

Establishment of inspection procedure for road civil engineering structures

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1. Introduction

The Shed and Large Culvert Regular Inspection Procedure was announced in June 2014 for the inspection of civil engineering structures on roads. In August 2017, the Road Bureau of the Ministry of Land, Infrastructure, Transport and Tourism established the Inspection Procedure for Road Civil Engineering Structures (hereinafter the “Procedure”) targeting other civil engineering structures on roads. With the Procedure, inspection procedures for all civil engineering structures on roads have been announced (figure 1).

The Public Works Research Center and the National Institute for Land and Infrastructure Management were involved with the establishment of the Procedure in examinations for drafts, such as the organization of the viewpoints of inspections and ideas concerning the diagnosis of robustness based on findings through past research.

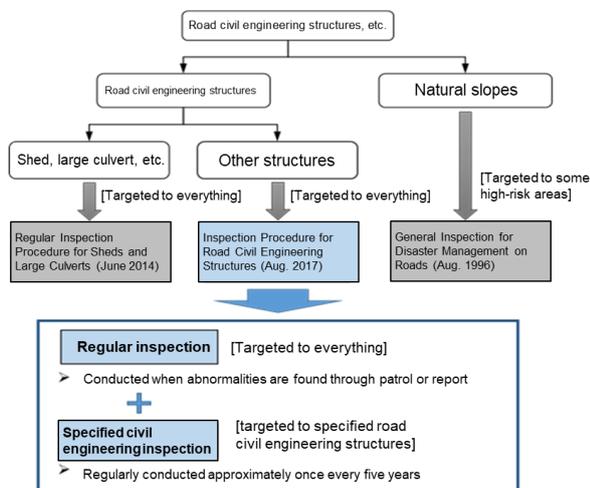


Figure 1. Position of the Inspection Procedures for Road Civil Engineering Structures

2. Outline of the inspection of road civil engineering structures

The objective of this inspection is to determine the necessity of maintenance or repairs by checking for any abnormal conditions to improve the safety of civil engineering structures on roads and to efficiently conduct maintenance and repairs.

The inspection includes a regular inspection targeting all structures and a specified civil engineering inspection targeting structures, such as long and large cutout and tall

embankments that have great social effects if a large-scale collapse occurs (specified road civil engineering structures).

The specified civil engineering inspections are regularly conducted at set intervals to assess the robustness of structures. It is also important that inspectors are familiar with the forms of damage that can occur to road civil engineering structures and disasters that occur from ground conditions.

The diagnosis of robustness within the specified civil engineering inspection is conducted based on categories I to IV as shown in table 1.

Table 1. Robustness diagnosis

Diagnosis category	Detail of assessment
I. Robust	No abnormality is found. Even when an abnormality is found, it does not require repairs. (A condition in which road functions are not affected.)
II. Observation stage	Abnormality is found, and the observation of the progress of the abnormality is necessary for a certain period. (A condition in which road functions are not affected, but more detailed investigations, regular observation, or other measures are required.)
III. Early repairs stage	Abnormality is found and should be repaired as soon as possible because the abnormality is expected to exacerbate until the next inspection and may trigger a structural collapse. (A condition in which road functions are not affected, but some impediment may occur until the next inspection, and the condition should be repaired as soon as possible.)
IV. Urgent repairs stage	A significant abnormality is found and expected to cause a major collapse requiring immediate repairs. (A condition in which road functions are being affected or highly likely to be affected, and immediate repairing is required.)

The Procedure also stipulates that the proper method and time for conducting the necessary repairs shall be determined on the basis of the outcome of the robustness diagnosis and that the outcomes of inspection, diagnosis, and measures shall be recorded and kept for the duration in which the applicable road civil engineering structures are in service.

3. Summary

The authors expect that road civil engineering structures that are under the strong influence of natural conditions and disasters, such as rain and earthquakes, are properly maintained and repaired at the proper times from the viewpoint of preventing disasters and providing efficient maintenance and repairs using the inspection diagnosis of the Procedure.

☞ For detailed information

1) Inspection Procedure for Road Civil Engineering Structures
http://www.mlit.go.jp/road/sisaku/yobohozen/tenken/ty_h2908.pdf