Department of Architecture

*nonmember

Urban Design of Civic Center in prefectural capital Cities based on Japanese Castle-Towns in the early Showa era.[in Japanese], Kenjiro MATSUURA, Satoshi KUSAKABE , Yoshihiro YOKOTA , Yosuke YAMAGUCHI and Masuro URAYAMA : Jounal of Architecture and Planning , Transactions of Architectural Institute of Japan, No. 588, p.p. 87-94, 2005.2

This paper aims to clarify how to form Civic Center in Castle area in relation to Castle-Towns basis analyzing cases of prefectural capital 17 Cities based on Japanese Castle-Towns in the early Showa era.

Findings are as follows : 1) Government and municipal offices tended to be dispersed from Meiji and Taisho era to the early Showa era, 2)The whole government and municipal offices tended to be located outside Castle area,but those which formed Civic Center tended to be located inside Castle area, 3)Paying attention to "Class" and "Axis" as space elements of making Castle area , as a result of analyzing relationship between those and Civic Center , we discover various Urban Design method of Civic Center such as Discrimination by locating Prefectural office in the site of the main enclosure of a castle and making identified and symbolic Urban Space by locating government and municipal offices along moat or skirts of a mountain or main streets.

STUDY ON HISTORIC ENVIRONMENT CONSERVATION PLAN OF DA-DAO-CHENG DISTRICT IN TAIPEI [in Japanese], Meiyin LIN, Satoshi ASANO and Masuro URAYAMA, Journal of Architecture Planning of AIJ, No.592, pp.123-133, 2005

Da-Dao-Cheng district, with various kinds of historic shop-houses, is located in Metropolitan of Taipei. The conservation movement by the citizen, NPOs, and experts began with the road-widening urban plan on the main street, Di-Hwa Street, and led to the change of policies to conservation. The conservation plan was officially announced in 2000 after varions discussions, by designated as a special district with the use of system of Transfer of Development Rights. This paper discusses the achievement and issues of the conservation plan, by analyzing the process of plan making, changing of conservation proposals, and the current operations.

An Economical Evaluation of Greenery Townscape composed by Trees on Housing Lots - A Study on Possibility of Co-Managing the Common Benefit of Private Spaces in Cooperate with Local Residents - [in Japanese], Naoki HAYASHI, Shiro KAWAI and Masuro URAYAMA, Journal of the City Planning Institute of JAPAN, No.40-3, pp.841-846, 2005

This paper evaluates the environmental values that residents will pay for enjoying greenery townscape composed by trees on housing lots. Two questionnaires were carried out; one is to compare the residents' consciousness of 3 neighborhoods which have various green covered area ratio on their greenery townscape, another is to evaluate the economical values of greenery townscape using Contingent Valuation Method (CVM). Conclusions are as followings: Residents in greenery neighborhood think that their and surrounding lots contribute to make greenery townscape rich. Therefore many residents will pay a part of the cost to maintain the greenery

townscape formed by trees on surrounding housing lots that makes them feel common green.

Study on Classification of Irrigation Reservoirs for Improvement Planning [in Japanese], Akira TOMORI and Masuro URAYAMA, Papers on Environmental Information Science, No.19, pp.77-82, 2005

This paper presents an improvement guideline of irrigation reservoir as environmental resources. In order to classify reservoir for improvement planning, five common factors were extracted from factor analysis of fourteen indicators. Through cluster analysis, reservoirs could be classified in five groups: big reservoirs, irrigation reservoirs for agricultural propose, rural reservoirs adjacent to residential area, small reservoirs in urban areas and small reservoirs in rural areas. Also, characteristics of reservoir improved as urban parks and as rural improvement project were analyzed, and compared with those groups to see conditions for selection for improvement planning. The selection method shows that the improvement planning emphasizes the use of reservoir as irrigation facility or as environmental resources.

A COMPARISON STUDY ON USERS' CHARACTERISTICS AND RECREATIONAL ACTIVITIES BETWEEN A PARK WITH RESERVOIR AND ANOTHER WITHOUT RESERVOIR －Characteristics of recreational activities at reservoir's waterfront area－ [in Japanese], Akira TOMORI and Masuro URAYAMA, Journal of the City Planning Institute of JAPAN, No.598, pp. 87-94, 2005

Abstract: Reservoirs are artificial lakes built as agricultural facilities, and play a significant role as urban resources. A comparison study through observation and questionnaire survey between a park with reservoir and another without reservoir was conducted to examine the characteristics of recreational activities at reservoir's waterfront area. In a park with reservoir, passive recreational, active recreational and walking were observed at waterfront area, which includes the walking path and the bank. Walking was the dominant recreational activity in this area and the majority of this recreational activity was daily or weekly - elderly users. Users that came to walk in a park with reservoir were more and stayed longer than in a park without reservoir due to opportunities for enjoying the aesthetical quality that the reservoir and the environment provide.

