To the second stage of road structures maintenance

Road Structures Department

Since the statutory periodic inspection, which started in order to maintain a huge number of road structures properly, has entered the second round, we are working on technical development for inspection, diagnosis, repair, and reinforcement and studying criteria for social implementation thereof in order to realize a more safe and economical maintenance cycle.

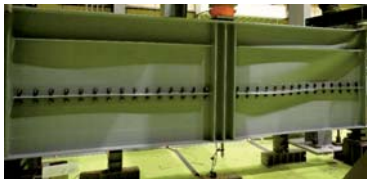
Social background and issues

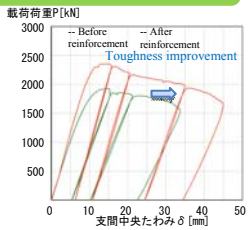
- Since completion of the first round of the road structures statutory inspection, introduced in 2014, there have been many reports on damaged structures for which measures should be taken as soon as possible or structures whose service has to be limited, such as traffic regulation.
- In order to realize economical preventive maintenance through accurate repair / reinforcement of existing structures under various conditions, it is essential to develop inspection / test techniques that enable accurate and timely diagnosis as well as design techniques that can control the behaviors of structures with high accuracy.
- In addition, in order to realize a resilient road network against frequent major disasters, introduction of design techniques and standards that can harmonize the performance of individual structures such as bridge, earthwork, and pavement with focus on road functions.

Study contents

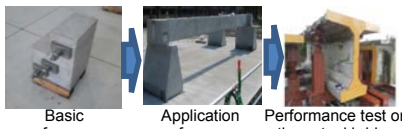
Study on the maintenance technology of road structures

If load-bearing behavior after yield of bridge members can be controlled, economical and efficient repair / reinforcement can be realized while preventing critical situations such as bridge fall for existing and/or damaged bridges subject to the old standards. Conduct the experiments and analyses under various conditions to establish design techniques and review standards.
In addition, for introduction of various inspection supporting technologies, which are being developed intensively, it is essential to clarify characteristics, such as relationship between application conditions and reliability / accuracy of results to be obtained. Develop methods and evaluation criteria for evaluating the performance of various supporting technologies according to needs in the maintenance cycle.



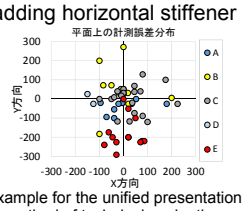


Improve the toughness of steel beam by adding horizontal stiffener



Basic performance test | Application performance test | Performance test on the actual bridge level

Performance check by phased test



Example for the unified presentation method of technical evaluation

Study of a performance evaluation method for road structures with focus on road functions.

In periodic inspections, soundness, necessity for actions, etc. are judged based on short-range visual observation. In order to improve inspection quality while overcoming the limit of appearance visual inspection and reducing excessive dependence on engineers' knowledge, implement analysis of inspection results across the country.
Additionally, the design criteria of road structures were established as performance specification, but in order to properly realize performance consistent between structures from a viewpoint of network, it is essential to realize a permanent performance assessment method not dependent on types of structures, whether new or existing, and such a method should be developed through analysis and evaluation of inspection results and existing structures.

An example of road functions being affected by run-off of bridge superstructure or clogged road.

Realization of a society where roads are maintained properly at the minimum life cycle cost and safe and safe public life is secured.