Structural Performance of Easy Slab Bridge as New Structural Type

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Summary

The easy slab bridge (RC slab bridge with H steel girder) has been developed in 4 years ago as a composite slab bridge for short span length bridges of 20 m under in Japan. Tarouda Bridge objected in this study is easy slab highway bridge reconstructed in 2004 due to degradation and damage of PC slab bridge constructed in 1978. To investigate static and dynamic performance on structure of easy slab bridge, the static and dynamic tests of the bridge with one dump truck were done in July 2005. The structural characteristics and performances on static and dynamic behaviors were investigated in the terms such as deflection, response vibration, vibration characteristics, dynamic increment factor, and vibration serviceability. Furthermore, three-dimensional static and eigenvalue analyses of the bridge were also done by FEM, and the structural characteristics and performances based on results of the field tests and the analyses were investigated.

Keywords: easy slab highway bridge; new type structure; static and dynamic field test; static behavior; dynamic behavior; 3 dimensional analysis; structural rigidity.

1. Introduction

There are bridges about 180,000 in Japan. It is short span bridges in which over 80% of these bridges are span length of 20m or less. For future 20 years, it has been estimated that the bridges of about over 47% exceed 50 years in the service life. Therefore, reinforcement, repair and reconstruction for these bridges are required, and then economical reinforcement and reconstruction method and the budget become an important problem in future in Japan.

The easy slab bridge (RC slab bridge with H steel girder) has been developed in 4 years ago as a composite slab bridge of new type structure for short span length bridges of under 20 m, and over 45 bridges have been constructed in Japan. The purpose of the development is such as economical

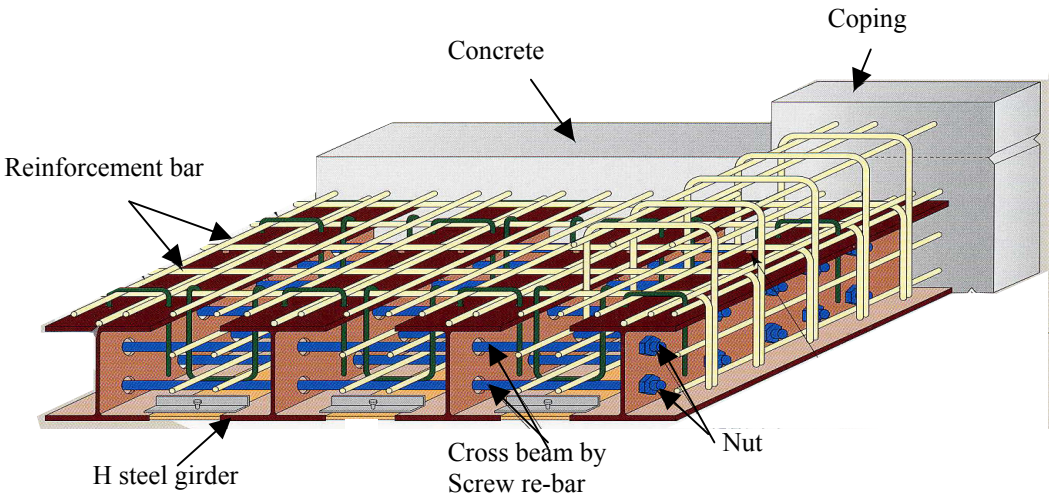

Fig. 1 *General drawing of easy slab bridge structure*

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