

# ParaDrain™ - Case History



## Slope Stabilization After Failure Wan Li, Taipei - Taiwan ROC

### Profile

ParaDrain™ grade use: ParaDrain™ 100/15  
Client: Taipei County Government  
Design: Johnson Engineering Co. Ltd.  
Contractor: Fu-Yi Construction Co. Ltd.



Every year Taiwan suffers much slope instability during the typhoon season. Much of the country is hilly and mountainous and the natural soils are characterized by high silty clay content. Vegetation grows rapidly but is often incapable of preventing slope failures during the periods of heavy typhoon rainfall. These slope failures result in road closures which are disruptive to the life and economy of the country. Regular seismic events exacerbate the problem.

Such a major event occurred in 1999 resulting in many slope and other failures which caused significant disruption and loss of life. One such failure occurred on a hill road at Wan Li near Taipei, capital of Taiwan.

During the typhoon season a build up of pore water pressure in a section of slope on the uphill side of the single carriageway road coupled with generally poor drainage caused a collapse of the slope and consequent closure of the road. The technique of soil reinforcement using ParaGrid™ is a very common and popular means of effecting slope repairs in Taiwan.

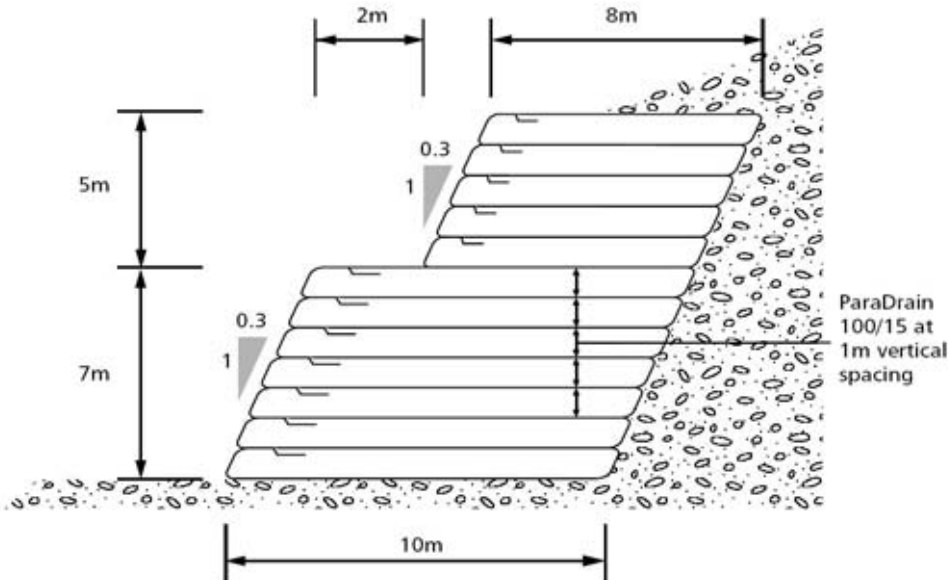


The reconstruction of slopes can be carried out quickly and cheaply using simple methods which result in stable but flexible structures. Rapid vegetation growth coupled with adequate drainage ensures that a stable repair is achieved which is capable of withstanding the effects of typhoons and earthquakes. However the seasonal storms and poor soil conditions limit the suitable construction period available using these techniques to the summer months only.

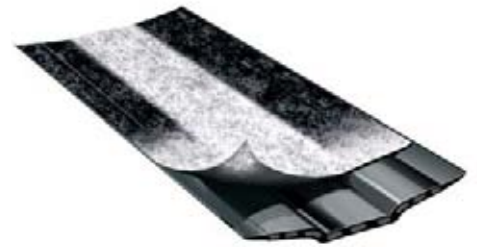


The introduction of ParaDrain™ to Taiwan has opened up the opportunity to carry out slope repairs for much longer periods during the year. This avoids delays in the work and thereby minimizes the time of disruption due to road closure. Such was the case at Wan Li where ParaDrain™ 100/15 was used to construct the 12metre slope as shown in the cross-section. ParaDrain™ allowed the rapid dissipation of pore water pressures during construction and ensured that the work could be completed in a very rapid 3 week period. After 6 months the vegetation on the slope had recovered thus ensuring a permanently stable structure into the future.

### Cross section through repaired slope



### ParaDrain™ cross section



**Linear Composites Ltd**  
 Vale Mills Oakworth Keighley  
 West Yorkshire BD22 0EB  
 UK  
 Tel: +44 (0)1535 643363  
 Fax: +44 (0)1535 643605  
[mail@linearcomposites.com](mailto:mail@linearcomposites.com)