

Rapid Technical Support for Disasters and Faults

Road Structures Department

In the event of road structure loss of function due to disasters and faults, we rapidly dispatch employees and provide technical support for emergency measures and recovery efforts. Here we present examples of employee dispatch to torrential rain damage in FY2022 and examples of major responses to road structure damage due to the earthquake off the coast of Fukushima in March 2022, as examples of major responses.

Social background and issues

- In addition to earthquakes, damage has been frequently occurring due to torrential rain, and steadily inspecting aging road structures, implementing necessary measures, and taking other steps to ensure the health of the road network is a key issue.
- Due to the importance of securing the functions of the road network, rapid response reflecting the latest knowledge is essential when providing technical advice on a range of issues from the design of road structures to the management stage and providing technical support for damage and faults.
- Sharing technical information and knowledge rapidly is becoming more and more important in reducing faults and improving disaster responses throughout Japan.

Response state

State of responses in FY2022

In FY2022 again, disasters that severed the road network, such as bridge and road collapses, occurred in relation to earthquakes and heavy rain as shown by the examples in the table to the right, and we have cooperated with the Public Works Research Institute, Road Maintenance Centers in Regional Development Bureaus, and others on request to provide technical information and dispatch employees for technical support for emergency responses immediately after disasters occur, surveys to investigate the cause of damage, and evaluations for recovery, among others.

Many examples of disasters in recent years are due to the damaged structures being based on old standards or technologies or include deterioration or damage accompanying old age, and we provide technical advice that reflects technical standards and deterioration countermeasures from the national government.

Examples of major responses to requests for employee dispatch

Case example	Main disaster and dispatch locations	Main damage	Requesting party
Earthquake off Fukushima coast (March)	Kakuda, Miyagi (Edano Bridge), Fukushima (Date Bridge)	Damage to bridge shoes and substructures	Kakuda, Miyagi, Fukushima
Bridge, etc. damage due to heavy rain (July)	Maruyama Bridge, Kubokawara Route (municipal road), Maeda Bridge, Maebayashi Route (municipal road) (Ōsaki, Miyazaki)	Bridge collapse due to pier collapse Washout of approach section at back of abutments	Tohoku Regional Development Bureau
Bridge, etc. damage due to heavy rain (August)	Road collapse and washout, National Highway 121 (Yonezawa, Yamagata)	Collapse of a natural slope directly under a retaining wall	Yamagata Prefecture
Damage due to Typhoon No. 14 (September)	Road collapse, National Highway 327 (Morotsuka, Higashi-usuki, Miyazaki)	Road collapse	Miyazaki Prefecture
	Kuma Ōhashi, National Highway 262 (Nishiki, Kuma, Kumamoto)	Sinking of substructure in river	Kumamoto Prefecture

Example of response to road structure damage due to the earthquake off the coast of Fukushima in March 2022

● Edano Bridge, Kakuda Municipal Road (Kakuda, Miyagi)

After an earthquake, we dispatched employees on request from Kakuda City. Concrete in three reinforced concrete bridge piers had peeled and cracked horizontally, and the side blocks had broken or deformed in eight locations on the shoes, and we provided technical support in relation to assessments of structural safety, and investigations and examination of recovery methods aimed at prompt opening to traffic.

With our technical support, stopgap measures necessary for traffic were implemented and the route was reopened to traffic on June 30. Traffic restriction criteria until recovery was completed were formulated and a system to respond to aftershocks was developed.



On-site investigation of Edano Bridge

● Date Bridge, National Highway 399 (Date, Fukushima)

After an earthquake, we dispatched employees on request from Fukushima Prefecture. The expansion device was broken and the shoes and substructure were damaged, and we provided technical support in relation to detailed surveys and recovery guidelines. We are providing ongoing technical support in relation to superstructure deformation that was discovered in the detailed surveys.

With our technical support, recovery guidelines were announced in August, including replacement of the superstructure and reinforcement of the substructure. Ensured passage of traffic with a temporary bridge as the recovery works will take considerable time.



On-site investigation of Date Bridge and meeting with managers

Minimizing social effects from disasters and faults through rapid and appropriate technical support

☞ See here for related articles

- Analysis of the Impact on Traffic Functions of Scouring of Road Earthwork Structures and Slope Collapses, Etc. Due to Torrential Rain (p. 59)
- Research to Gain Understanding of the Sense of Scale of Structure Damage Directly after Earthquakes (p. 61)