

The connecting road of Miaoli high speed rail station



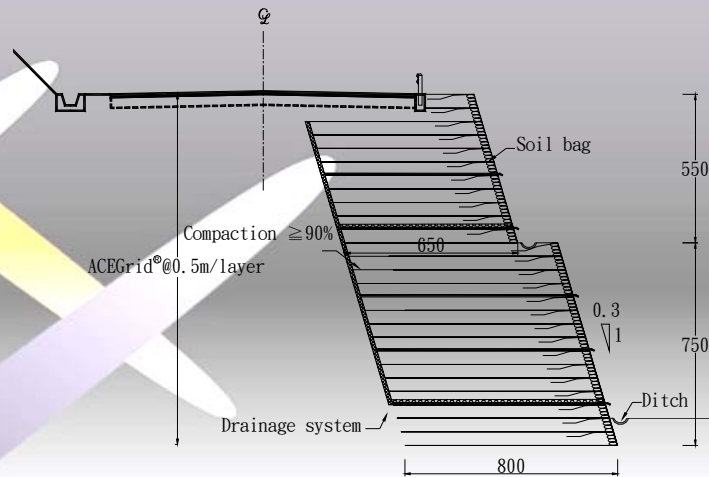
Introduction

In Taiwan, because of the small and narrow territory and dense population concentrated mainly in the western region, as the growing importance of time to the modern society, the original highway and railway transportation system was not in line with demand. To further accelerate the north-south transportation, the Taiwan government planned to build the first high-speed railway, a total of 345 km and seven stations. Simultaneously, in order to balance the developments among regions and to enhance convenience, the project also included the roads in connection with the communities. Our case here is one of road constructions in the project.

The reinforced embankment consumed the surplus soil from the excavated slopes and sustained steep slopes. The reinforced structure did not only avoid the soil disposal problem but also increase the available areas of the road and reduce land acquisition costs.

The Design

The site is located in Miaoli areas in connection with national highway leading to the high-speed rail station. The construction started from the beginning of year 2006 and completed on December 13, 2007 officially. The total length of 2,407 m used ACEGrid[®] GG200-I as road reinforcement material. It was designed four different wall heights according to topographic changes. The wrapped reinforced embankment had the total length of 1,090 m and its structure length of the longest side occupied almost 42% of the total projected road length. The installed length of the reinforced materials was determined in accordance with the road gradient changes and stability analysis results, which was divided by its wall height into 4m in length at less than 5m wall height, 5m long at 5 ~ 7 m, and 6m at 7 ~ 8 m, two stages (8.5m for lower stage, 6.5m for the upper) at over 10 m tall wall. The wrapped length was 2m and the slope gradient of the retaining wall was 1:0.3(V:H).



Cross section of design drawing

Construction

The total facing area of the wall was 6,780 m², which applied the quantity 123,000 m² of ACEGrid®. The construction period for the reinforced structure took about five months. The average construction area was 45 m² per day and required about 820m² of ACEGrid® averagely. The length of the longest reinforced structure was 1,010m and the total construction length was 1,090m.

Performance

The reinforced embankment consumed the surplus soil from the excavated slopes and sustained steep slopes. The reinforced structure did not only avoid the soil disposal problem but also increase the available areas of the road and reduce land acquisition costs. Moreover, after green vegetation, the wrapped-around wall face integrated with the local landscape perfectly.



During construction



After construction

Specification : ACEGird® GG-200I Quantity : 123,000m ² Owner : Miaoli County government Designer : HuaLlain engineering consultants .INC Contractor : RiTai construction company
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