

# Trial Application of the Partial Repainting Manual for Steel Bridges (Draft)

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## 1. Background and purpose

On many steel road bridges, severe paint deterioration and corrosion occurs at ends of girders and parts of other members exposed to harsh corrosion environments<sup>1)</sup>, and if corrosion on a supporting part important for load-bearing capacity advances to an extreme degree, even if only within a narrow range on the part, there is a danger of the corrosion severely impacting the performance of the bridge (Photo 1). Although general items regarding repainting methods are specified in, for example, the “Painting and Corrosion-proofing Manual for Steel Highway Bridges (Japan Road Association, December, 2006)”, technical methods for partial repainting, which is difficult to perform with guaranteed high execution quality, have not been established, and there is fear that it is dangerous to leave local paint deterioration, which advances rapidly, until the deterioration of the entire paint membrane has advanced to the point where overall repainting is performed.

Thus, technology to partially repaint narrow parts such as the ends of girders on existing road bridges (referred to below as, “partial repainting”) has been developed, summarized as technical manual, and trial application of it has been carried out on an MLITT



Photo 1. Example of Girder Edge of Main Girder Showing Local Corrosion



Photo 2. Trial Execution on an Actual Bridge

operated bridge.

## 2. Outline of the partial repainting manual (draft)

The following items are main technical characteristics of the partial repainting manual (draft).

- ① To develop a method of ensuring sufficient surface preparation quality on parts where execution conditions are spatially harsh, a test execution was done using full-size specimens taken from a bridge which was removed to set execution specifications based on the combined use of open blast and machine tools.
- ② Because a weak point of executing partial painting is the paint quality along the boundary with the old paint film which has not been renewed, based on existing knowledge and the results of a trial execution, a painting system which considers recoating width and other execution specifications plus the adhesiveness of the new and old paint films was established.
- ③ In order that rational and economical partial painting can be done, precautions required when planning painting, conditions under which partial painting should be studied, and methods of recording an execution for maintenance purposes and other standards have been prepared.

And a final version of this manual (draft) has been prepared by confirming its applicability in the field through a trial execution at an actual bridge (Photo 2).

## 3. Trial application on an existing bridge

The trial application of this manual (draft) is now beginning on MLITT operated bridges, and in the future, follow-up surveys of these applications of the manual and of the trial execution specimens during continuous exposure testing will be carried out and reflected in the revision.

### [References]

- 1) Survey Research on Local Corrosion of Steel Bridges, Technical Note of the NILIM, No. 294, January 2006

<http://www.nilim.go.jp/lab/bcg/siryou/tnn/tnn0294.htm>