



Property Analysis of Link Slab in Long-span Steel-Concrete Composite Bridge

Liang XIAO

Department of Bridge Engineering, Tongji University, Shanghai, China

Qingtian SU

Department of Bridge Engineering, Tongji University, Shanghai, China

Yu LIN

CCCC Highway Consultants Co., Ltd., Beijing, China

Tianbo PENG

Department of Bridge Engineering, Tongji University, Shanghai, China

Contact: sqt@tongji.edu.cn

Abstract

The expansion joint of simply supported bridge makes the driving uneven and maintenance inconvenient. Therefore, it is the best way to reduce or cancel it. Link slab is a favourable substitute. At present, it is mainly used for small and medium span bridges. This paper attempts to introduce the link slab into long-span simply supported steel-concrete composite bridge. The numerical model of the whole bridge is built, and the influences of bridge span, debond length of link slab and thickness of link slab on the mechanical property of continuous bridge deck structure are studied. The results show that as the bridge span increases, the longitudinal tensile stress on the upper surface of the control section increases significantly.

Keywords: Long span simply supported bridge; Debond Link Slab; Debond length; Thickness of DLS

1 Introduction

Steel structure and steel-concrete composite structure bridges have outstanding advantages such as large span capacity, and easy assembly construction. They are widely used in Bridge Engineering in developed countries such as Europe, America and Japan. As of 2015, the proportion of steel structure bridges in China is still less than 1%[1]. In recent years, under the guidance of national policies, the adaptability of steel-concrete

composite structures in long-span bridge, mountain bridge, prefabricated bridge and other structures has attracted more and more attention[2].

Simply supported bridge has the advantages of good economic benefits, simple structure and fast construction speed. So it occupies an important position in the construction of modern bridges in China. However, there are many expansion joints in simply supported bridge, which reduce the flatness of the bridge deck. In addition, the expansion joints