World Academy of Science, Engineering and Technology
International Journal of Civil and Architectural Engineering
Vol:16, No:07, 2022

Finite Element Method for Calculating Temperature Field of Main Cable of Suspension Bridge

Authors : Heng Han, Zhilei Liang, Xiangong Zhou

Abstract : In this paper, the finite element method is used to study the temperature field of the main cable of the suspension bridge, and the calculation method of the average temperature of the cross-section of the main cable suitable for the construction control of the cable system is proposed; By comparing and analyzing the temperature field of the main cable with five diameters, a reasonable diameter limit for calculating the average temperature of the cross section of the main cable by finite element method is proposed. The results show that the maximum error of this method is less than 1℃, which meets the requirements of construction control accuracy; For the main cable with a diameter greater than 400mm, the surface temperature measuring points combined with the finite element method shall be used to calculate the average cross-section temperature.

Keywords : suspension bridge, main cable, temperature field, finite element
Conference Title : ICBMSM 2022 : International Conference on Bridge Maintenance, Safety and Management
Conference Location : Berlin, Germany
Conference Dates : July 21-22, 2022