国土交通省
Ministry of Land, Infrastructure, Transport and Tourism
国総研ニューズレター
NILIM News Letter
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Contents

N I L I M

Full scale Fire Experiment of a Three-story Wooden School Building

Building Department
Fire Standards Division

A fire experiment using a full scale building has been planned in order to revise the building standards so that three-story wooden school buildings can be built in Japan.

Because wood absorbs CO_2, it effectively prevents global warming, and using wood to construct buildings protects forest resources and prevents disasters such as landslides. Its superior capacity to adjust humidity contributes to greater interior comfort and by taking advantage of the technical skills of local workmen, it contributes to their training and stimulates regional industries.

So the Act for Promotion of Use of Wood in Public Buildings Etc. enacted in October 2010 requires a review of building standards guided by necessary research concerning regulation by the Building Standard Law of Japan .

In response to this need, the National Institute for Land and Infrastructure Management began a research project concerning the fire safety of wooden three-story school buildings in 2011 in order to revise fire protection requirements under the Building Standard Law for three-story wooden school buildings from fire-resistive building to quasi-fire-resistive building with some additional requirements.

This research will begin with fire tests of walls, columns and other members and classroom scale fire experiments, then a full scale building with specifications set based on the results of these tests will be used for a fire experiment, and data necessary to prepare technical standards will be collected and proposed standards prepared.

This fire experiment of a building will be a type of test never performed before: constructing a full size three-story wooden school building on the site of the NILIM and starting a fire in the building to confirm its performance: that occupants can evacuate safely, how much impact on the surroundings (heat, firebrands, collapsing) a fire would have and so on. The experiment will be performed at an unprecedented scale, so a preliminary experiment is planned for 2011 and 2012, followed by the main experiment. See the following web site for information about the experiment.

http://www.nilim.go.jp/lab/bcg/kisya/journal/kisya20120126.pdf

Photo: Outline of the Experimental Building (One photo each of the exterior and interior)

Overview of NILIM FY2012 Budget for Priority Research Projects

Planning and Research Administration Department,
Planning Division

The National Institute for Land and Infrastructure Management (NILIM) is funded by the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) as a research institute to perform research on housing and public works, and technically support the MLIT in its policy making and revisions of engineering standards.

The NILIM also requests budgets directly from the Ministry of Finance in order to conduct priority research and independently address various issues with foresight. In 2012, the NILIM will work on twenty priority research projects including the following 5 new challenges in 2 areas.

The total value of the priority research budget for 2012 is 261 million yen (1% higher than last year). Through its research activities, the NILIM aims to ensure safety against catastrophic disasters such as the Great East Japan Earthquake and to achieve the New Growth Strategy.

New Research Challenges

Area 1: Safety and security

- Research on Risk and Crisis Management Strategy for Excessive and Multiple Actions of Natural Disasters
- Research on the Evaluation Technique and Standard of the Earthquake-Proof Safety of Finishing External Walls
- Research on Technologies for Disaster Reduction Planning in Coastal Cities
- Research on Calculation Methods and Criteria for Evacuation Safety Performance in Building Fires

Area 2: Enhancement of urban mobility and international competitiveness

- Research on Trail Data Infrastructure by Information Communication Technology

MLIT Begins Full-scale Use of 24/7 Traffic Data

Road Department
Traffic Engineering Division

In the winter of 2011, the Ministry of Land, Infrastructure, Transport and Tourism began full-scale use of 24/7 traffic data. To support this program, the National Institute for Land and Infrastructure Management conducts research and development on data collection and analysis methods.

The system collects and utilizes data obtained from continuous observation of traffic volume and traveling speed using the basic traffic survey sections established for the 2010 road traffic census as its platform.

The results of the road traffic census of 2010 were recently summarized and a 24/7 traffic data collection system using the results of the census has been established, thus permitting full-scale introduction of this program.

The devices used to continuously obtain traffic volume data are installed and updated, while the obtained data are also used to estimate the values for sections without such devices, thus allowing data to be collected efficiently and continuously.

The NILIM supports the work through the following research achievements:

[1] Preparation of specifications of continuous observation equipment for low-cost two-vehicle category classification
[2] Development of methods of processing missing values and singular values in the continuous observation data
[3] Development of a method of evaluating traffic volume using continuous observation data

Traveling speed data is prepared by the NILIM by collecting all ordinary automobile probe (tracking traveling) data such as two-way communication type car navigation and portable navigation system data which is used to provide drivers with traffic information etc., then processing these data and providing them to Regional Development Bureaus, etc.

In the future, probe data obtained by ITS Spots will also be integrated and used.

