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北斗高精度定位技术在边坡变形监测中的应用

404000

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摘　要：近年来，国家经济快速发展更加重视西部贫困地区的经济发展，加大了西部交通基础设施建设投资。西山的不平使公路建设更加困难和昂贵，同时也产生了大量的钻井和填埋场。由于道路坡度是手动形成的，并且往往是运输基础设施中最脆弱的部分，因此侧变形监测是确保运输基础设施安全高效运行的有效手段。传统的入口监测方法主要使用主轴等工具，受到地面的严重影响，需要长期的人工测量，容易出现人工测量误差。使用北斗技术进行侧坡监测的优点是可以选择灵活、高度自动化的实时点，而不管地形等条件如何。

关键词：北斗高精度定位技术；边坡变形监测；应用策略
中图分类号：TN92　**文献标识码：**A

Application of Beidou High-precision Positioning Technology in Slope Deformation Monitoring

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Abstract: In recent years, the rapid economic development of the country has paid more attention to the economic development of poor areas in the west, and increased the investment in the construction of transportation infrastructure in the west. The unevenness of the West Mountain makes the road construction more difficult and expensive, and also produces a large number of drilling and landfill sites. As the road slope is formed manually and is often the most vulnerable part of the transportation infrastructure, the lateral deformation monitoring is an effective means to ensure the safe and efficient operation of the transportation infrastructure. Traditional entrance monitoring methods mainly use spindle and other tools, which are seriously affected by the ground and require long-term manual measurement, and are prone to manual measurement errors. The advantage of using Beidou technology for side slope monitoring is that you can select flexible and highly automated real-time points, regardless of terrain and other conditions.

Keywords: Beidou high-precision positioning technology; Slope deformation monitoring; Application strategy

引言

1 边坡变形监测中存在的问题

1.1

1

1.2

“ ”

TDR

“ ”

1.3

b.

gps

InSAR

TDR

2 北斗技术在变形监测中的优势

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4

5

3 边坡监测的内容

1a

70d

4 实际应用

4.1

20

2.56 82.2

1:0.75 53

8 82.2

112′49

J1 10′78 J2 99′58 J3 339′55 “

”

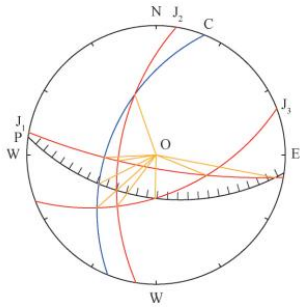
J1 J2 J3

1 1

表 1 赤平图投影参数

Table 1 Parameters of stereographic projection

编号	结构面名称	倾向/(°)	倾角/(°)
P	坡面	8	53
C	岩层面	112	49
J_1	节理 J_1	10	78
J_2	节理 J_2	99	58
J_3	节理 J_3	339	55



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4.2

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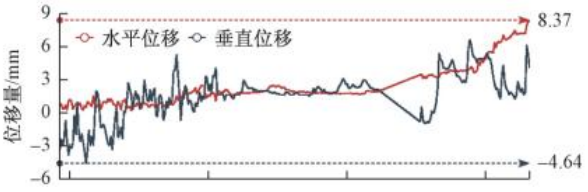

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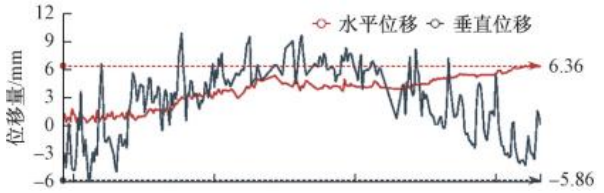

3 2#

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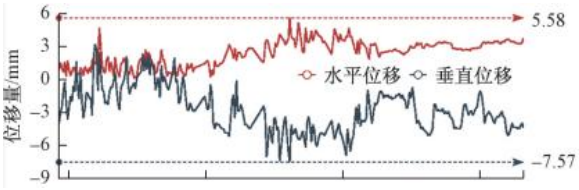
2020 07 03 -2021 07 03



4 3#

2- 4

1#

8.37

-4.64 6.59 2#

6.36

-5.86 10.02 3#

5.58 -7.57 3.64

1# 2021 8.37

2# 3# 6.5

2 061mm 2# 3#

9mm 2# 3#

1#

5 结束语

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