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News Letter

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■ Message from Director-General

Japan is one of the leading countries evolving from an industry-based society into an information-based society. Personal computers are indispensable tools even in small business offices, and more than 77 million people (61% of the Japanese population) were connected to the internet as of 2003. In addition, 87 million mobile phones are now in use, 86% of which are web-enabled.

ITS (Intelligent Transport Systems) is emerging as a powerful means of reducing traffic congestion and improving road safety. Almost all the expressway interchanges operated by the Japan Highway Public Corporation are now equipped with ETC (Electronic Toll Collection) gates, enabling non-stop cash-less pass through, as well as very flexible pricing systems. Automobiles with ETC devices are soaring in number. The 11th World Congress on ITS, held in Nagoya in October 2004, highlighted the rich possibilities of ITS technologies.

Looking toward the future, a ubiquitous computing society is a key concept for Japan. Prof. Sakamura of Tokyo University, a major advocate of this idea, says, "A ubiquitous computing system is one that aims to provide us with comfort, convenience and safety by embedding microchips (computers or memory devices) in everything, and having these microchip-embedded physical objects exchange information with each other."

The use of IC tags to trace the delivery of goods is just the start. The MLIT (Ministry of Land, Infrastructure and Transport) has initiated an ambitious project for the physically handicapped in collaboration with Prof. Sakamura, related organizations and enterprises. In this experimental project, many IC tags are



embedded in various facilities of the city, such as under the pavement, at crossings, in front of offices and shops and so on. These will provide a vision-impaired person with audio guidance, as well as provide a hearing-impaired person with visual information, so that they can avoid danger and gain greater mobility. This system will also be very convenient for people who are not disabled.

ITS and the ubiquitous computing society are challenges worth attempting for future generations. In addition, Japan is facing the silent challenge of a shrinking population, which will change the fabric of society and the economy.

The population of Japan (128 million as of 2004) has almost quadrupled compared with 33 million in 1867 when the modernization of Japan started, and will reach its peak in a couple of years. Japan has achieved remarkable economic success and longevity under the circumstances of rapid population increase and urbanization. The decline in population is accompanied by unprecedented aging of society. These two factors will affect every aspect of social, economic and cultural activities. Regional planning, transportation systems and other social infrastructure plans must be reviewed and re-organized. Although these impacts will be new for Japan, we must pave the way for a safe, livable and vibrant society. The search for a new paradigm has just begun.

This year, mainland Japan was hit by the largest number of typhoons ever recorded. Ten typhoons claimed the lives of more than 200 victims. In October, nearly 40 people were killed and over 2,500 houses were severely damaged by a strong earthquake in the Niigata area. These natural disasters are classic yet new problems that we must deal with.

NILIM is involved in a wide range of research including the aforementioned issues. We welcome your opinions and suggestions on all related matters.

HAMAGUCHI Tatsuo, Director-General, NILIM

The 3rd Japan-U.S. Governmental Conference on Drinking Water Quality Management and Wastewater Control

Water Quality Control Department

From the 12th to the 15th of July, 2004, the 3rd Japan-United States Governmental Conference on Drinking Water Quality Management and Wastewater Control was held in Hawaii. The purpose of the Conference was to exchange information on science and policy in the field of drinking water quality and wastewater management. In addition to presentations and discussions, the delegates attended the technical tour in drinking water supply and wastewater recycling facilities of the Honolulu Water Board.

Formerly, technical exchanges between Japan and the U.S. were conducted separately in the areas of waterworks and sewerage. They were based on the Japan-U.S. Environmental Cooperation Agreement, and the first meeting in each area dates back to 1987 and 1971, respectively. New challenges and common issues in both areas led to their unification, namely issues of water quantity and quality management on a watershed basis, endocrine disrupting chemicals, and *Cryptosporidium*. The first Conference after the unification was held in Colorado in 1999, and the second in Tokyo in 2002.

