



A Case Study of the Activity Gravitational Deformation Slate Slope on One Newly Rebuild Highway Bridge in Taitung Longitudinal Valley of Taiwan

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There are many landslide hazards induced by typhoon and earthquake in Taiwan because Taiwan is located in active orogen zone, where the Taitung Longitudinal Valley is the plate boundary, and also many typhoons hit Taiwan and bring much precipitation. In Japan, where also is located in orogen zone, the 2016 Kumamoto Earthquake caused a large landslide which destroyed the Great Aso Bridge. It shows that landslides might have huge influence on the safety of bridges. In Sep. 2016, Typhoon No.14 (Meranti) hit Taiwan and caused a slate slope failure which located in Taitung Longitudinal Valley. It cut the approach road of a highway bridge called Songfeng Bridge and the maximum displacement is about 2 meters. The landslide body might include the bridge, and if this landslide continued move the bridge structure might be destroyed.

The attitude of cleavage and joints measured in site investigation are complex and confused, it imply that this landslide event is not only controlled by gravitational deformation, but also affected by release joint and river erosion because the site is located on confluence of two river. The target of site investigation in this research includes finding the border of failure surface and the measurement of cleavage and joints. In this research, we compare the result of site investigation and numerical model to find the mechanism of failure, and try to analysis the possible influence on the bridge structure.