

Application of a Complex Reinforced Structure next to Fault Zone

Steven Chang¹, Kevin Wu², Jean Wei³, Nana Chen⁴

¹ Assistant Manager, Export Department, ACE Geosynthetics

² Project Leader Engineer, Domestic Department, ACE Geosynthetics

³ Technical Engineer, Export Department, ACE Geosynthetics

⁴ Sales Representative, Export Department, ACE Geosynthetics

Abstract

Transport infrastructure is one of the main influence factors on urban development. In early Taiwan, with local rapid growth, Taiwan government substantially built roadway systems to reduce transport time and cost. Furthermore, the demand of hilly road is increasing in recent years with population growth and tourism development. As a result of lying in the circum-Pacific seismic zone and the marine tropical zone, comparison of other country Taiwan comes with fragmental geology and succumbs to attacks of server tropical storms. Slope failure, erosion, collapse or road damage happened frequently after torrential rain. The hilly road in this case locates next to fault zone. Due to fragmental geology and poor drainage, slope instability apparently happened and brought out the extensive collapse. Wrap-around reinforced structure gradually became proposed hilly road repair method due to its flexible structure and rapid construction. Moreover, in-situ soil was successfully used as backfill material in Taiwan due to the lack of natural aggregate, which further reduced construction cost. Under well-controlled compaction quality of in-situ soil and thoughtful arrangement of drainage system circumstances, here complex reinforced structure combined with drilling piles and soil anchors was built. Through one year of inclinometer monitor and water level observation wells, increment of overall slope was decreased with ground depth and almost none displacement is detected under 10m depth.

Keywords: Geotextile; Gradient ratio; Filtration; Flow rate; Pore size distribution; Uniaxial tensile strain

