

## 厦门翔安海底隧道陆域段CRD法位移监测分析

张建斌<sup>1, 2</sup>

(1. 河海大学 水利水电学院, 江苏 南京 210098; 2. 厦门路桥建设集团有限公司, 福建 厦门 361026)

收稿日期 2007-6-18 修回日期 2007-7-19 网络版发布日期 2008-1-25 接受日期 2007-7-15

**摘要** 厦门翔安海底隧道陆域段为软弱地层三车道大断面浅埋暗挖隧道, 主要采用交叉中隔壁(CRD)法施工, 结合现场施工情况对该隧道CRD法位移监测量测结果进行研究。研究表明, 该隧道CRD法施工监控量测判断指标应以拱顶下沉为主, 水平收敛为辅; 拱顶下沉通常为最后收于一稳定值的台阶状上升曲线, 各分部开挖引起的拱顶下沉增量呈一定比例关系, 可用于对最终拱顶下沉量的预测和控制时机参考, 施工中应重点控制引起约占总下沉量一半的CRD1初期支护尽早封闭; 该隧道陆域段CRD法施工中CRD1最终拱顶下沉控制标为200 mm比较合适。综合位移监测分析和现场施工经验认为, 翔安隧道陆域段CRD法相邻导坑掌子面间距控制在10~15 m, 每循环开挖1.0~1.5 m(极软弱地段只允许开挖0.5 m)后立即支护, 导坑内台阶长度控制在6 m以内, 及时封闭仰拱, 对控制最终拱顶下沉和保证支护结构稳定性成效良好, 对隧道后续施工控制具有很好的指导意义。

**关键词** [海底隧道; 开挖; 交叉中隔壁\(CRD\)法; 位移监测; 拱顶下沉](#)

分类号

## DISPLACEMENT MONITORING ANALYSIS OF XIAMEN XIANGAN SUBSEA TUNNEL IN LANDSIDE SECTION CONSTRUCTED WITH CRD METHOD

ZHANG Jianbin<sup>1, 2</sup>

(1. College of Water Conservancy and Hydropower Engineering, Hohai University, Nanjing, Jiangsu 210098, China;

2. Xiamen Road and Bridge Construction Group Co., Ltd., Xiamen, Fujian 361026, China)

### Abstract

The landside section of Xiamen Xiang'an subsea tunnel was under unfavorable ground condition with small buried depth and 3-lane large-section, which mainly is constructed by center cross diagram(CRD) method. Measured displacements and construction method of CRD were also analyzed. Results indicated that the estimation of measured displacement of CRD method should be dependent primarily on arch-crown subsidence and secondly on horizontal convergence. The curve of measured arch-crown subsidence of CRD method vs. time normally was in a shape of uplifted zigzag with a final stable value, and the subsidence is caused by each heading constituted of a certain proportion of final subsidence, which could be used as an index to forecast and control the final subsidence. The primary lining of CRD1 should be closed as soon as possible for reducing the final subsidence since half of which was caused during excavation of CRD1; experiences in this case show that the total arch-crown subsidence of CRD1 should be controlled within 200 mm for the safe operation. Combining measured displacements with field construction experiences, it shows that the guarantee of structure safety in Xiang'an subsea tunnel is 10-15 m for space between border upon headings, 1.0-1.5 m for each round of excavation(only 0.5 m for extreme poor ground condition), 6 m for maximal of step length in heading, and the invert arch should be closed as soon as possible. The suggestion is verified in construction of Xiamen Xiang'an subsea tunnel.

**Key words** [subsea tunnel; excavation; center cross diagram\(CRD\) method; displacement monitoring; arch-crown subsidence](#)

DOI:

### 扩展功能

#### 本文信息

- ▶ [Supporting info](#)
- ▶ [PDF\(227KB\)](#)
- ▶ [\[HTML全文\]\(0KB\)](#)
- ▶ [参考文献](#)

#### 服务与反馈

- ▶ [把本文推荐给朋友](#)
- ▶ [加入我的书架](#)
- ▶ [加入引用管理器](#)
- ▶ [复制索引](#)
- ▶ [Email Alert](#)
- ▶ [文章反馈](#)
- ▶ [浏览反馈信息](#)

#### 相关信息

- ▶ [本刊中 包含](#)  
“[海底隧道; 开挖; 交叉中隔壁\(CRD\)法; 位移监测; 拱顶下沉](#)”的[相关文章](#)
- ▶ 本文作者相关文章

- [张建斌](#)
-

