

EAST UMEA - GABION VERTICAL COVERING A SHEET PILE WALL UMEÅ, VÄSTERBOTTEN COUNTY, SWEDEN

Mass Gravity Retaining Walls

Problem

Due to the increased needs to expand the railway link in the city of Umea, a second track was designed between the existing one and the national road aside due to the space constraints (the river on the opposite side). This decision required the natural slope between road and railway to be vertical.

Due to the requirement to keep the road open during construction, a sheet pile wall was made to provide support to the soil during the excavation as well. However, since the sheet pile wall was not deemed aesthetically pleasing by the landscape architects a solution with a more natural pleasing rock filled facing was considered.

Solution

The solution consisted in special gabions manufactured with a longitudinal diaphragm with a preattached geotextile.

The wall height varies from 1.5 up to 7 m.

This special unit was designed to allow two separate types of filling:

1) Leca expandable granular fill on the inner side, 2) conventional graded rock on the outer side.

The gabion lining was also designed to be connected at each layer to the sheet pile wall behind by means of anchors and cables. Units were manufactured to specifically meet the requirements to shape around the contours of sheet pile wall, including a concrete beam running longitudinal to the wall at constant elevations below the road. The construction required careful hand placing of the rockfill to provide a smooth face on the outer side. Particularly challenging was the construction of the sections around the concrete beam, since the filling required to work with the beam constantly variable elevations and the gabion layers set along horizontal planes.

Client: Botniabanan PUBLIC

Designer / Consultant: NA

Contractor: NA

Products used (Qty.)

- Gabion	1450
- Reno Mattress	880

Date of construction: 04/2006 - 10/2006



Fig. 1



Fig. 2



Fig. 3



Fig. 4



Fig. 6



Fig. 7

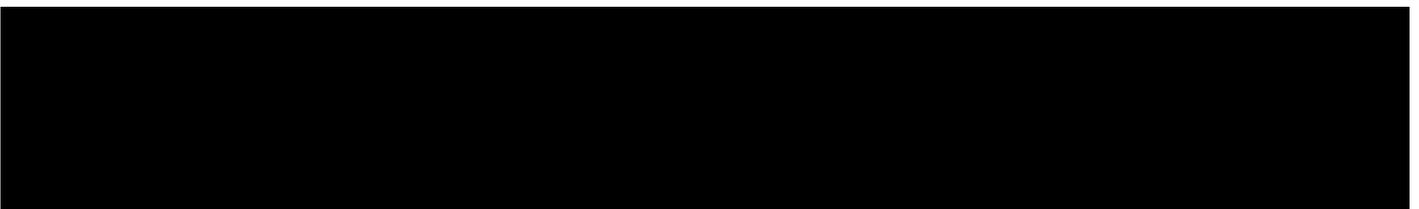


Fig. 5