



Application of GFRP for Bridge Inspection Way

Yoshiyasu FURUYA, Takeshi HIROSE

Nippon Expressway Research Institute Company Limited, Tokyo, JAPAN

Hitoshi NAKAMURA, Yuya ISHII

Tokyo Metropolitan University, Tokyo, JAPAN

Kousuke KOIZUMI

East Nippon Expressway Company Limited, Tokyo, JAPAN

Contact: y.furuya.aa@e-nexco.co.jp

Abstract

This paper reports on the results of tests conducted to verify the applicability of bridge inspection way using glass fiber-reinforced polymer (GFRP). The process of setting the Japanese expressway standards for fiber-reinforced polymer (FRP) bridge inspection way is also described in this paper.

The proposed bridge inspection way adopts lightweight and highly anti-corrosive GFRP. The bridge inspection way consists of GFRP slab panels that sandwich hard urethane foam and truss girders that serve for railings to further reduce its own weight.

Nippon Expressway Company Limited (NEXCO) have also established standards for FRP bridge inspection way installed on Japanese expressway bridges, based on the knowledge obtained from development of bridge inspection way, literature reviews and case studies in Japan.

Keywords: Fiber-reinforced polymer, bridge inspection way, sandwich-panel floor slab, pony-truss type, establish standards

1 Introduction

Construction of expressway in Japan began in the 1960s, and deterioration is progressing as expressway age. What is required, now, of road operators in Japan is to maintain these road structures efficiently. Recently, it has become mandatory [1] in Japan to visually inspect bridges every five years. Visual inspection requires inspectors to check the bridges at close range,

which means that there are strong needs for bridge inspection way.

Typical bridge inspection way uses economical steel members and applies hot-dip galvanizing to prevent corrosion. However, the anti-freezing admixture is sprayed on Japanese roads in winter to prevent freezing, which sometimes causes the steel bridge inspection way to corrode.

To counter this problem, a bridge inspection way using GFRP as a structural material is being