The NILIM is studying ways of more effectively using the continuous traffic data in cooperation with related research departments through "Project Research: Research to Advance the Collection, Analysis, and Use of Continuous Observation Road Traffic Data" (2011 to 2013).
http://www.nilim.go.jp/lab/gbg/index.htm

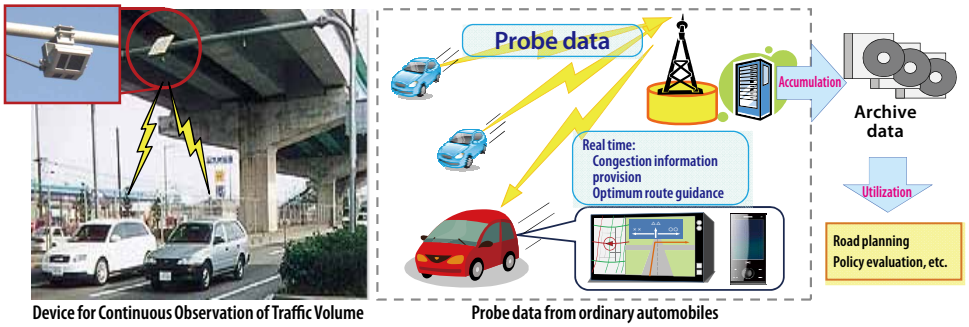

Figure: Device for Continuous Observation of Traffic Volume and Probe Data from Normal Automobiles

Research on Revision of Energy-saving Standards for Non-residential Buildings

Building Department
Environmental and Equipment Standards Division

The actual state of energy consumption of buildings was clarified, energy conservation evaluation methods were developed, and technological knowledge to be applied to the scheduled 2012 revision of energy conservation standards of buildings was organized.

The quantity of CO_2 emissions from buildings such as offices, stores, schools, hospitals etc., has increased by 31.2% (by 2009) since 1990, requiring stronger countermeasures along with those for residential buildings. In response, from 2008 to 2011, the quantity of energy consumed by buildings and equipment systems in actual conditions of use was surveyed, and methods of estimating energy consumed were studied based on actual operating hours as part of Research on Integrated Evaluation Methods and Design Methods Related to Energy Conservation Performance of Non-residential Buildings.

Ministry of Construction Energy Standards for buildings scheduled for revision in 2012 are now being studied using the knowledge obtained. Under the new standards, a method of evaluation based on primary energy consumption of the entire building and reflecting the state of use and efficiency during actual operation of the building's exterior skin and opening performance and mechanical systems (air-conditioning, ventilation, lighting, hot water supply, elevators) is scheduled to be introduced. (Evaluation based on primary energy consumption is already introduced for residential buildings as Standards for the Judgment of Owners of Residential Building Projects).

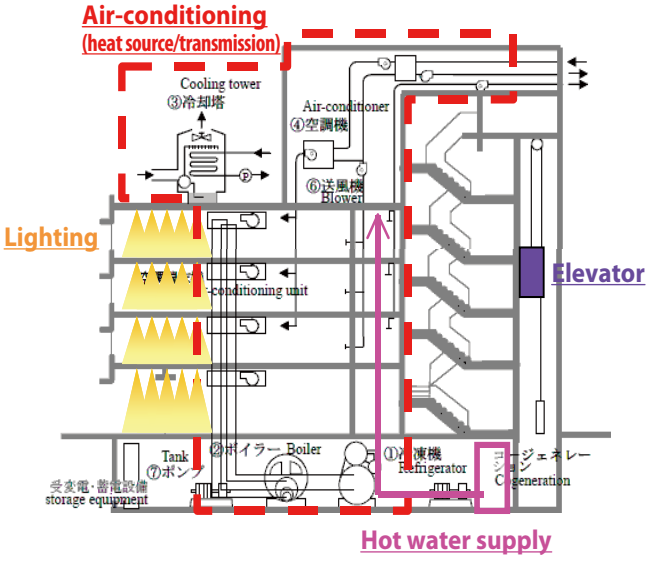

Figure: Buildings' Mechanical Systems which are evaluated (examples)

The 12th Tokyo Bay Symposium

Keita FURUKAWA
Research Coordinator for Coastal and Marine Affairs

The 12th Tokyo Bay Symposium was held in Yokohama on January 16. Information related to the Tokyo Bay Monitoring Campaign by Renaissance Council was shared in a workshop.

The 12th Tokyo Bay Symposium (organized by NILIM and the Tokyo Bay Renaissance Promotion Council; Monitoring Working Group) and the Sixth National Conference on the Restoration of the Sea (organized by the Ministry of Land, Infrastructure, Transport and Tourism, NILIM, Port and Airport Research Institute) were held at the Pacifico Yokohama Conference Center on January 16, 2012 with great fanfare, entertaining more than 200 members of the general public.

The Symposium held in the morning was, as a public workshop of the Tokyo Bay Monitoring Campaign, divided into two sections which exchanged information and opinions on two themes.

Section One, titled "River Mouths and Shallows for Land and Sea Interaction", dealt with clarification of pollution mechanisms, which are the principal target of the survey, by focusing on dynamics of river mouths and shallows, and by examining in detail the attributions and roles of river mouths and shallows, which have a variety of characteristics in Tokyo Bay.

Section Two, titled "Towards Future Surveying of Tokyo Bay", surveyed living organisms and degree of transparency to pave the way for understanding Tokyo Bay in more detail and to take future action in cooperation with the general public, studied specific proposals for citizen's surveys, and highlighted the importance of recognizing that the "abundance" of Tokyo Bay refers not only to the habitats of living environments, but also to the pleasures of present and future generations.

