

# Aslan 150 GFRP

## Consumable soil nail for slope protection, Singapore (2005)

When proposing available methods to carry out the KGC slope protection work, the soil-nailing technique was defined as the best solution by either technical-wise or economical-wise aspect. However, the engineer encountered a serious objection when submitted the proposal to the city planner of Singapore. A metro tunnel was planned to be going through the bed of the slope right after the slope protection work was completed, and the Tunnel Boring Machine (TBM) would potentially suffer a big jam due to the uncertain ground obstruction. After considering all existing materials which the engineers' familiar with, the designer was going to give up the soil-nailing method while a heavy retention wall seemed to be the only possibility.

Such an obstruction concern was finally eliminated by the Aslan 150 Glass Fiber Reinforced Polymer (GFRP) soil nails. Unlike steel which is strong in all directions, GFRP reinforcement is primarily strong along the length of the fiber, and can be easily "consumed" by TBM and mining equipments.

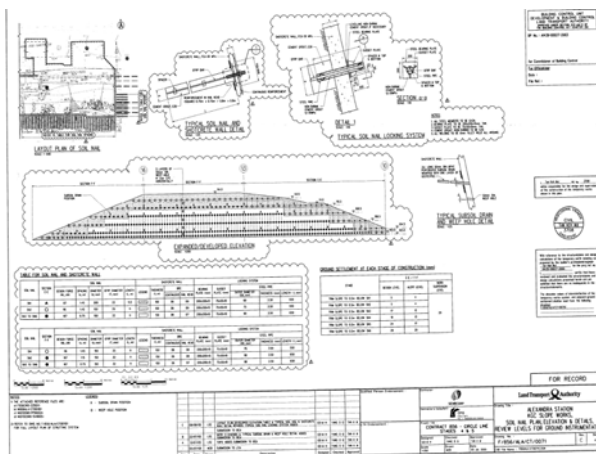
The KGC slope is protected by Aslan 150 GFRP soil nail, which comes with an appearance similar to that of steel nails. Equipped with the unique Aslan swaged connection (patented), Aslan 150 soil nail transfers all load capacity throughout the nail head, the GFRP reinforcement and the couplers if splicing is a necessary. Traditional pull-out tests are conducted as usual to verify the quality of installation.



GFRP Soil Nails



Site Pull-out Test



Shop-drawings



Installation of GFRP Soil Nail

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