A Study on the applying Circumstances and Roles of the Landscape Administrative Measures in the Landscape Ordinance about the Total Developmnt Type, The present condition of the Prefectures' landscape administrative measures centered on the landscape ordinances Part 1, Yoshio BANDO, Satoshi ASANO and Shoji IMAI, Journal of Architecture and Planning, No.597, pp.109-118, 2005

City Planning Stdies "Presents Situation and Prospects, Foregin Countries", Satoshi ASANO, City Planning Review, No.262, pp.83-88, 2005

A Study on the Successive Change Condition of Management of Condominiums Including Many Units in Tokai Area–Management Rules and Countermeasures to Pets Breeding Problem– [in Japanese], Hiroyuki Takai, Urban Housing Sciences, No.51, pp.95-100, 2005

The aim of this research is to make clear the actual condition on successive change of the management of condominiums including many units in Tokai area, especially focused on the management rules and countermeasures to pets breeding problem. The research was made for 9 housing estates by the way of hearing to the chief of homeowners association or the management staff. Many changes are surely occurred. For example, management rules and the organization of homeowners association are changed because of physical aging, residents' aging and short of the association's budget. The countermeasures to the pets breeding problem are various in each condominium in spite of almost all residents' much dissatisfaction.

A Study on the Successive Change Condition of Common Spaces and facilities in Condominiums Including Many Units [in Japanese], Ch. Hiroyuki Takai; Mem. Hiroko Saito, Mitsuo Takada , Nishido Hirotaka , Yuki Miyauchi and Takahiro Moki, Journal of Housing Research Foundation, No.31, pp.241-250, 2005

Common spaces and facilities have taken root as a way of planning for condominiums including many units in Japan. The aim of this study is to make clear the actual condition on successive change of these common spaces and facilities in early condominiums, and make suggestions to make them work well. The researches were conducted by way of questioners to the chief of homeowners association or the management staff by mail and hearing on 8 housing estates. Some interesting changes have already occurred and they can be arranged by three factors. From the actual conditions of these changes 8 suggestions to make them work well could be made.

Experimental Study on Behavior of Free Water in Dewatered Concrete Using Visible Evaluation Method [in Japanese], Toshitsugu INUKAI, Shigemitsu HATANAKA, Naoki MISHIMA and Minsu JANG, Proceedings of the Japan Concrete Institute, Vol.27, No.1, pp.595-600, 2005.7

Behavior of Air Bubbles in Mortar and Concrete during Vacuum-processing [in Japanese] Eisuke SAKAMOTO, Shigemitsu HATANAKA, Hiroki HATTORI and Naoki MISHIMA, Proceedings of the Japan Concrete Institute, Vol.27, No.1, pp.1021-1026, 2005.7

Fundamental Study on Exfoliation Damage Properties of Porous Concrete by Wear Test [in Japanese] Takeshi NAKAGAWA, Toshitsugu INUKAI, Naoki MISHIMA and Shigemitsu HATANAKA, Proceedings of the Japan Concrete Institute, Vol.27, No.1, pp.1261-1266, 2005.7

Fundamental Study on Distribution of Compressive Strength of Porous Concrete [in Japanese]

Takamasa YAMAMOTO, Shigemitsu HATANAKA, Sachio KOIKE* and Naoki MISHIMA, Proceedings of the Japan Concrete Institute, Vol.27, No.1, pp.1267-1272, 2005.7

Fundamental Study on Bending Fracture Properties of Large Particle Size Porous Concrete [in Japanese] Akihiro MAEGAWA, Shigemitsu HATANAKA, Naoki MISHIMA and Moe KURODA, Proceedings of the Japan Concrete Institute, Vol.27, No.1, pp.1273-1278, 2005.7

Axial Compression 3-D FEM Analysis on Confined Concrete with Bleeding Layers [in Japanese] Yukio YOSHIDA, Eiji MIZUNO* and Shigemitsu HATANAKA, Proceedings of the Japan Concrete Institute, Vol.27, No.2, pp.103-108, 2005.7

Effect of Piles on Rotating Criteria of Shear Walls in Seismic Evaluation of Existing RC Buildings [in Japanese] Toyofumi TAKADA, Shigemitsu HATANAKA and Kenzo KUBOTA, Proceedings of the Japan Concrete Institute, Vol.27, No.2, pp.1183-1188, 2005.7

