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厦门翔安海底隧道富水砂层注浆试验

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摘要　针对我国第一条海底隧道——厦门翔安海底隧道富水砂层段进行注浆试验，采用钻孔取芯和压水的方法对注浆效果进行检验，摸索该条件下的一些注浆规律，提出注浆量、注浆压力、注浆速度、扩散半径等注浆参数。通过试验研究海水对浆液强度的影响。研究结果表明，海水延长初凝时间、减缓浆液强度上升的速度、稀释浆液并加剧不均匀扩散。结合翔安海底隧道施工注浆的经验可以得出，以上几个问题是在海水注浆中值得深入研究的，其研究结果可为厦门海底隧道注浆的设计、施工提供指导，并可为相关工程提供重要的参考。

关键词　隧道工程；海底隧道；注浆；富水砂层

分类号

GROUTING TEST ON WATER-ENRICHED SAND LAYER OF XIAMEN XIANG¢AN SUBSEA TUNNEL

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Abstract

Water-enriched sand layer will bring difficulty for grouting and therein result in failure of grouting. The influence of the seawater increases the difficulty of grouting. This paper presents grouting in water-enriched sand layer of the first subsea tunnel—Xiamen Xiang¢an subsea tunnel，China. Drilling and pushing water are used to check the grouting result. Some grouting rules are obtained and some parameters such as grouting amount，grouting pressure，grouting speed and diffusion radius are suggested. This paper also finds the results of an experimental investigation applied to the study of the effects of seawater. The result indicates that the seawater will delay the time of initial setting，slowing down the speed of gain in strength，diluting the density of slurry and aggravating differential pervasion of grouting. Several problems of grouting in seawater are discussed from the test and the construction experiences of Xiamen Xiang¢an subsea tunnel. The study can provide instructional advice for both design and construction of grouting of the Xiang¢an subsea tunnel. Meanwhile it can also provide important reference to similar project.

Key words　tunnelling engineering；subsea tunnel；grouting；water-enriched sand layer

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