

Aiming for a Beautiful, Safe and Vital National Land

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We of the National Institute for Land and Infrastructure Management (NILIM) are aiming to create beautiful, safe, and vital national land by conducting surveys and research necessary for the Ministry of Land, Infrastructure, Transport and Tourism to be able to technologically, appropriately, and quickly implement its policies.

In regard to safety in particular, we are conscious that this is the most important challenge we must face to establish the infrastructure and prerequisite conditions in all fields.

On March 11, 2011, the Great East Japan Earthquake taught everyone in Japan many lessons. In light of these lessons, we are conducting research in areas where improvements are essential to enact necessary standards and apply them to restoration projects etc. We are also conducting research needed to introduce hard and soft measures to prepare to respond as effectively as possible to the imminent giant Nankai Trough Earthquake and an earthquake directly under Tokyo. At the same time, as the deterioration of public capital is emerging as a social problem, in cooperation with other concerned organizations, we are feverishly researching methods, technologies etc. needed to efficiently and sustainably maintain our public capital.

1. Comprehensive inter-disciplinary initiatives

To respond appropriately to these urgent challenges, it is necessary that instead of blindly continuing past initiatives, we conduct comprehensive studies aiming at faster resolution of all challenges by adopting an overall view including surrounding conditions. Regarding public capital deterioration countermeasures which involve various challenges and risks such as implementation systems or financial problems of management bodies, it is vital that from now on into the future, we adopt a policy of comprehensively planning the most appropriate problem resolution policies guided by awareness of the overall risk and closely linking organizations in all disciplines, in addition to conducting research to clarify existing conditions, rationalize and increase the

efficiency of inspection, diagnosis, and record keeping methods and to improve repair and renewal methods etc. in individual fields based on the characteristics of each field such as sewage works, rivers, roads ports and harbors, building construction and urban affairs. At the NILIM, specialized groups encompassing a wide range of diverse disciplines related to public capital conduct research in their respective areas of expertise, but we have also formed project teams to flexibly take comprehensive initiatives spanning many disciplines. Such inter-disciplinary comprehensive initiatives are counted on to achieve unprecedented success by taking advantage of various networks established both inside and outside of Japan.

2. A humble attitude toward technology

As a person who has long been involved in administrative and technological policies concerning public capital, I have recently reached two conclusions.

The first concerns a humble attitude toward technology. Generally, science and technology have evolved with each acquisition of knowledge through humanity's various experiences. Present knowledge is the result of our unflagging efforts of the past, but it will not continue to improve in the future; we must adopt a humble attitude without being overconfident in today's science and technology, and at the same time, based on present knowledge, we have to imagine everything that could possibly occur in the future, or even imagine the "unimaginable", to continuously devote ourselves to the task of preparing for these events with both hard and soft measures.

It is extremely interesting to look back at the evolution of seismic technologies of bridges for example. The first technical standards for road bridges in Japan were stipulated in the Home Ministry Order of 1886, National Highway Construction Standards, but the first which specifically considered the impacts of earthquakes were presented in the Notification, Bridge Abutment and Bridge Pier etc. Seismic Methods issued in 1924 by the Civil Engineering Bureau of the Home Ministry in response to damage

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caused by the Great Kanto Earthquake of September 1923. Later Japan experienced many disastrous earthquakes such as the Niigata Earthquake of 1964, Miyagi Prefecture Offshore Earthquake of 1978, and the Hyogo-nanbu Earthquake of 1995, and after each one, we conducted various tests to obtain new knowledge which we applied to evolve design methods, seismic standards and seismic technologies¹⁾. Today's seismic standards are based on research conducted in response to the Hyogoken-Nanbu Earthquake, and almost all bridges newly constructed or retrofitted in line with these standards were free of fatal damage caused by earthquake motion of the later Niigata Chuetsu Earthquake of 2004 and the Great East Japan Earthquake of 2011. But damage caused by the tsunami has revealed new challenges. We must humbly and steadily continue research considering these new challenges.

3. Pursuing dreams

The second is to constantly pursue our dreams.

In the spring of 2012, approximately 162km of the Shintomei Expressway opened in Shizuoka Prefecture. It is reported that this sharply cut congestion on the existing Tomei Expressway at the same time as it normalized the sharing of functions among the arterial roads—the Shintomei, existing Tomei and National Highway No. 1—and achieved an approximately 80% level of satisfaction among users with the safety, security, and comfort of the Shintomei Expressway²⁾. This road which, although only partly opened, has quickly begun to function as a major new artery of Japan, was constructed according to new geometric structure standards intended to create roads which are safer and more pleasant to use than past expressways. This structural standard is based on experimental research that started about 30 years ago on the 6km test course at the NILIM. As a result of various later circumstances, it took the people of Japan an extremely long time, more than 30 years in fact, to truly benefit from our experimental research's effectiveness and achievements. For us who were directly involved in the project to varying degrees, this unexpected and unnecessary long delay was deeply regrettable. We had worked feverishly to realize our shared dream of building a network of roads to serve as major arteries needed to support Japan in the 21st century.

Later, the test course was used for a variety of tests related to ITS, and ITS technologies, intended to let people use roads more safely, pleasantly, and more intelligently, will continue to evolve further as we compete with the U.S. and Europe for leadership in this field.

Everything conceived of and planned in the Showa Period (1926 to 1989) has been generally completed, and some people say, “The future will be an age of

maintenance instead of an age of construction.” Throughout their long history, the Japanese people have devised various measures to improve their national land, with its harsh natural environment, in which we have suffered flood disasters of various kinds every year and occasional massive earthquakes while enjoying the blessings of its rich natural setting. If people continue to live on this land for hundreds or for thousands of years into the future, they will have to work hard to continuously and steadily maintain and renew the public capital, which is resistant to earthquakes and other disasters and will reliably perform the functions demanded by each age, and when they do so, it will be vital to harbor warm feelings and dreams for the people who live on the national land now and in the future. We must never forget to dream of and remain constantly excited about the future.

In the future, we of the NILIM are determined to act as groups of experts in a wide range of disciplines by applying our overall abilities to carry out surveys and research needed to aim for a “beautiful, safe, and vital national land” with humility and dreams and to continue to work to enable the people of Japan to genuinely feel our achievements as each appears.

[Sources]

1) Japan Road Association: Road Earthquake Disaster Manual (Pre-quake countermeasures) 2006 Revision, Sept. 2006

2) Shintomei (Shizuoka Prefecture) Impact Adjustment Committee: One year after opening of the Shintomei Expressway (Gotenba Junction – Mikkabi Junction), --Traffic Conditions and Improvement Effects of the Expressway 1 Year after opening, April 12, 2013.