Compressive Failure 3-D FEM Analysis of Cylindrical Confined Concrete with the Drucker-Prager Model [in Japanese] Yukio YOSHIDA, Shigemitsu HATANAKA and Eiji MIZUNO*, J. Struct. Constr. Eng. AIJ, No.587, pp.155-162, 2005.1

Main purpose of the present study is to discuss the effect of parameters (e.g. internal friction angle and dilatancy angle) of the constitutive law of Drucker -Prager type on the result of simulation analysis of confined concrete under compression. Two series of 3-D FEN analyses have been carried out. Firstly, the optimum values of the internal friction angle and dilatancy angle, used in the Drucker-Prager type plasticity model with the strain softening effect, have been discussed for a set of compressive strength data of concrete specimens with different shapes. As a result, reasonable value as the internal friction angle has been found to be approximately 30 degrees for a condition of rather high equivalent lateral pressure. Secondly, simulation analyses have been carried out for the compressive behavior of cylindrical concrete specimens confined by steel tubes or reinforcing bars, introducing interface element and different values of the internal friction angle. As a result, it has been pointed out that the distribution of equivalent confining pressure along the longitudinal direction of a specimen and the progress of the degree of damage in horizontal sections differ to a large extent by the value of internal friction angle applied.

Experimental Study on Influence of Pore Water Pressure on Shear Deformation of Fresh Concrete [in Japanese] Gun-Cheol LEE*, Yasuo TANIGAWA*, Hiroshi MORI*, Yoshiyuki KUROKAWA* and Naoki MISHIMA, J. Struct. Constr. Eng. AIJ, No.588, pp.7-12, 2005.2

In this study, the rheological properties of fresh mortar and concrete were investigated experimentally by shear box test. The pore water pressure in fresh mortar and concrete was measured as an influence factor of rheological properties of fresh concrete. The cohesion and the coefficient of dynamic internal friction were represented from pore water pressure and shear

stress measured in the experiment. As the result, it was clarified that the rheological properties is affected by the pore water pressure in fresh mortar and concrete. Moreover, the correcting method of shear stress in case of shear box test was obtained, and the cohesion and the coefficient of dynamic internal friction were quantified.

Effect of Mesh Size of Filter Mats and Vacuum Pressure Ratio on Quality of Vacuum Processed [in Japanese] Shigemitsu HATANAKA, Hiroshi WATO, Naoki MISHIMA and Akio MURAMATSU*, J. Struct. Constr. Eng. AIJ, No.588, pp.13-19, 2005.2

The strength and hardness of concrete slab surface is considered significantly affected by bleeding of concrete. It has been reported that vacuum processing is quite effective to obtain high density of concrete. The method, however, has not been successfully used for the concrete work in the field of building construction, compared with that of civil engineering works in Japan. In the present study, as the sequence of the earlier experiment, two series of experiments have been carried out in order to examine the effect of mesh size of a filter mat and vacuum pressure ratio. As a result, the internal strength distribution of concrete slab gets to be more preferable as the mesh size becomes smaller and vacuum pressure ratio higher. Further, discussion has been conducted, based on the experimental results including the earlier ones, in order to find more reasonable and effective way in the application of the proposed vacuum processing method.

Fundamental Study on Manufacturing Method of Large Particle Size Porous Concrete Using Concrete Rubble and Applicability as Fishing Bank [in Japanese] Akihiro MAEGAWA, Shigemitsu HATANAKA, Naoki MISHIMA and Yukihisa YUASA, J. Struct. Constr. Eng. AIJ, No.589, pp.43-48, 2005.3

To expand the usage of porous concrete, the authors have examined manufacturing method of large particle size porous concrete using concrete rubble. In the manufacture of large particle size porous concrete, in stead of manufacturing with a mixer, the binder mortar was sprayed on the upper surface of the concrete rubbles of every layer. The results obtained from the present study are as follows.

1. Recycling type large particle size porous concrete was producible by spraying method.
2. Void diameter located outside of the large particle size porous concrete can be presumed by using a simple theoretical formula. Moreover, the void diameter can be controlled by adjusting aggregate diameter, adhesion thickness of binder mortar, and number of aggregates.
3. Applicability of the large particle size porous concrete to the fishing bank for lobster was sufficiently confirmed.