The delegations were composed of specialists from various sectors such as national and local governments, national research institutes, universities, support organizations, and public companies. The Japan delegation had ten delegates in the area of drinking water quality management and nine in wastewater control, led by Mr Yasuo Yanagibashi, Director, Office of Drinking Water Quality Management, Water Supply Division, Ministry of Health, Labour and Welfare, and Dr Masahiro Takahashi, Director, Water Quality Control Department, NILIM. The U.S. delegation had seventeen delegates, led by Dr Lawrence Reiter, Acting Director, National Risk Management Research Laboratory, U.S. Environmental Protection Agency (EPA).

The topics discussed in this Conference covered state-of-the-art technologies and diverse emerging issues in the area, and each topic included technical presentations from both countries followed by relevant discussions. The contents are summarized below.

- EPA's risk management research, the status of drinking water regulations, and a foundation's strategic research plan were presented by the U.S. while Japan addressed drinking water quality management, regulations, research and technology as well as wastewater control, regulatory activities and directions. Lessons learned from outbreaks of cryptosporidiosis in Japan were presented, and a perspective on the value of pathogen monitoring in the U.S. was provided. Membrane and desalination technologies were presented through an overview in Japan and a case study in El Paso, Texas.

- The pollution caused by wet-weather flow is a relatively new issue, and the control of combined sewer overflows in Osaka City and stormwater in New York City was discussed. The U.S. Department of Agriculture outlined its water activities in Asia.

- An innovative concept of a decentralized water system was presented by Japan. The status of watershed management in the U.S. was discussed, while wastewater management in the Lake Biwa Basin in Japan was described. A water quality management technique utilizing economic incentives was discussed with case studies in both countries. Overviews of accidental water resource pollution and early warning system research were discussed.

- The status of treated wastewater reuse and risk management of biosolids in both countries were presented. The subject of endocrine disrupting chemicals was a topic of continuing interest and research in both countries, and its behaviour and treatment in drinking water and wastewater were discussed.

- Emerging issues on water and wastewater infrastructure rehabilitation, renewal and financing were presented. An overview of bromate formation and control in advanced water treatment systems in Japan was presented, while the identification and control of odours in the wastewater environment in the U.S. were presented.

Through such presentations and discussions, the delegates exchanged many opinions and shared relevant information. Especially, the importance of proper management of watersheds as well as drinking water and wastewater as a continuing priority for both countries was confirmed. An agreement was signed to continue this fruitful interaction and to hold the next Conference two years later on the following topics: watershed management, advances in the regulations of drinking water quality management and wastewater control, risk assessment and management of microbial and chemical contaminants, new technologies for water treatment and wastewater control, measures against emergencies, and water reuse.



Photo1 Group portrait of the delegations



Photo2 Technical tour in wastewater recycling facility

1. Introduction

The 11th ITS World Congress, Nagoya-Aichi 2004, was held from October 18 to 22, 2004, at Aichi Arts Center and Port Messe Nagoya. This was the second congress held in Japan following the 2nd ITS World Congress in Yokohama ten years ago.

This congress was the first trial of 'citizen participation' to consider the viewpoint of users as well as engineers and manufacturers, reflecting the fact that ITS will soon be widely used.

2. Contents of the Congress

The congress consisted of discussions on the concepts and directions of ITS, presentations of their technical studies by experts, and exhibitions of ITS services by about 250 organizations, including companies, universities and ITS promoting organizations of various countries and areas. The congress attracted about 60,000 people, including the citizens.

Twenty-five members of NILIM attended to present the results of their studies on ITS technologies and services, and participated in sessions. NILIM and related organizations cooperatively exhibited models of DSRC services in a parking area of Meijo Park, Smart IC at Kamigo SA, and AHS at Kamiyashiro JCT, and displayed some of the services at iITS Worldi, which was a theme park where citizens could experience ITS services of the future.

3. Conclusion

Today, the importance of 'transportation' for city planning, human lives, environment and economy is increasingly recognized by society. The world congress was a good opportunity to show people the specific roles of ITS and promote its deployment.



Photo3 Opening ceremony of the 11th ITS World Congress



Photo4 Showcase for DSRC service (parking area of Meijo Park)

The 13th Conference on Public Works Research and Development in Asia

International Research Division

The 13th Conference on Public Works Research and Development in Asia was held from the 18th of October (Monday) to the 29th of October (Friday), 2004, in Tsukuba, Tokyo and Okinawa.

