



Corrosion Suppression Effect of Bridge Cables Using Environmental Isolation Paint

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Abstract

This study examined the corrosion suppression effect of bridge cables using environmental isolation paint. The strand rope which is also used for the main cables and hanger ropes of short/middle-span bridges is used for the specimens and compared the presence or absence of the paint on the surface. The accelerated corrosion test was conducted by the salt spray test method to examine corrosion suppression effect. As a result, the rust was confirmed on the appearance of the unpainted specimens, but no rust was confirmed on the painted specimens. Furthermore, the corrosion state from surface to inside was confirmed by EPMA analysis on the cross-section. The distribution of oxygen and chloride were large, and the occurrence of corrosion was confirmed in the unpainted specimens. On the other hand, no corrosion was confirmed on the rope surface in the painted specimens.

Keywords: suspension bridge cables; cable corrosion; anticorrosion; isolation paint; EPMA analysis.

1 Introduction

Main cables, hanger ropes, and stays used for suspension/cable-stayed bridges have been suffer from corrosion and breakage, which has become a serious problem ¹⁾⁻⁶⁾. Generally, cables are provided with anti-corrosion treatment such as dehumidification system, but this system is economically limited to installation on long-span bridges ³⁾. Inexpensive, effective maintenance and repair measures are still required for short/middle-

span bridges. This study examined the corrosion suppression effect of bridge cables using an environmental isolation paint.

The environmental isolation paint used in this study is an epoxy resin-based rust inhibitor. Submicron-sized ultrafine particles penetrate into the gaps of the rust structure and have the property of almost blocking the steel substrate from the atmospheric environment. It is expected