乌江构皮滩水电站软基锚桩抗拔试验研究

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摘要　　在乌江构皮滩水电站水垫塘及边坡存在页岩、黏土岩、粉砂质黏土岩，且夹薄层泥灰岩和少量中细粒钙质砂岩，为典型的不均质软岩，为了克服运行期间的浮托力，设计采用1 200多根锚桩对该层软岩进行锚固，则锚桩的极限承载力、群桩的间距和锚固深度等3个主要指标需要通过原位试验确定。将地表变形测量和深部应力测量的一般方法应用于锚桩的径向变形和轴向应力影响范围测量，进行了5根锚桩抗拔试验，并设计了一套试验方法。通过研究不同边界条件下锚桩的破坏形式，确定了锚桩的极限承载力标准值。通过测试锚桩周围岩体铅直方向上抬变形沿径向的分布规律研究了锚桩对软岩的影响范围，确定群桩间距为12D(D为桩径)，通过预埋钢筋计测试不同深度的应力大小，研究了锚桩深部应力的分布规律并确定了锚桩的锚固深度为42D。

关键词　桩基工程；锚桩；破坏形式；极限承载力；锚桩间距；锚固深度

分类号

PULLOUT TEST RESEARCH OF ANCHOR PILE IN SOFT SOIL FOUNDATION OF WUJIANG GOUPITAN HYDROPOWER STATION

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Abstract

There are shale，clay stone，silty clay stone in plunge pool and sliding slope of Wujiang Goupitan Hydropower Station，and there are marlite folium and a few medium and thin particle diameter calcareous sandstone，which are typical asymmetric soft rocks. In order to overcome uplift force in operation period and reinforcement of slide slope，more than 1 200 anchor piles have been applied to reinforcement of the soft rock layer. Three main indices such as ultimate bearing capacity，space of pile group，rock socketed depth have to be determined by in-situ test. Distance of anchor pile and rock socketed depth is usually determined by calculation，rarely by in-situ test method. The generic method of wavelet transform measurement and deep space stress measurement is applied to radial transform and influencing range of longitudinal stress. Five anchor piles pullout tests are performed，and a series of test

method are designed. According to the research on collapse mode of anchor pile in different boundary conditions，the normal value of ultimate bearing capacity about anchor piles is established. According to the radial distribution rule of vertical transform about rock mass around anchor pile，influencing range of soft rock caused by anchor pile is researched，and it is confirmed that the space of pile group is 12D. Value of stress in different depths is tested by premed reinforcing steel bar apparatus；distribution rule of stress in deep place of anchor pile is researched and it is confirmed that rock socketed depth of anchor pile is 42D.

Key words pile foundations；anchor pile；collapse mode；ultimate bearing capacity；space of anchor pile；rock socketed depth

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