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复合土钉墙的若干理论问题、兼论《复合土钉墙基坑支护技术规范》

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SOME THEORETICAL QUESTIONS OF COMPOSITE SOIL NAILING WALL AND DISCUSSION ON TECHNICAL CODE FOR COMPOSITE SOIL NAILING WALL IN RETAINING AND PROTECTION OF EXCAVATION

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摘要 详细剖析4个经过挑选的复合土钉墙工程事故实例，得出如下结论：复合土钉墙整体稳定性验算安全系数满足规范要求时，可不再验算局部稳定性；土钉“设计承载力”难以检验，可用“验收抗拔力”取而代之，作为质量检验验收标准及杆体的设计依据；复合土钉墙13种可能破坏模式中，验算其中6种，其余采取构造措施预防即可等。此外，研究还得出：复合土钉墙适用条件，土钉基本试验与验收试验方法，坑中坑开挖及边角效应的处理原则，周边环境的勘察与调查要求，工程中统筹协调不力及岩土工程专业经验欠缺的解决方法等。这些理论研究成果在新实施的国标——《复合土钉墙基坑支护技术规范》中得到了体现。

关键词： 基坑工程 复合土钉墙 整体稳定性 设计承载力 验收抗拔力 基本试验 坑中坑 边角效应

Abstract： Four selected engineering accident examples of composite soil nailing walls are particularly analyzed and studied；and some conclusions are drawn as follows. (1) When the safety factor of global stability checking of composite soil nailing wall meets the requirements of specification，the local stability can not be checked. (2) The “design bearing capacity” of nailing is difficult to be checked；and the “pull-out resistance of acceptance” could be adopted as the quality test standard and the basis of rod body strength design. (3) 6 kinds of composite soil nailing wall failure modes of the 13 kinds should be mainly checked and the other kinds could adopt structural measures，and so on. In addition，the research results include that：application conditions of composite soil nailing wall，methods of basic test and acceptance test of soil nailing，treatment principles of excavation of pit inside pit and edge-corner effect，exploration and survey requirements for surrounding environment，solution to bad engineering plan and coordination and lack of geotechnical engineering professional experience，etc. These theories research results have been reflected in the new implemented national standard of Technical Code for Composite Soil Nailing Wall in Retaining and Protection of Excavation.

Keywords： foundation pit engineering composite soil nailing wall global stability design bearing capacity pull-out resistance of acceptance basic test pit inside pit edge-corner effect

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