

● **Publication (research achievements) < February, 2014-April, 2014 >**

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PROJECT RESEARCH REPORT of NILIM

No.	Title of Paper	Project Leaders
43	Research on Advancement of Design, Construction and Maintenance Management Using 3D-Data	Research Center for Advanced Information Technology
44	Research on greenhouse gas emissions and on collaboration between energy suppliers and consumers in cities	Director of the Water Quality Control Department

RESEARCH REPORT of NILIM

No.	Title of Paper	Names of Divisions
53	Numerical estimation of inflow flux of floating natural macro-debris into Tokyo Bay	Coastal Zone Systems Division

TECHNICAL NOTE of NILIM

No.	Title of Paper	Names of Divisions
749	Interim report on climate change adaptation studies	Climate Change Adaptation Research Group
760	Method of emergency search for the location of landslide dams using high-resolution single-polarization SAR image interpretation	Erosion and Sediment Control Division
766	Annual Report of Road-related Research in FY 2012	Road Department, Research Center for Advanced Information Technology
767	Manual on data analysis for detection of landslide dam occurrence using discharge data	Erosion and Sediment Control Division
768	An Examination on Measures for Vessel Movements Monitoring along the Northern Sea Route by the Utilization of Satellite AIS	Port Planning Division
769	A study on internationalization of technical standards for port and harbour facilities of Japan -Example study on efforts to assist in developing port design standards in Vietnam-	Port Facilities Division
770	Reconnaissance Report on Damage to Road Bridges and Snow-Shed by the 2011 Nagano-Ken Hokubu Earthquake	Bridge and Structures Division
771	Landscape and Ecology Division, Annual Research Report (28th)	Landscape and Ecology Division
772	Report of Overseas Government Procurement -Public Procurement of Construction in United States, United Kingdom, France and Germany-	Construction Management Division
773	FY2012 Annual Report of Wastewater Management and Water Quality Control	Wastewater System Division, Wastewater and Sludge Management Division
774	Report of the 1st Evaluation Committee of NILIM in FY 2013	Research Administration and Evaluation Division
775	Report of JTRC, NILIM and JARA Joint Seminar	International Research and Promotion Division
776	Annual Report of Basic Data on Road Structures In FY 2012	Bridge and Structures Division
777	Research on Evaluation Technique of Applicable Condition for Weathering Steel Bridge (I) Study about Evaluation Technique of Applicable Condition	Bridge and Structures Division
778	Research on Evaluation Technique of Applicable Condition for Weathering Steel Bridge (II) Study about Effect of the Scattered Deicer on the Bridge	Bridge and Structures Division
780	The Roadside Trees of Japan VII	Landscape and Ecology Division
788	Research on landscape assessment and case studies for road noise barriers	Road Environment Division

● **We provide you with research information.**

• **2014 Annual Report of NILIM NEW**

This web site introduces NILIM activities throughout the year, including research activities and achievements, future initiatives, etc.

Go to this web site: ● <http://www.nilim.go.jp/english/annual/annual2014/ar2014e.html>



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国土交通省
Ministry of Land, Infrastructure, Transport and Tourism

No.48
Spring 2014

Edited and Published by National Institute for Land and Infrastructure Management



■ **Changes of Organization of NILIM**

Planning and Research Administration Department, Planning Division

On April 1, 2014, a reorganization of the NILIM was carried out to strengthen its survey research and field technology support system and to improve the efficiency and effectiveness of its research concerning maintenance, disaster prevention and disaster mitigation.

In order to strengthen survey research and the field technology support system concerning the maintenance of public capital (structures etc.), the Road Structures Department, Research Coordinator for River Structures, and the Port Construction Systems and Management Division were newly established.

And to strengthen the research system related to disaster prevention and disaster mitigation for large scale sediment disasters and floods, which have been occurring with increasing frequency in recent years, the NILIM also established the Sabo Department and the Research Coordinator for Land Management and Disaster Prevention.

Furthermore, to conduct more efficient and more effective research by departments in a shared field, the Research Center for Land and Construction Management was newly established.

