

#### 4.3 . OBSTACLES DURING DRILLING.

During drilling at the boreholes caught some rotten woods have not yet completely disintegrated when drill through layer 2 (Very soft, high plasticity blackish grey).

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### 1 . STRUCTURE OF THE BASE SOIL.

Based on in-situ survey, drilling documents and the results obtained from the soil tests, we have noticed that basic soil on the surveying site (up to 30.0m deep) was composed by Holocene deposits of more 29.5m thick, covering Pleistocene deposits, of which the thickness has not been determined yet (Boreholes of 30.0m depth did not excess these deposits) and at all boreholes there are made ground on the surface with the thickness from 0.5m to 0.8m. From the surface downwards there are the following layers:

#### 1.1 . Layer 1: Made ground - Soft, blackish grey SANDY CLAY

This layer lies right on the surface, only found at all the boreholes with the thickness is from 0.5m (UB(2)-2 to 0.8m (UB(2)-3).

#### 1.2 . Layer 2: Very soft, high plasticity blackish grey ORGANIC CLAY (OH).

It is lies right on the surface or covered by layer 1 with thickness from 21.4m (UB(2)-01) to 24.5m (UB(2)-02) and the bottom is from 22.0m (UB(2)-01) to 25.0m (UB(2)-02) deep. Standard penetration resistance N from 0 to 1. In total, 40 samples were taken from this layer, the obtained physical, mechanical properties of the samples have shown that, natural moisture is from 51.13% to 99.69%, wet density from 1.326 to 1.579g/cm<sup>3</sup>, liquid limit from 52.2 to 97.8%, plasticity index from 21.2 to 53.6%, high compressibility (see average value of the physico-mechanical properties - table 1d). The main characteristics of the layer are as follows :

Wet density	$\gamma_w$	=	1,453 g/cm <sup>3</sup>
Unconfined compressive strength	$q_u$	=	0.148 Kg/cm <sup>2</sup>
Compression index	$C_c$	=	1.129
Coefficient of consolidation	$C_v$	=	$2.12 \times 10^{-4}$
Coefficient of volume compressibility	$m_v$	=	$1.41 \times 10^{-4}$

#### 1.3 . Layer 3: Soft, high plasticity blackish grey ORGANIC CLAY (OH).

Was found only at the borehole UB(2)-02. The thickness is more 5.0m and the depth of the layer bottom is more 30.0m, at borehole UB(2)-02 with 30.0m depth, its thickness has not been determined yet. Standard penetration resistance N from 3 to 4. In total, 3 samples were taken from this layer, the obtained physical, mechanical properties of the samples have shown that, natural moisture is from 63.97% to 65.77%, wet density from 1.466 to 1.501g/cm<sup>3</sup>, liquid limit 90.3%, plasticity index is 43.9%, (see average value of the physico-mechanical properties - table 2d).

#### 1.4 . Layer 4: Stiff, low plasticity whitish grey CLAY (CL).

Was found only at the borehole UB(2)-01. The thickness is 4.0m and the depth of the layer bottom is 27.5m. Standard penetration resistance N from 13 to 14. In total, with 2 samples were taken from this layer, the obtained physical, mechanical properties of the samples have shown that, natural moisture is from 20.22% to 24.33%, wet density from 1.929 to 1.943g/cm<sup>3</sup>, liquid limit from 22.2%, to 26.8%, plasticity index from 8.6 to 9.4%, (see average value of the physico-mechanical properties - table 3d).

#### 1.5 . Layer 4a: Medium dense, light brown CLAYEY SAND (SC).

Was found at the borehole UB(2)-01 and UB(2)-03. The thickness from 1.5m UB(2)-01 to more 2.0m and the depth of the layer bottom is from 23.5m UB(2)-01 to more 30.0m UB(2)-03. Standard penetration resistance N from 12 to 13. In total, 3 samples were taken from this layer, the obtained physical, mechanical properties of the samples have shown that, natural moisture is from 14.87% to 40.91%, wet density from 1.704 to 2.018g/cm<sup>3</sup>, liquid limit from 18.8% to 33.5%, plasticity index from 7.9%, to 13.1% (see average value of the physico-mechanical properties - table 4d).

#### 1.6 . Layer 4b: Medium dense, brownish grey well graded SAND with SILT (SW-SM).

Was found at the borehole UB(2)-01 and UB(2)-03. The thickness from 1.0m UB(2)-01 to 4.0m and the depth of the layer bottom from 28.0 UB(2)-03 to more 30.0m UB(2)-01. Standard penetration resistance N from 12 to 33. In total, 3 samples were taken from this layer, the obtained physical, mechanical properties of the samples have shown that, natural moisture is from 15.33% to 17.21%, wet density from 1.779 to 1.979g/cm<sup>3</sup> (see average value of the physico-mechanical properties - table 5d).

#### 1.7 . Layer 4c: Dense, whitish grey poorly graded SAND with SILT (SP-SM).

Was found only at the borehole UB(2)-01. The thickness 1.5m and the depth of the layer bottom 29.0m. Standard penetration resistance N = 36. The sample was taken from this layer, the obtained physical, mechanical properties of the samples have shown that, natural moisture is 14.87%, wet density 1.844g/cm<sup>3</sup> (see average value of the physico-mechanical properties - table 6d).

### *Hydrogeological conditions*

At the surveying area, the groundwater level is affected by the tide and changeable according to seasons. The groundwater level in the boreholes during the investigation time is from 0.5m (UB(2)-01) to 0.8m (UB(2)-02).