



U Shape Anchoring System: Concept Design and Key Experiments

Ke HU

Anhui Transportation Holding Group Co., LTD., China

Xuefei SHI, Xin RUAN

Tongji University, Shanghai, China

Zuqiao MA

Project office of the Second Bridge of Wuhu Yangtze River Highway Bridge, Anhui Transportation Holding Group Co., LTD., China

Contact: ruanxin@tongji.edu.cn

Abstract

The anchoring zone of the pylon is the key partial design of cable-stayed bridges. Both the reliable transmission of enormous stay force and the convenience for structure and construction should be considered in design.

The U shape anchoring system is a brand-new anchoring system. It is developed on the basis of saddle anchorage. The steel strands pass through the saddle on one side of pylon cross section, then go around the pylon and come back to the anchor on the other side at the same cross section. This method mainly generates compressive force in pylons, avoids tensile stress from mechanism, and improves their stress performance.

To realize this concept in engineering, there are still some problems to handle, including arrangement of saddle space in pylons, specific structures for stays to rotate in pylons, guarantee for mechanical property of strands in the U shape anchoring system and construction plan in later period and so on.

These problems have been taken into full consideration in the concept design. And some tests about fatigue performance of cables, clamping performance of the V-shape pipes and construction techniques have been carried out to verify the system.

This paper will give a detail introduction about the concept design of this U shape anchoring system, and some key experiments.

Keywords: anchoring zone; u-shape anchoring; durability; design; experiment.