

Completed Recovery of Major Roads Damaged in 2016 Kumamoto Earthquake

Research Center for Infrastructure Management

NILIM established the Kumamoto Earthquake Recovery Division and provided technical support at the site of disaster recovery efforts in order to achieve the prompt recovery of roads that were severely damaged in the 2016 Kumamoto earthquake, thus contributing to the completion of recovery efforts on all roads where they were conducted as a project performed by the national government on behalf of the local government, six years after the earthquake.

Social background and issues

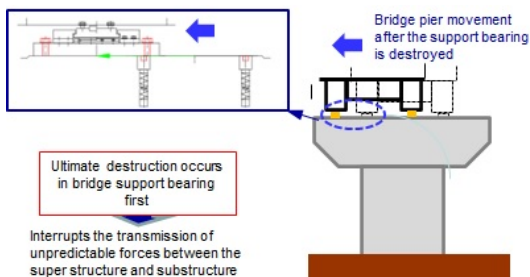
- Major roads connecting urban areas of Kumamoto and the Aso area were cut by the Kumamoto Earthquake. To ensure prompt recovery, the national government was to carry out the project for recovery of three routes managed by local government.
- Recovery of the road bridges required advanced technical support adjusted for various forms of disaster damage.
- Rather than simply recovering them to their original state, it was necessary to reduce the risk of similar disasters affecting them again.

Social background and issues

Recovery considering effects from ground deformation

Even when the ground had deformed due to slope collapse, fault displacement, etc., we gave technical advice to minimize the effects and reflected it on-site.

For the Shin-Aso Ōhashi, where the fault shifted horizontally, we proposed designs for the bridge support bearing and structural considerations that would reduce the risk of super structure falling, even if a fault shift occurred.



Design concept for a bridge support bearing that interrupts transmission of the unpredictable forces arising between the super structure and substructure with fault deformation



Opening ceremony for the Shin-Aso Ōhashi (March 2021)

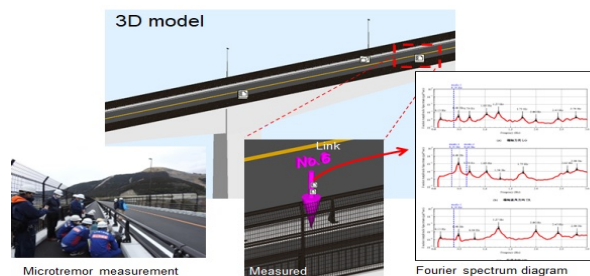
Maintenance-minded recovery

For the Aso Chōyō Ōhashi, we proposed using a strong rigid-frame structure to create a form that was less likely to sink over the structure as a whole, even if the slope collapsed in a large earthquake.



Aso Chōyō Ōhashi after completion of recovery

We also took certainty and ease of maintenance into account and proposed information acquisition leveraging ICT and recording and storage using BIM/CIM.



Acquiring information that is useful for maintenance and recording and storing it with BIM/CIM (Shin-Aso Ōhashi)

Stimulating regions through prompt infrastructure recovery from disaster

See here for related articles

- Five years progress in the Kumamoto Earthquake Recovery Division – The activities of the NILIM's research division establishing at the disaster restoration site of the 2016 Kumamoto Earthquake (p. 142)