Assessment of steel railway bridges for future traffic demands - a case study

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Summary

The purpose of this study is to identify the factors affecting the remaining effective service life of a steel railway bridge that has been giving service for the last 50 years and that will be implemented as part of Marmaray project, a project that aims not only to connect two continents, Europe and Asia, by providing an underwater link for the first time, but also upgrading of existing commuter rail system thoroughly. Detailed field measurements and in-depth analytical studies were conducted on the bridge and by using the computer model which was refined by field measurements, the bridge was re-assessed according to expected train traffic in the future. The results were used to determine the remaining life of the bridge. In order to improve the fatigue life, a strengthening scheme to extend the service life was proposed for a typical bridge component.

Keywords: Railway bridge; fatigue; remaining fatigue life; bridge assessment; field testing.