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交通荷载对预应力锚索桩板墙的土压力影响分析

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摘要: 以邵怀高速公路应用最典型的桩板式挡土墙为例, 以数值方法为研究工具, 考虑车辆与挡墙的距离、汽车载重和汽车速度等因素, 区别挡墙的不同位置(桩、板), 对挡墙的土压力进行现场测试与计算分析。研究表明: 在交通荷载的作用下, 挡土墙受影响的部位主要集中在墙顶以下2 m, 桩(柱)上所受影响大于板上所受的影响; 当动荷载离挡土墙的距离在0~1.5 m内变化时, 对挡土墙的影响较大, 而当距离大于1.5 m后, 对挡土墙的影响就相当小; 汽车的行车速度对挡墙结构的影响较小; 汽车超载对挡墙的影响较大, 设计时必须考虑这种因素对挡墙的影响。

关键字: 桩板墙; 高速公路路基; 动力分析; 数值方法

Dynamic earth pressure effect analysis on pre-stressed anchor pile plate wall under traffic load

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Abstract: Taking sheet-pile in ShuoHuai expressway as an typical example, using numerical method and considering the different distance between the vehicles and the retaining wall, the different vehicles' loads and velocities, the dynamic stress was studied according to the different positions of sheet-pile (pile and board). The results show that, under the traffic load, the main part of the retaining wall which is affected is less than 2 m of the top of the retaining wall. The dynamic effect of the pile is bigger than that of the board. When the dynamic load varies in 0-1.5 m, there is a bigger dynamic effect on the retaining structure, and the distance is greater than 1.5 m, the dynamic effect of the vehicles on the retaining wall is relatively small. The velocity of vehicles has a less effect on the retaining structure. The overload of the vehicles has a larger effect on the retaining structure, it must be considered.

Key words: sheet-pile; expressway subgrade; dynamic analysis; numerical method

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