## Joint Research with the Investigation Team from the Federal Highway Administration of the United States Concerning the Damage to Highway Bridges Caused by the Kumamoto Earthquake

Jyun'ichi Hoshikuma, Head, Doctor of Engineering<br/>Fumi Miyahara, ResearcherMasahiro Shirato, Senior Researcher, Doctor of<br/>EngineeringBridge and Structures Division, Road Structures DepartmentShojiro Kataoka, Head, Doctor of Engineering<br/>Earthquake Disaster Management DivisionNobuhiro Imacho, Senior Researcher

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## 1. Outline

Based on the implementation procedures for road science technological cooperation between the Construction Ministry of Japan and the Federal Highway Administration (FHWA) of the United States established in 1994, NILIM has been exchanging information on the revision of technical standards and trends of measures and cooperating to share information on disasters and accidents, as well as to conduct field investigations, mutually with the FHWA.

NILIM conducted joint research on damaged bridges with the investigation team of the FHWA in collaboration with the Center for Advanced Engineering Structural Assessment and Research (CAESAR), as a result of bridges being damaged due to the Kumamoto earthquake in April. The participants on the United States side are as follows:

<Participants on the United States side>

The Turner-Fairbank Highway	Sheila Duwadi
California Department of	
Transportation:	Ron Bromenschenkel
Washington Department of	Iim Cuthbertson
Transportation:	Jill Cullocraon
University of Nevada, Reno	David Sanders
University of Nevada, Reno	Ian Buckle
University of Nevada, Reno	Denis Istrati

## 2. Field Investigation

For two days from July 12 to 13, we conducted a field investigation of major damaged bridges. The investigation was conducted on a total of 12 bridges on Kyusyu Expressway, National Route 325, Kumamoto prefectural road, and Minami-Aso village road under the cooperation of road administrators.

## 3. FHWA-NILIM Meeting

On July 14, at the Asahi office of NILIM, the cause of the damage to bridges due to the Kumamoto earthquake, the lessons learned, and the methods of future seismic design were discussed. From the United States side, the information on seismic design as shown below was provided based on this disaster:

- In the United States, plans for the construction of bridges near known geologic faults are avoided.
- In the state of California, dampers are used in few cases because they are expensive and their effects are uncertain.





Photo 1 Investigation of bridges damaged by the Kumamoto Earthquake



Photo 2 Informal meeting at NILIM