

厦门海底隧道结构防排水原则研究

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摘要 海底隧道不同于陆地隧道, 水压高, 水源充足, 又无天然出口, 海底隧道的渗水问题远比陆地隧道严重得多, 处理起来也困难得多。海底隧道结构防排水系统的合理性和可靠性是海底隧道成功的关键, 也是控制运营费用的主要部分, 海底隧道结构防排水原则和标准的确定又是设计合理防排水系统的基础。在分析国外已建成海底隧道防排水设计的基础上, 提出确定海底隧道防排水原则的临界地下水位, 并通过数值分析计算厦门海底隧道设置盲管排水系统后的排水量和衬砌背后水压, 从运营经济性角度分析排导系统设置的可行性, 提出厦门海底隧道应采用“以堵为主, 限量排放”的防排水原则。在此基础上, 提出厦门海底隧道合理的防排水体系, 并在工程中得到应用。提出的研究方法也可为其他海底隧道结构防排水系统设计提供参考。

关键词 [隧道工程](#); [海底隧道](#); [结构防排水](#); [原则](#); [标准](#)

分类号

STUDY ON WATERPROOF AND DRAINAGE PRINCIPLES OF XIAMEN SUBSEA TUNNEL

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Abstract

Subsea tunnel is different from land tunnel with abundant water, high water pressure and without automatic drainage. These lead to more serious leakage problems, which are difficult to be dealt with comparison to land tunnel. Rationality and reliability of the waterproof and drainage system are the key factors for a successful subsea tunnel and the main parts controlling operation cost. The determination of waterproof and drainage principles is the basis for design of reasonable waterproof and drainage system. Based on the data of the existing subsea tunnels, the critical groundwater level is put up to determine waterproof and drainage principles. The water discharge and water pressure on lining with hidden pipe drainage system are calculated by numerical method for Xiamen subsea tunnel, and the feasibility of installation of drainage system is studied from point of view of economical efficiency during operation. The principle that blockage is dominant and drainage is limited is put forward for Xiamen subsea tunnel. Based on this, the reasonable waterproof and drainage system is brought forward and has been applied to this project. As the first systematic study for the first subsea tunnel with drill and blast method in China, the research method is a reference for other subsea tunnels.

Key words [tunneling engineering](#); [subsea tunnel](#); [waterproof and drainage of structure](#); [principle](#); [standard](#)

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