Experimental Study on Bleeding Behavior of Free Water in Mortar Based on the Visible Evaluation Method [in Japanese] Toshitsugu INUKAI, Shigemitsu HATANAKA, Naoki NISHIMA and Rinji KANEKO*, J. Struct. Constr. Eng. AIJ, No.590, pp.1-7, 2005.4

Main purpose of the present study is to examine the rising behavior (bleeding) of free water in mortar by using a proposed visible evaluation method. A series of experiments of exp.1

to 3 was carried out. In exp.1, rising path of colored liquid as free water injected into mortar was observed. In exp.2, effect of the volume of the injected colored liquid on its rising distance was examined, and the behavior of the internal bleeding was idealized for modelling. In exp.3, applicability of the proposed model was verified through the 2-dimensional visualization experiment, using model materials. Consequently, it was shown by the devised visible evaluation method that the internal bleeding behavior of mortar can be checked qualitatively. Moreover, the rising process of the modeled free water showed clearly that the proposed method is applicable to actual mortar and concrete.

Fundamental Study on Rotating Criteria of Seismic Walls in Seismic Evaluation of Existing RC Buildings [in Japanese] Shigemitsu HATANAKA, Yoshiyuki KATOU, Kenzo KUBOTA and Yoshiro KOHAMA*, J. Struct. Constr. Eng. AIJ, No.590, pp.79-86, 2005.4

Evaluation (screening) of the seismic performance of RC buildings has been widely carried out in various ways mainly based on the manual issued by Japan Disaster Prevention Association. According to results of the evaluation to date, failure mode of aseismic walls are apt to be estimated as "rotation", in spite of the fact that such failure mode has been hardly recognized in the past disasters, except for the case of collapses due to uneven settlement or liquifation of ground. In the present study, firstly the resisting mechanism of a structure against rotating internal walls is analysed, using the result by "the 3rd-step aseismic evaluation method" for a typical old building of 3 stories. Secondly, the effect of foundation piles on the rotation bearing capacity of seismic walls is discussed. As a result, it is pointed out that the main factors affecting the bearing capacity are resisting forces due to dead load, coupling beams, transverse walls, and foundation piles. In order to change the failure mode of rotation into another one (bending or shear), however, combination of two or more resisting forces due to the above factors is required.

Experimental Study on Effects of Binder Strength and Aggregate Size on Relationship between Compressive Strength and Void Ratio of Porous Concrete [in Japanese] Shigemitsu HATANAKA, Naoki MISHIMA and Yukihisa YUASA, J. Struct. Constr. Eng. AIJ, No.594, pp.17-23, 2005.8

The authors have proposed an empirical formula for predicting the relationships between compressive strength and void ratio of porous concrete in the earlier paper. Main purpose of the present study is to discuss the effects of binder strength and aggregate size on the strength-void ratio relationships, based on the experimental data. Two series of experiments have been carried out, and the followings have been found. 1)The compressive strength of porous concrete at a constant void ratio is dependent on the binder strength and the aggregate size, while independent on the flow value of binder. 2)The earlier proposed formula for the prediction of compressive strength-void ratio relationships is found to be applicable to porous concrete tested in the present study.

Study on Mechanism of Strength Distribution in Vacuum Processed Concrete Based on the Consolidation Theory [in Japanese] Shigemitsu HATANAKA, Hiroki HATTORI, Eisuke

SAKAMOTO and Naoki MISHIMA, J. Struct. Constr. Eng. AIJ, No.596, pp.1-8, 2005.10

The strength and hardness of concrete slab surface is considered significantly affected by bleeding of concrete. It has been reported that dewatering by vacuum processing is quite effective to make concrete high density and high strength. In the earlier report, the authors have already pointed out that there is a strong relationship between the strength distribution and density distribution in the vacuum processed concrete, both gradually decreasing from the top surface to about 15 cm depth of concrete. Main purpose of the present study is to discuss the mechanism of the occurrence of such distribution of strength and density, based on consolidation theory. The present paper reports the results of the investigation on the distribution of ingredients in mortar and concrete. Further, a prediction method for the strength improvement of concrete by vacuum processing is also discussed.

Uniaxial Compression FEM Analysis of Cylindrical Concrete with Strength Variation Due to Bleeding [in Japanese] Yukio YOSHIDA, Eiji MIZUNO* and Shigemitsu HATANAKA, J. Struct. Constr. Eng. AIJ, No.596, pp.71-78, 2005.10

Purpose of the present study is to discuss the compressive failure state and the effectiveness of internal friction angle used in the Drucker-Prager model, based on the uniaxial compression 3-D FEM analysis of plain concrete with the strength variation due to bleeding. As a result of analyses, which introduced the different values of internal friction angle (30 and 53 degree), it has been pointed out that 1) the failure zone along the longitudinal direction of specimen shows tendency of proportional reduction with the increase in the size of a specimen, and 2) the distribution of equivalent strain inside a specimen obtained from the analysis with internal friction angle of 53 degree can represent the ordinary failure pattern.

