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Experimental Study on Depth Correction of Bearing Capacity of Medium-Weathered Silty Mudstone Foundation

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Abstract : The bearing capacity of the foundation has always been a key point in the design and calculation of bridge foundations. The displacement-controlled Luzhou Lantian Yangtze River No. 5 Bridge is located in Jiangyang District, Luzhou City, Sichuan Province, with a main arch span of 570m, which is the largest arch bridge in China, and the bearing layer of the foundation on the north bank is moderately weathered silty mudstone. Based on the field deep load test, the measured values of load and settlement were corrected and analyzed, which confirmed that the bearing capacity of the soft rock foundation on the north bank meets the requirements and the depth correction can be carried out. Furthermore, the characteristic value of the bearing capacity of the foundation in the soft rock area can be obtained by using different depth correction coefficients k2'=2.5 or 8.0 according to the actual situation. This paper further substantiates that the bearing capacity of soft rock foundations can be significantly enhanced through in-depth modification, thereby offering meaningful reference and guidance for practical engineering applications.

Keywords : arch bridge foundation, field test, bearing capacity, displacement control
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