

PARAMESH WALL OF TANA TORAJA AIRPORT TANA TORAJA, SOUTH SULAWESI, INDONESIA

Reinforced Soil Walls and Slope Reinforcement

Problem

The new airport runway is 2 km long and approximately 210 m wide, suitable for ATR type aircrafts. Since a plane surface is required for the construction of the runway, and due to the presence of hills and spurs clashing with the runway area, massive cut and fill earth works have to be undertaken in order to get the required level of runway. Thus, the filling soil has to be retained with technically suitable and economically feasible structures. It is worth to note that the maximum embankment height to be retained is almost 40 m. The main technical constraints have been: the high seismicity of the area, the heavy rainfall encountered every year and the presence of clay shale foundation soils. Clay shales are originally dry and hard with high shear strength, but when they absorb water during the unloading process, they can rapidly turn to stiff or even to soft clay with extremely low shear strength. For this reason, excavation and construction operations require noteworthy care and adequate planning in order to minimize the exposure of the foundation soils to weathering agents.

Solution

Different types of retaining structures have been considered during the design stages: traditional concrete walls, bored piles and hybrid MSE walls (Paramesh). The evaluation criteria have been, permeability: the retaining structures should have a very permeable facing in order to rapidly drain the rainfall waters and to dissipate the hydrostatic pressure developed in the backfilling soil, flexibility: the retaining structures should have a flexible behavior in order to accommodate potential differential settlements and to absorb dynamic shocks, construction time/schedule and overall cost. Based on all the above criteria, Maccaferri hybrid MSE structures (DT + Paralink) have been selected as the best solution. In October 2015, the construction of the first Paramesh retaining structure using Maccaferri products started. It has a maximum retained height equal to 25 m, distributed in 5m high berms. The berms are realized using both Terramesh System and Green Terramesh elements (60 degrees). The primary reinforcements are Paralink geogrids having an ultimate tensile strength equal to 300 kN/m.

Client: MINISTRY OF PUBLIC WORKS

Designer / Consultant: PT. BREMA

Contractor: PT. BINTANG ARAFFA

Products used (Qty.)

- Terramesh

N/A

Date of construction: 10/2015 - 01/2016



Terramesh & Green Terramesh Installation



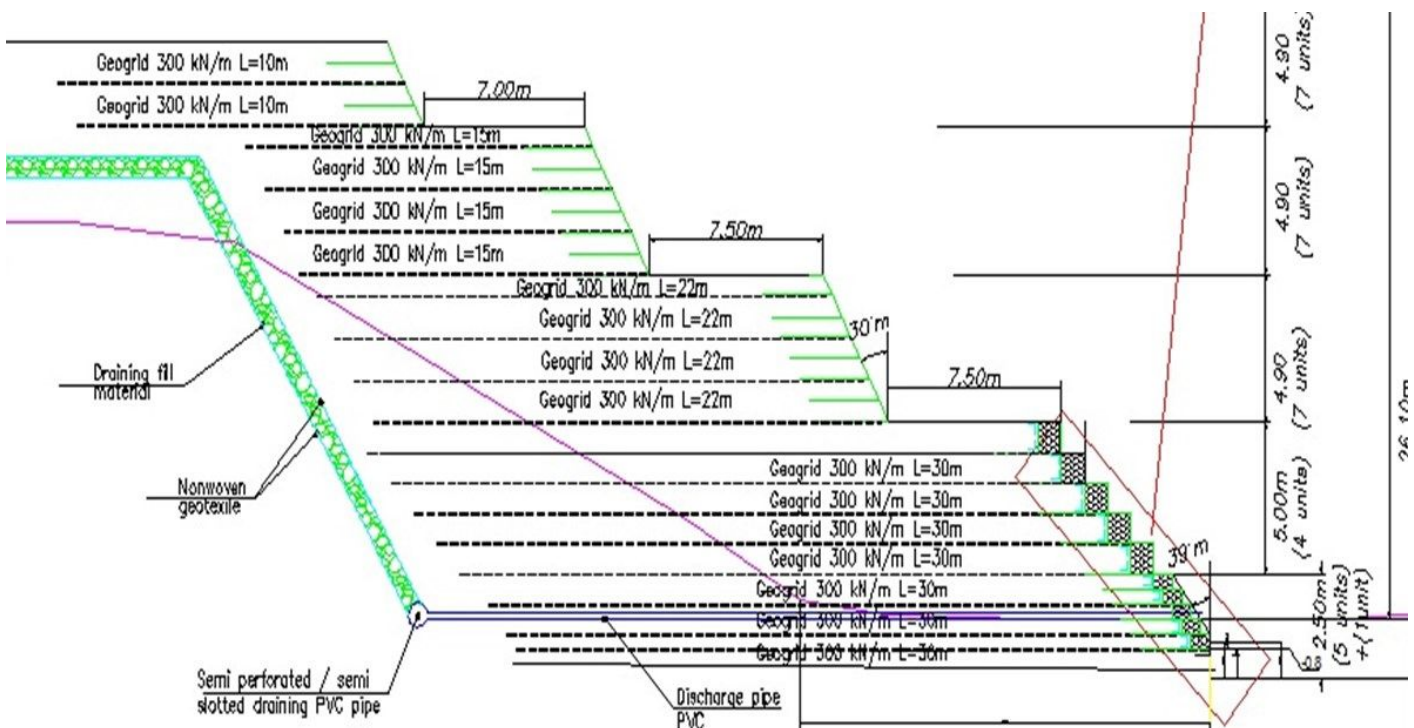
Paralink Installation



During Construction



Finished Structure



Typical Cross Section Drawing