

浹底隧道明洞桩筏基础设计及有限元分析

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摘要 浹底隧道作为城市景观大道——瓯海大道上的重要构筑物, 在洞口设计中采用了有利于环保及景观的拉长明洞。针对于浹底隧道出洞口段的软弱地基, 结合出洞口明洞设计的特点, 采用了桩筏基础的设计方案以避免过大沉降带来的不利影响。应用有限元方法, 建立了明洞、桩筏基础与土共同作用的三维有限元模型, 对桩筏基础应用于隧道洞口软弱地基处理这一方法进行了初步的研究。通过研究表明, 隧道洞口在软弱地基条件下, 采用的桩筏基础能充分发挥桩基承载能力, 能有效的控制明洞填土所引起的不均匀沉降。

关键词 [隧道工程](#); [隧道明洞](#); [桩筏基础](#); [软弱地基](#); [三维有限元](#)

分类号

DESIGN AND FEM ANALYSIS OF PILE-RAFT FOUNDATION OF CUT-AND-COVER TUNNEL AT JIADI TUNNEL PORTAL

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Abstract

Jiadi tunnel is one of important structures of landscape road—Ouhai road in Wenzhou city. Elongated cut-and-cover tunnel has been designed in entrance for improving environmental design and landscape design. Pile-raft foundation has been introduced based on the characteristic of the entrance design in order to avoid negative effect due to excessive settlement, considering the soft subsoil of portal section. Primary study has been performed on pile raft foundation applied on soft subsoil treatment at tunnel portal based on a 3D FEM model set up for combined action of cut-and-cover tunnel, pile-raft foundation and soil. It's indicated by numerical analysis that the applied pile-raft foundation will give the full play of pile bearing capacity and effective control the differential settlement of the cut-and-cover tunnel on the soft subsoil as a result of asymmetric dead load.

Key words

[tunneling engineering](#); [cut-and-cover tunnel](#); [pile-raft foundation](#); [soft foundation](#); [3D FEM](#)

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