At this Symposium, in addition to presentations on achievements and clarification of pollution mechanisms, progress was made in making people more interested in, and willing to get involved in these activities.

The Conference held in the afternoon began with the keynote speech, "Method of Assessing Natural Symbiosis for Sustainable Watersheds Management," given by Professor Tsujimoto Tetsuro of Nagoya University. This was followed by reports of cases from various regions, a comprehensive discussion session, and a summary of prospects for future initiatives to restore the marine environment, in order to achieve the goals of "Restore the Marine Environment by Integrated Approach Considering Interaction of the Land and Sea," a common policy under the Sea Restoration Project, which is now in progress.

Web site: http://www.meic.go.jp/tokyo2012/

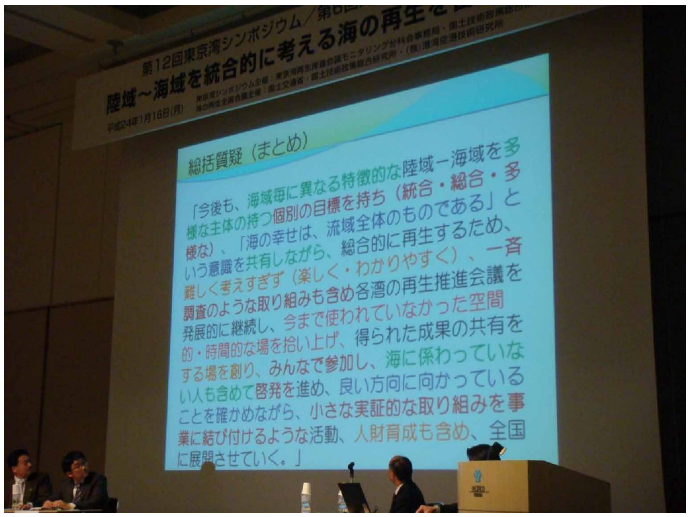

Photo: Twelfth Tokyo Bay Symposium and Sixth National Conference on the Restoration of the Sea
(Upper-left: more than 200 participants, upper-right: Author speaking at the symposium,
Bottom: Conclusion of the Conference.)

Schedule of Principal Events (February-March, 2012)

Scheduled Dates	Event Name
Feb.13 to 15	The 3rd Joint Workshop on Land Slide and Disaster Management in Sikkim, INDIA
Mar.8 to 10	The 6th Joint Meeting to identify the Research Cooperation Needs of River Policy and Water Resource, as well as to Draft a New Theme for Bridge Technological Policy and to Modify the Tunnel Technology agreed on by the 3rd WS, both being identified as the themes in The Declaration for The International Symposium in Bali, OCT. 2010
Mar. 13	Report on the Great East Japan Earthquake (Tokyo)
Mar. 21	Report on the Great East Japan Earthquake (Osaka)

RESEARCH REPORT of National Institute for Land and Infrastructure Management (November,2011-January,2012)

No.	Title of Paper	Names of Divisions
47	A Consideration about Port Entry of Bulk Carrier with Using Tidal Level	Port Planning Division
48	A study on the combination method of correlated wave and wind actions	Port Facilities Division

TECHNICAL NOTE of National Institute for Land and Infrastructure Management (November,2011-January,2012)

No.	Title of Paper	Names of Divisions
645	Annual Report of Basic Date on Road Structures In FY 2009,2010	Bridge and Structures Division
646	Quick Report on Damage to Infrastructures by the 2011 off the Pacific coast of Tohoku Earthquake	Research Center for Disaster Risk Management
647	Summary of the Field Survey and Research on "The 2011 off the Pacific coast of Tohoku Earthquake" (the Great East Japan Earthquake)	Building Department, Housing Department, Urban Planning Department
648	Monitoring of the ecological-type revetment on Port of Akita, Japan: A first year report	Marine Environment Division
649	Impact of Great East Japan Earthquake Disaster on Ship Movement and Containerized Cargo Flow	Port Planning Division
650	Recovery Process from Hurricane Katrina Disaster - Implication for Recovery from the Great East Japan Earthquake -	Port and Harbor Department
651	Life Cycle Analysis on CO2 Emission Ascribed to Constructing Two Types of Port Facility	Port Construction Systems Division
652	Study on Application of Time-series Analysis to Air Transport Demand Estimation	Airport Planning Division
653	Study on Cooling Time during Night Time Construction of Airport Asphalt Pavement	Airport Facilities Division
654	FY2010 Annual Report of Wastewater Management and Water Quality Control	Water Quality Control Department
655	Report of the Lecture Meeting of NILIM(2011)	Planning Division

■ Documents issued by the NILIM can be viewed at our web site. (http://www.nilim.go.jp/lab/bcg/siryou/index.htm)

■ NILIM research activities and achievements are now available on the web site (http://www.nilim.go.jp/english/annual/annual2011/ar2011e.html), as Annual Report 2011.

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