GEOTECHNICAL ENGINEERING

Product: GABION, MACGRID™, MACTEX™

Problem

Vale Malaysia Minerals Sdn. Bhd. is a Brazilian pioneering mining company that provides raw material for coins, cars and computers manufacturing. Due to their expansion, Vale is setting up a new regional iron ore distribution centre and pellet plant located in Lumut, Perak. This centre is scheduled to operate in 2014. It is designed to handle 90 MTPA (Million Tons Per Annum) of Brazilian iron ore and will include port facilities to load and unload ore and pellets, stockyards and pelletizing complex.

An access road was needed to transport materials between the stockyard areas. The pellet plant in Teluk Rubiah is located at hilly terrain and adjacent to the coast of Straits of Malacca. Due to its geological condition, it is very hard to achieve the design’s finishing level through cutting and filling. Therefore, a reinforced earth wall was determined to be the best solution.

Solution

Essar Engineering Services Division is the consultant in designing the reinforced earth wall. The maximum retained height of the wall is 13 meter, whereby the length is 358 meter. The access road will be put to constant pounding from transporting the heavy iron load. Therefore, the reinforced wall will not only have to be functional, but strong enough to withstand heavy loading. The design used a combination of Gabion wall and MacGrid™ geogrid for reinforcement. The geogrid tensile strength used were 200kN/m and 300 kN/m, with vertical spacing at 0.5m. During construction, Maccaferri provided site and technical assistance to the consultant and contractor, to ensure proper installation.
Installation of MacGrid™ at site

Filling Gabion boxes with stones

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