



Safety Risk Analysis of Super-Large Span Suspension Bridge Supporting Rotary Structure Composite Ground Wall Anchorage Foundation

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Abstract

According to the geological characteristics of the deep soft overburden and high pressurized water where the anchor of the 2300 meters suspension bridge is located, the safety risk analysis of the diaphragm wall anchorage foundation with rectangular-ambulatory-plane was carried out, and the risk sources were sorted out. The risk levels of each risk source were evaluated by expert questionnaire, and the risk levels of anchorage were analyzed by Kent index method. The countermeasures of all risk sources were formulated, and the main risk factors were studied. On this basis, the design scheme of anchorage foundation was optimized, the key control measures of risk factors in the construction process were put forward, and the corresponding emergency plans for main construction risks were formulated, which provided a guarantee for the smooth implementation of anchorage foundation scheme.

Keywords: anchorage; risk assessment; suspension bridge; diaphragm wall; deep excavation; composite foundation.

1 Project Overview

1.1 Geological Conditions

The main span 2300m span of the Zhangjinggao Yangtze River Bridge Southern passage bridge is a two-span suspension bridge with continuous steel box girder elastic support semi-floating system.

The strata where the anchorage is located are mainly quaternary alluvial-diluvial silty sand, partially intermixed with silty clay and silty clay. The upper strata are loose and slightly dense, the middle strata are slightly dense-medium dense, and the lower strata are dense. The geological characteristics are as follows: (1) There is no good holding layer within the range of 60m depth; (2) There is no good waterproof layer within 100m