigeru AOKI, 2011.12, Yamaguchi, MANJUSO(Refining Architecture)

Architectural Magazine

Shigeru AOKI, 2011.4, Shinkenchiku, Shinkenchiku-sha (in Japanese)

Shigeru AOKI, 2011.6, Architecture yearbook 2010, The Japan Institute of Architects(in Japanese)

Shigeru AOKI, 2011.8, Shinkenchiku, Shinkenchiku-sha (in Japanese)

Shigeru AOKI, 2011.9, Twelve Houses Restored in Japan and Italy, Esempi di Architettuta(in Japanese)

Shigeru AOKI, 2011.10, MODERN LIVING No.199, Hearst Fujingaho(in Japanese)

Shigeru AOKI, 2011.10, EAST TIMES, East Japan Construction Surety(in Japanese)

Shigeru AOKI, 2011.10, LIVE ENERGY vol.97, Tokyo Gas(in Japanese)

Shigeru AOKI, 2011.10, Updating House Renovation Housing Studies, Kenchiku Shiryo Kenkyusha CO., LTD (in Japanese)

Shigeru AOKI, 2011.11, Introduction to Renovation, Nikkei Architecture(in Japanese)

Shigeru AOKI, 2011.11, BELCA Vol.23 No.135, Building and Equipment Long-life Cycle Association(in Japanese)

Shigeru AOKI, 2011.12, JA 84 WINTER 2012, Shinkenchiku-sha (in Japanese)

Shigeru AOKI, 2012.3, Architect Vol.61 No.714, Japan Fanderation Architects & Building Engineers Association(in Japanese)

Shigeru AOKI, 2012.3, sui, The Nishinippon Shimbun(in Japanese)

Architectural Magazine(serialization)

Shigeru AOKI, 2012.1, Nikkei Architecture Vol.967, Nikkei Business Publication, Inc.

Shigeru AOKI, 2012.1, Nikkei Architecture Vol.968, Nikkei Business Publication, Inc.

Shigeru AOKI, 2012.2, Nikkei Architecture Vol.969, Nikkei Business Publication, Inc.

Shigeru AOKI, 2012.2, Nikkei Architecture Vol.970, Nikkei Business Publication, Inc.

Shigeru AOKI, 2012.3, Nikkei Architecture Vol.971, Nikkei Business Publication, Inc.

Shigeru AOKI, 2012.3, Nikkei Architecture Vol.972, Nikkei Business Publication, Inc.

Shigeru AOKI, 2012.4, Nikkei Architecture Vol.973, Nikkei Business Publication, Inc.

Shigeru AOKI, 2012.5, Nikkei Architecture Vol.974, Nikkei Business Publication, Inc.

Shigeru AOKI, 2012.5, Nikkei Architecture Vol.975, Nikkei Business Publication, Inc.

Newspaper

Shigeru AOKI, 2011.4.6(Wed)Oita Kensetsu Shinbun

Shigeru AOKI, 2011.4.14(Thu)The Kensetsutsushin Shimbun Corporation

Shigeru AOKI, 2011.5.2(Mon)Zenkoku Chintai Jutaku Shinbun

Shigeru AOKI, 2011.5.14(Sat)Oita Godo Shimbunsha

Shigeru AOKI, 2011.6.7(Tue)The Yomiuri Shimbun.

Shigeru AOKI, 2011.6.27(Mon)The Kensetsutsushin Shimbun Corporation

Shigeru AOKI, 2011.7.1(Fri)The Nikkan Kensetsu Kogyo Shimbun.

Shigeru AOKI, 2011.8.18(Thu)The Kensetsutsushin Shimbun Corporation

Shigeru AOKI, 2011.9.30(Fri)The Kensetsutsushin Shimbun Corporation

Shigeru AOKI, 2012.1.3(Tue)The Remodeling Business Journal.

Shigeru AOKI, 2012.2.8(Wed)The Kensetsutsushin Shimbun Corporation

Shigeru AOKI, 2012.2.22(Wed)The Nikkan Kensetsu Kogyo Shimbun.

Shigeru AOKI, 2012.2.22(Wed)The Kensetsutsushin Shimbun Corporation

Shigeru AOKI, 2012.2.24(Fri)Oita Kensetsu Shinbun

Awards

Shigeru AOKI, 2012.2, The Japan Building Disaster Prevention Association Award

Shigeru AOKI, 2011.6, Mansion Creative Reform Award Jury's Special Award(Takane Heights)