

Latest Practices for Existing Long-Span Suspension Bridges

Hohsing Lee, P.E., S.E.

AECOM, Sacramento, California, US

Shane R. Beabes, P.E., Barry R. Colford, BSc., CEng, FICE

AECOM, Philadelphia, Pennsylvania, US

Contact: hohsing.lee@aecom.com

Abstract

This paper discusses three latest practices applied to existing US long-span suspension bridges. The first is the moveable median barrier (MMB) along U.S. Highway 101 on the Golden Gate Bridge that was recently installed. This MMB system enhances traffic safety by providing a physical barrier to separate opposing directions of traffic, while at the same time allowing the reconfiguration of the lanes to meet peak capacity demands. The second is the suicide deterrent barrier system (SDS) to be installed on the Golden Gate Bridge, the first of its kind in the United States. The Net system was identified as the Preferred Alternate in the FEIR/EA process to be carried forward to final design. The third is the corrosion protection of main cables by dehumidification, first implemented in the United States on the William Preston Lane Jr. Memorial Bay Bridge and now being planned or implemented on other US main cable suspension bridges.

Keywords: suspension bridge; moveable barrier; suicide deterrent system; cable dehumidification.

1 Introduction

In the 21st century, engineers continue to face unprecedented challenges on an aging infrastructure. This paper discusses in detail three emerging practices in existing long-span suspension bridges in the US:

1. The moveable median barrier (MMB) on the Golden Gate Bridge. The MMB system was recently installed and enhances traffic safety by providing a physical barrier to separate opposing directions of traffic, while at the same time allowing the reconfiguration of the lanes to meet the peak capacity demands. The primary components of the superstructure were evaluated to see if they are adequate to take on additional loading from the MMB system.
2. The suicide deterrent barrier system (SDS) on the Golden Gate Bridge, the first of its kind in the United States. The SDS and preferred alternate of a Net System was extensively evaluated during feasibility studies, alternatives analysis, and preliminary design for a physical suicide deterrent system on the GGB. Complex wind studies and structural analysis for various alternative barrier systems were conducted. The Net system, as the Preferred Alternative, was identified for the final design during the FEIR/EA process.
3. Main cable dehumidification on the William Preston Lane Jr. Memorial (Bay) Bridge, the first of its kind in the US. First