A DRAINING WATERPROOFED DIAPHRAGM WITH SYNTHETIC PANELS IN DEFENCE OF FOUNDATION WALLS IN A BUILDING

PROBLEM

In the building at issue foundation walls are supported by a thick cohesive layer with geotechnical properties becoming sensibly worse in presence of water.
On the other hand this supporting layer is adjoining at a board overhanging permeable layer of a superficial aquifer whose oscillations produce damages to foundations and increase the moisture in the buried part of the building.

In the next paragraph it will be explained how these problems have been solved out.

SOLUTION WITH DRAINING PANEL

What is expected is keeping under control the flood water by an efficient draining “belt” which allows to drain and convey ground and sub-surface water and simultaneously to preserve both foundation and supporting layer from the flood water by a right and suitable waterproofing system.
The draining panel is suitable for a wide variety of applications such as waterproofing of below grade foundation walls, earth shelters (landslides reclamation) and tunnels. The system is also suited for hydrostatic pressure reduction, reinforcing structures and retaining walls.
Lightweight, flexible, easy to join and with high hydraulic properties, draining panels has permitted to drain foundations and basements, reducing the likelihood of structural damage caused by foundation movements in expansive soils.

TRADITIONAL SOLUTION

Traditionally draining trenches would have been carried out with a gravel core 39,37” thick (cube packaging). A solution like that would have required longer technical times for digging out and more risks during the gravel laying.
It would be necessary:

- to realize a 39,37” wide hole;
- to support the excavation walls by scaffolding;
- to place the drain pipe on the bottom trench;
- to fix the waterproofing membrane to the wall trench;
- to lay both non-woven filter fabric and gravel.

ALTERNATIVE SOLUTION WITH DRAINING PANEL

In this case draining panels, (packaging: 78,74” long, 39,37” high and 11,81” wide), like the gravel thickness to be substituted, pre-joined with a waterproofing coating, has come out the most convenient solution for the following reasons:

- a narrow excavation can be realized, as required by panel measures (15,75”wide instead of 39,37”wide);
- hole scaffolds may be avoided because of the fast installation of DRAINING PANEL;
- go down the trench not (is)avoided because all assemblage operations (binding between panel and waterproofing membrane included) and installation are carried out outside the excavation. In such a way safety code is completely guaranteed.

Moreover the filter fabric prevents soil from entering and clogging the drainage core while the core allows unrestricted

water flow to a collection system.

INSTALLATION SCHEME

In the case at issue the waterproofing liner has been fixed to the draining panel for the all its height so as to create a waterproof and draining barrier just for conveying upstream flood water.

Overall, the cost of DRAINING PANEL system is much less than for conventional sub-surface drainage.

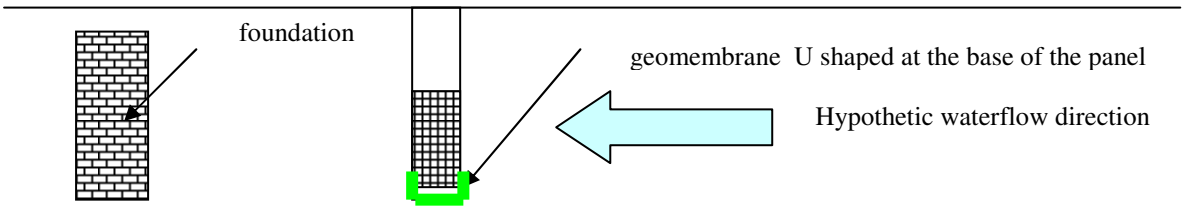

FIG 1 Narrow excavation

FIG 2 Binding of DRAINING PANEL and fixing of geomembrane at the bottom

FIG. 3 Draining waterprofed strip ready to be placed inside tha trench.

FIG. 4 Draining on installation

Filling of the trench with excavated soil

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