Details ● NILIM Web Site (Press Releases)
http://www.nilim.go.jp/lab/bcg/kisya/journal/kisya20140328_2.pdf

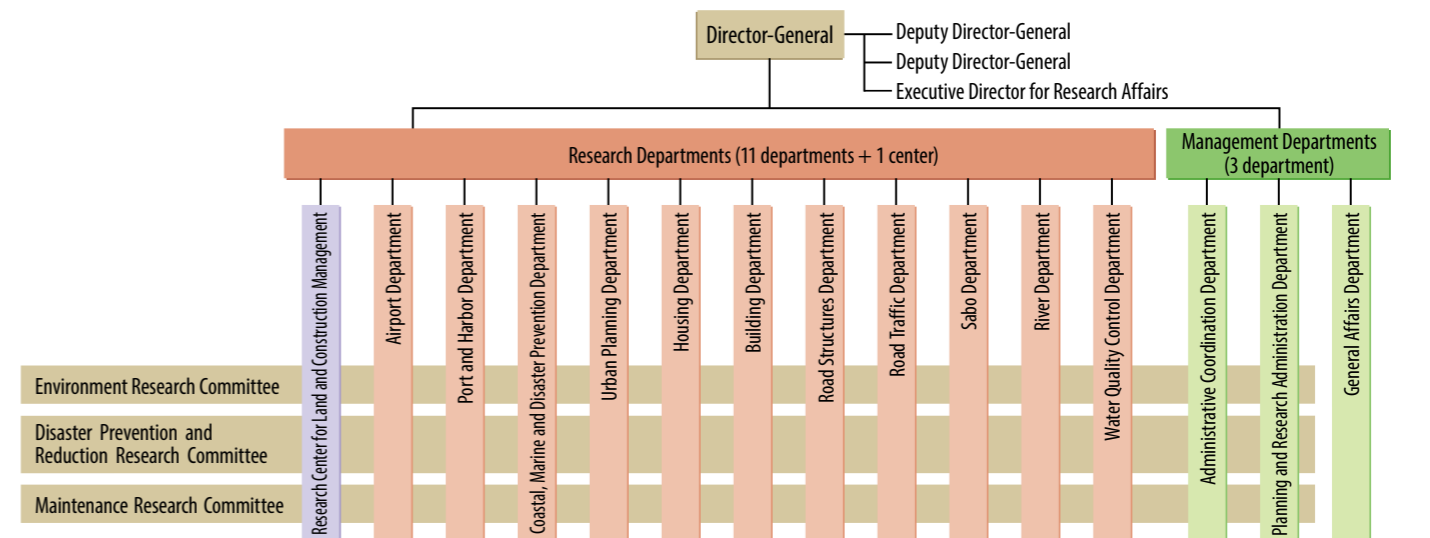


Figure: New Organization of the NILIM

■ **Seven New Project Researches Start in Fiscal Year 2014**

Planning and Research Administration Department, Planning Division

The National Institute for Land and Infrastructure Management started the following seven new project researches in Fiscal Year 2014.

Project Research, which means priority research that the NILIM has independently selected by, for example, integrating research with common research and development goals, is conducted under a project leader based on an approximately 3 to 5 year plan by a group of researchers from fields considered necessary to achieve its goals.

[New Project Research Table]

1. Research on a method of improving the sustainability of maintenance incorporating the risk management perspective
2. Research on a method of evaluating safety of non-structural members

3. Development of maintenance technologies and location evaluation technologies for systematic restructuring of degenerated urban districts
4. Research to improve airport pavement inspection and repair technologies
5. Research on technologies to reduce earthquake damage to medium and low storied buildings caused by large earthquakes
6. Research on the evaluation of parts of cities susceptible to damage by urban fires etc. during earthquakes and of the effectiveness of disaster prevention countermeasures
7. Research on port and harbor technology and standards globalization policies

Details ● NILIM Web Site (Press Releases)
http://www.nilim.go.jp/lab/bcg/kisya/journal/kisya20140328_1.pdf

■ Vice minister Hermanto (Indonesia) visited NILIM

Planning and Research Administration Department, International Research Division

A group led by Dr. Ir. Achmad Hermanto Dardak, Vice Minister of Public Works of Indonesia paid a visit to NILIM under the Japan – Indonesia Research Cooperation Agreement concerning roads and related fields.



