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新光大桥桥墩钢板桩围堰抗渗问题分析

曹洪罗彦周红星

(华南理工大学 土木工程系, 广东 广州 510641)

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摘要 摘要: 新光大桥5#, 6#桥墩采用钢板桩围堰, 是目前广东省最大的围堰之一, 针对施工中与钢板桩相关的渗漏问题进行了分析研究: (1) 对钢板桩缝渗漏问题, 考虑缝内与缝外渗透系数的不同, 修正了等代渗透系数公式并用其分析砂层中钢板桩缝自愈过程对等代渗透系数的影响, 给出了计算最终渗透量和估算初始抽水量的计算依据; (2) 利用水平面二维有限元程序的计算结果说明了钢板桩桩底的绕渗只会引起渗流量增大而不影响围堰安全; (3) 论证了围堰底面封堵与导排的利弊, 提出了解决方案, 使工程能够顺利完成。

关键词 [关键词: 水利工程](#) [钢板桩](#) [围堰](#) [抗渗](#) [自愈](#)

分类号

ANALYSIS OF PERMEABILITY OF COFFERDAM

CAO Hong, LUO Yan, ZHOU Hong-xing

(Department of Civil Engineering, South China University of Technology, Guangzhou, Guangdong 510641, China)

Abstract

Abstract: Xinguang bridge project is the pivotal project of Xinguang throughway, and it will be the longest half-through arch bridge with three continuous spans in the world. The constructions of piers No.5 and No.6 meet much difficulty in this project due to the large-span, deep water, and intricate geologic conditions as well as water inpouring into hardpan in their sits. On account of all those factors, cofferdam with steel sheet pile is employed in this project with large dimensions, which is the largest steel sheet pile cofferdam in deep water in Guangdong Province. However, successful implementation of this project lies in how to solve the permeating problems of steel sheet pile cofferdam. As to the permeability problem, the formula for the equivalent permeability coefficients is modified. On basis of this modified formula, a variety of the equivalent permeability coefficients is modified during the self-healing up process of the steel sheet pile in the sandy layer are analyzed; and the calculation of the final seepage quantity as well as an estimation of the initial quantity of the pumped water are presented. Moreover, it is concluded that permeability below the root of steel sheet pile will not cause seepage failure but only increase the leakage, which is confirmed by the two-dimensions finite element program on horizontal plane. Eventually, corresponding settlement was generated after a full account of both the merits and demerits of the cofferdam base in both draining and blocking up approaches. This project was completed smoothly, and complementary supporting evidences of the self-healing process of the steel sheet pile were deduced.

Key words [Key words: hydraulic engineering](#) [steel sheet pile](#) [cofferdam](#) [permeability](#) [self-heal](#)

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