ABSTRACT: In Geomembrane Liner Systems (GLS) or all other systems involving the use of geosynthetics on slopes, the “geosynthetic” complex constitutes a preferential slip plane for the layers (topsoil, gravel, rocks, concrete blocks…) that cover and protect it. In most cases, stability is ensured by an abutment and/or by anchoring the geosynthetics at the top of the slope. Calculation of the dimensions of these two elements is presented here.

The methods of calculating slope stability of the GLS are generally all based on the same principle of calculation at failure, consisting of the force equilibrium between a passive block at the foot of the slope and an active block composed of the cover layers. Additions have been made to the method of calculating stability on the slope with the aim of improving the way hydraulic conditions are taken into account.

On the basis of these methods, a calculation software was produced making it possible to study the stability of a GLS on a slope, to define any forces that might be necessary to retain the cover layers and to calculate the dimensions of the anchorage at the crest. The main characteristics of this software are, on the one hand, the ability to take into account a system comprising up to 4 geosynthetics and 3 layers of protection, with an upper layer that can be of varying thickness to improve the abutment and, on the other, the possibility of taking into account a large number of hydraulic conditions.