Photos: Group photo (top), Director-general Sakai delivers an address (lower left), Vice Minister Hermanto listens carefully to the presentation (lower right)

Details • NILIM Web Site (Press Releases)
<http://www.nilim.go.jp/lab/bcg/kisya/journal/kisya20140310.pdf>

On March 13, 2014, Dr. Ir. Achmad Hermanto Dardak, Vice Minister of Public Works of Indonesia and Mr. Herry Vasa, Director of Institute of Road Engineering (IRE) of the Ministry of Public Works of Indonesia visited NILIM.

They visited Japan under the Japan-Indonesia Research Cooperation Agreement signed by the Minister of Land, Infrastructure, Transport and Tourism and the Minister of Public Works of Indonesia. They attended a joint workshop (held at NILIM), the Seminar on Japan-Indonesia Civil Engineering Technology (held by the Japan Society of Civil Engineers on March 12), and the Fifth Overseas Road PPP Consultative Meeting (held by the Ministry of Land, Infrastructure, Transport and Tourism on March 14, attended only Director Herry Vasa).

The parties undertake technical cooperation in many fields. Past examples include research conducted to introduce traffic volume measurement method (IPT) using image processing technology to survey traffic in Indonesia and research on natural asphalt, asbuton, which is produced in Indonesia.

At the joint workshop, the participants exchanged views concerning Japan's Road Stations, and inspected an experiment using asbuton at the PWRI.

■ Construction management methods of liquefaction countermeasures in sewage pipes

Water Quality Control Department, Wastewater System Division

To reliably earthquake-proof sewage pipes, an experimental study of a backfill soil compaction method (liquefaction countermeasure) was carried out and a new construction management method was proposed in a guideline.

management of compaction. For this reason, a study was carried out of a construction management method performed by carrying out an advance experiment in a simple ditch excavated at another location to decide the spreading thickness and roller compaction frequency suited to the machinery and tools (trial execution). Performing the backfill experiment using the PVC pipe under conditions based on the trial execution results showed that at all measurement points at five locations installed in the depth direction, compaction equal to 90% or more of the degree of compaction stipulated by the present earthquake resistance countermeasure guideline for sewage pipes (Japan Sewage Works Association) was satisfied, confirming the effectiveness of the construction management method: backfill and compaction of the backfill soil based on a trial execution. The results of this experiment will be reflected in the revised Sewage Pipe Earthquake Resistance Guideline.



Performing the experiment Laying the PVC pipes

An experiment was performed by backfilling PVC pipes under a variety of conditions in order to propose a management method that will be applied to reliably execute liquefaction countermeasure work: backfilling sewage pipes by compacting good quality soil (backfill soil compaction method). The landfill soil compaction method is a work method used by many regional public bodies, but because there are cases where construction management is difficult, it was necessary to study a new construction management method. The experiment was executed by first placing PVC pipes with diameter of 200mm in a 2m deep, 6m long, and 1.5m wide excavated ditch assuming that PVC pipes will be laid, then using three roller compactors (tamper, plate compactor) and tools (mallets) to backfill the pipes while varying the roller compaction frequency, roller compaction time, spreading thickness, and other conditions, and measuring the impact on the degree of compaction of the soil and on the pipes, the execution time, etc.

As a result, considering the ease of on-site management, it has been decided that selecting roller compaction machinery suited to soil quality, and setting the spreading thickness and roller compaction frequency most suitable for each machine are important factors in the

■ Investigation of Building Damage Caused by the Heavy Snowfall that Started on February 14th, 2014

Building Department, Standards and Accreditation System Division

The Department conducted an emergency investigation of the state of damage such as the collapse of roofs of gymnasiums etc. caused by record-breaking heavy snowfall in the Kanto-Koshin Region on February 14 and 15 of this year.

On February 14 and 15, 2014, record-breaking heavy snow fell in parts of the Kanto-Koshin Region and Tohoku Region, resulting in accumulated snow damaging buildings in Tokyo and Saitama Prefecture, etc.