The conference participants are executive engineers responsible for infrastructure management of administrative and research departments in some 10 Asian countries with the aim of exchanging views and opinions on such common subjects in Asia, including Japan, as the environment, natural disasters and infrastructure development and furthermore establishing research exchange networks among participating countries by confirming the common understanding of the subjects.

The theme of the 13th conference was iManagement of Urban Water Environment, and participants from Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Korea, Laos, Malaysia, Nepal, Pakistan and Japan (Mr. Hamaguchi, Director General of the NILIM) presented their reports on case studies in their own countries, followed by discussions.

The 13th International Symposium on Land Development and Civil Engineering in Asia held in Ginowan City in

Okinawa during the latter period of the conference and supported by the Okinawa General Bureau of the Cabinet Office and the Okinawa Prefectural Government attracted some 100 participants, the majority of whom were involved in



Photo5 The 13th International Symposium in Okinawa

public works in Okinawa Prefecture. The overseas participants were introduced to the advanced technologies employed in public works in Japan and also to some application examples in Okinawa, including the Building Using Reclaimed Water in Naha New Urban Center and were able to obtain a deeper understanding of Japan's public works closely linked to the locality.

The conference concluded with a common understanding as follows.

(i) The participants recognized the role and need for further improvement in "Management of Water Environment" as well as the importance to conduct research to facilitate them.

(ii) The participants recognized that each country should learn from insights and experiences of countries in Asia, to enhance and support the infrastructure development.

(iii) The participants recognized the needs to cooperate with each other and continue the conference in the future.

The recognizing again the need for this conference, the NILIM will proceed with the preparations for the 14th conference.



Photo6 The Symposium Participants

■ TECHNICAL NOTE of National Institute for Land and Infrastructure Management (January-March, 2004)

No	Title of Paper	Names of Divisions
121	Study on Quality Improvement Measures in Construction Work for Prestressed Concrete Slabs of Highway Steel Bridge (I) - Manual (draft) for Construction and Guide (draft) for a Quality Control of Prestressed Concrete Slabs - - Version for Precast Prestressed Concrete Slabs -	Bridge Division
122	Study on Quality Improvement Measures in Construction Work for Prestressed Concrete Slabs of Highway Steel Bridge (II) - Manual (draft) for Construction and Guide (draft) for a Quality Control of Prestressed Concrete Slabs - - Version for Cast-in-place Prestressed Concrete Slabs -	Bridge Division
132	Study on the Land Use Planning for Coexistence of Houses and Factories in Inner Urban Areas	Urban Planning Division
133	Investigation Report of the Damages by the Northern Miyagi Earthquakes on July 26th, 2003	Planning Division
137	Report of the Lecture Meeting of NILIM (2003)	Planning Division
138	FY2002 Annual Report of Wastewater Management and Water Quality Control	Water Quality Control Department
140	Annual Report of Research Activities, Earthquake Disaster Prevention Division, 2002	Earthquake Disaster Prevention Division
141	Calculation Base of Motor Vehicle Emission Factors	Road Environment Division
147	Landscape and Ecology Division, Annual Research Report (18th)	Landscape and Ecology Division
148	The 12th Conference on Public Works Research and Development in Asia	International Research Division
150	Interview with Dr. Takehiko OHTA "National Land Management and Forest"	Construction Economics Division
155	FY2002 Research Summary of Wastewater Management and Water Quality Control	Water Quality Control Department
157	Research on Appropriate Illuminance and Classification of Pedestrian Lighting	Advanced Road Design and Safety Division
160	Study on Effects of Earthquake Disaster Prevention Investments for Road Infrastructures	Earthquake Disaster Prevention Division
162	Interview with Hiroshi KITO "National Land Management from the Viewpoint of Historical Demography"	Construction Economics Division

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We publish the English version of "2004 Annual Report of NILIM" to show our research activities and accomplishments, and you can see all of its contents on our website, www.nilim.go.jp.



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