Research on Stability of Fishing Bank Made by Large Particle Size Porous Concrete Placed Under Sea [in Japanese] Akihiro MAEGAWA, Toshihiko SHAKOUCHI, Yukihisa YUASA, Naoki MISHIMA and Shigemitsu HATANAKA, AIJ Journal of Technology and Design, No.22, 53-58, 2005.12

In this report, the stability and applicability of fishing bank made by large particle size porous concrete was examined in the large-scale waterway where wave and current can be generated. It has been found that void of fishing bank decreases power of current and wave, and the effect on wave energy is especially large.

Three-dimensional predictive analysis of ground vibrations produced by construction work, Toshikazu HANAZATO, Norio TAGUCHI, Yoshiaki NAGATAKI and Yoshio IKEDA, Environmental Vibrations : Prediction, Monitoring, Mitigation and Evaluation, pp381-384,2005

Construction of high-tech facilities that must be protected against vibrations by machine, traffic and construction vibrations has been in great demand. In order to satisfy the requirement of performance of these facilities, it is needed to control the vibrations within the

allowable limit being strict for precision instruments in buildings. This implies necessity for development of 3-dimensional dynamic soil-structure analysis that makes it possible to accurately predict the vibrations transmitting from sources to structures via soils, as well as, to employ it to develop the most suitable measures for reduction of vibrations. Therefore, we have developed the analysis technique that combines 3-D FEM with thin layer method to predict the ground vibrations produced by traffics, machines and construction operations. In the present technique, 3-D finite element and thin layer models represent near-field including structure and far-field, respectively.

Experimental Study on the Load-Deformation Characteristics of Concrete Filled Circular Steel Tube Short Columns under Axial Compression Considering Size Effect, Takamasa YAMAMOTO, Jun KAWAGUCHI and Shosuke MORINO [in Jaoanese], Journal Structural Construction Engineering, AIJ, No. 592, 2005.6, pp. 193-200.

Behavior of a circular concrete-filled steel tube (CFT) short columns under axial compression is influenced by the interactive effects between steel and concrete. This paper first derives the constitutive equations of the concrete considering the triaxial stress state under the incremental lateral stresses. Second, the numerical formulas for predicting stress-strain behavior of steel tube are proposed based on the experimental results. By using the obtained numerical formulas, the load-deformation behavior of a circular CFT short column under uniaxial compression is predicted, considering the size effect.

Study on the Size Effect on Compressive Strength of Concrete Filled Square Steel Short Tube [in Japanese], Takamasa YAMAMOTO, Jun KAWAGUCHI, Shosuke MORINO and Sachio KOIKE, Journal of Constructional Steel, Vol. 13, 2005.11, pp. 509 - 514.

Compression tests of square concrete filled steel tube (CFT) short columns have been conducted to clarify the size effect on the compressive strength of square CFT columns. The experimental variables were as follows: size of specimen, strength of filled concrete, wide thikness ratio and loading methods (applying the compression load only on the plain concrete, the filled concrete and on the overall cross-section). This paper first presents the test results concerning compressive strength and discusses of the strength of square CFT short columns considering the size and confining effects.

Study on the Improvement of Indoor Relative Humidity for Office Buildings during Heating Operations in Winter [in Japanese], Shigehiro ICHINOSE, Kazunobu SAGARA,Yukio ISHIKAWA, Toshifumi KOBAYASHI, Genzaburou FUKAYA and Ikuya KAWAKAMI,Transactions of the Society of Heating, Air-Conditioning and Sanitary Engineers of Japan,No.100, pp.27-37, 2005

Study on Mixing Model for Temperature-stratified Thermal Storage Tank under Variable Input Conditions in Actual Operation, Hiroaki KITANO, Takeshi IWATA and Kazunobu SAGARA*,

Transactions of the Society of Heating, Air-Conditioning and Sanitary Engineers of Japan, No.96, pp.31-40, 2005.1

Thermal performance of a solar cooker based on an evacuated tube solar collector with a PCM storage unit, Someshower Dutt Sharma*, Takeshi IWATA, Hiroaki KITANO, Kazunobu SAGARA*, Solar Energy, Vol.78, No.3, pp.416-426, 2005.3

Verification of Simple Design Method for Air-based Solar Heating System by System Simulation, Hiroaki KITANO, Takeshi IWATA and Kazunobu SAGARA*, Journal of Japan Solar Energy Society, Vol.31, No.4, pp.37-47, 2005.7