



Experimental Design of Link Slab in Long-span Steel-Concrete Composite Bridge

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Abstract

Link slab makes the steel girder simply supported and the bridge deck continuous. Therefore, it is a fine substitute for expansion joint in simply supported bridge. However, the application of link slab in long-span simply supported composite bridge is rarely reported. This paper attempts to introduce the link slab into long-span simply supported steel-concrete composite bridge. In order to study the static performance of the link slab, this research designs a full-scale I-shaped segment specimen and conducts a numerical analysis on it. The calculation results are compared with the full bridge model to verify its feasibility, preparing for a follow-up test.

Keywords: Long span simply supported bridge; Debond Link Slab; Full-scale specimen design.

1 Introduction

In 2016, the Ministry of transport of China issued the guiding opinions on promoting the construction of highway steel structure bridges. After that, more and more importance has been attached to the adaptability of steel-concrete composite structures in long-span bridge, mountain bridge, and prefabricated bridge [1].

Simply supported bridges have the advantages of good economic benefits and simple structure.

Therefore, it is the most widely used bridge type. However, there are many expansion joints of simply supported bridge, which makes the driving uneven. In addition, the expansion joint is easy to damage, difficult to maintain, and need to be replaced frequently.

In order to solve the above problems, in the late 1970s, engineers put forward the concept of Continuous Bridge Deck, which means that two adjacent spans of simply supported bridge decks (all or part) or deck pavement are connected