Therefore, on the 17th, 18th, and 21st of the same month, the Building Department carried out an emergency investigation of the state of the damage jointly with the Building Guidance Division of the MLIT and the Building Research Institute and with the cooperation of the owners of the buildings in order to obtain reference information for use in setting future building standards.

The buildings investigated were a Civic Gymnasium (Fujimi City, Saitama Prefecture), the laboratory of a research institute (Mitaka City, Tokyo), and a junior high school gymnasium (Ome City, Tokyo) In all three buildings, accumulated snow caused the destruction or collapse of steel frame roofs. Two of the roofs were flat roofs made by installing shingles on a frame work made of truss beams, joists, and horizontal

braces (1/75 and 1/32 weathering). One was a roof covered with steel plates and with cement excelsior boards as the substrate on top of a steel frame (1/20 weathering).



Photo: Collapsed roof of a gymnasium

At the March 10th meeting (19th) of the Council for Social Infrastructure, Building Subcommittee, Division of Countermeasure Planning for Accidents and Disasters of Buildings, a report was given on the damage investigation and a Building Snow Damage Countermeasure Working Group consisting of experts was formed under the Division. It is now analyzing the causes of the building damage and studying the need to revise building standards.

Details • MLIT web site
http://www.mlit.go.jp/policy/shingikai/s204_setugaitaisaku01.html

■ Study on internationalization of technical standards for port and harbour facilities of Japan

Port and Harbour Department

The technical standards for port and harbour facilities in Japan represent the best of Japanese design technologies for port structures. In order to reflect these technical standards in Vietnam's national standards, we are advancing the research into the methods for tailoring the national standards to Vietnam's needs.

The Japanese government intends to make it possible for Japanese companies to expand their businesses beneficially in foreign countries, for example, the countries of Asia where lively demand for infrastructure are expected to continue in the future. Therefore the Japanese government needs to promote efforts to have the countries in which Japan makes investments adopt its standards in addition to conducting positive sales campaigns through cooperation between the public and private sectors. However, not all of the technical standards used to design port and harbour structures in Japan directly conform to the actual circumstances of the countries in which Japan makes investments. That is caused by the differences in environmental conditions, technological level, etc.

Therefore the Port and Harbour Department of NILIM is conducting research into methods for tailoring the technical standards to the needs of those countries through the following research activities:

carrying out investigations into the technology and standards in developing countries such as the countries of Asia and others, analyzing them; and

conducting comparative analyses of the major technical standards for ports and harbours of Europe and America.

Vietnam and the Port and Harbour Department have built a cooperative relationship in investigations and examination. On the basis of the relationship, we are advancing the task of examining methods of tailoring the technical standards to the needs of Vietnam. The above work is also conducted in cooperation with the Ports and Harbours Bureau of the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) and also with assistance provided by the Port and Airport Research Institute and others.



Photo: Lecture by Mr. Yamamoto, Deputy-Director General of NILIM at the High Level Seminar

As a result of the past examinations and the good offices of the people concerned, in Hanoi, Vietnam on March 7, 2014, MLIT and the Ministry of Transport of the Socialist Republic of Viet Nam signed the "Memorandum on cooperation in development of the national technical standards for port and harbour facilities of the Socialist Republic of Viet Nam". In addition, the High Level Seminar on "Soft Infrastructure for Development of Safe and Efficient Transport Network" was held on the same day at the same place. As part of the seminar, Mr. Yamamoto Hiroshi, Deputy-Director General of NILIM lectured on the comprehensive technical standards for ports and harbours in Japan. His lecture facilitated deeper understanding of the Vietnam side.

The research into methods for tailoring the technical standards to the needs of various countries was approved as project research. In response to the approval, we have strengthened the aforementioned research from the beginning of the fiscal year 2014. On the basis of the signed memorandum, Japan and Vietnam will work on the project research expediting examinations. The Port and Harbour Department will conduct the work in cooperation with the Ports and Harbours Bureau of MLIT on the Japan side. On the other hand, Department of Science and Technology (DOST) of the Ministry of Transport, and the Institute of Transport Science and Technology (ITST) will take the lead in the research on the Vietnam side.

Details • NILIM web site (Technical Note of the NILIM)
<http://www.nilim.go.jp/lab/bcg/siryounn/tnn0769.tnn>