

São Vicente Suspension Bridge Rehabilitation and Cable Substitution

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Abstract

The São Vicente Suspension Bridge was built in 1914 as part of the plan for the sanitation of the São Vicente city. The bridge is listed by Brazilian historical heritage since 1982. In 2012, the conditions of the main structural elements were critical and needed recovery or substitution. The structural design considered the complete recovery of the steel main deck connected by rivets, the calculation of the new suspension system that would replace the existing one using temporary cables, towers and anchorage blocks. The bridge was reopened to the public in October of 2015.

Keywords: Suspension bridge; rehabilitation; cable substitution; structural design; historical heritage

1. Brief history of São Vicente Bridge

São Vicente was the first settlement established by the Portuguese in Brazil, back in 1532. The city is located in the south coast of the state of São Paulo.

As the city of São Vicente developed and grew, it became necessary to develop and construct a sewerage system for the city.

The São Vicente Suspension Bridge project was promoted by Saturnino de Brito and Miguel Presgrave, the two Brazilian engineers responsible for the sewerage project of Santos and São Vicente in the beginning of the 20th Century.

The original purpose of the bridge was thus to transport sewage from Santos and São Vicente to the area of Praia Grande towards the Atlantic Ocean.

The bridge was designed and fabricated in Dortmund, Germany by August Klönne AG

Brückenbauanstalt company, and was shipped to Brazil for its erection.



Figure 1. Installation of sewerage pipe under the bridge deck.



Figure 2. Opening of São Vicente Bridge in 1914.