

Tab 1 - Current Ground structure

Groundwater level (related to ground level) **-0,1** **Valid input**
 Groundwater level (after excavation) -0,3
 Ogroundwater pressure (KN/m2) 10

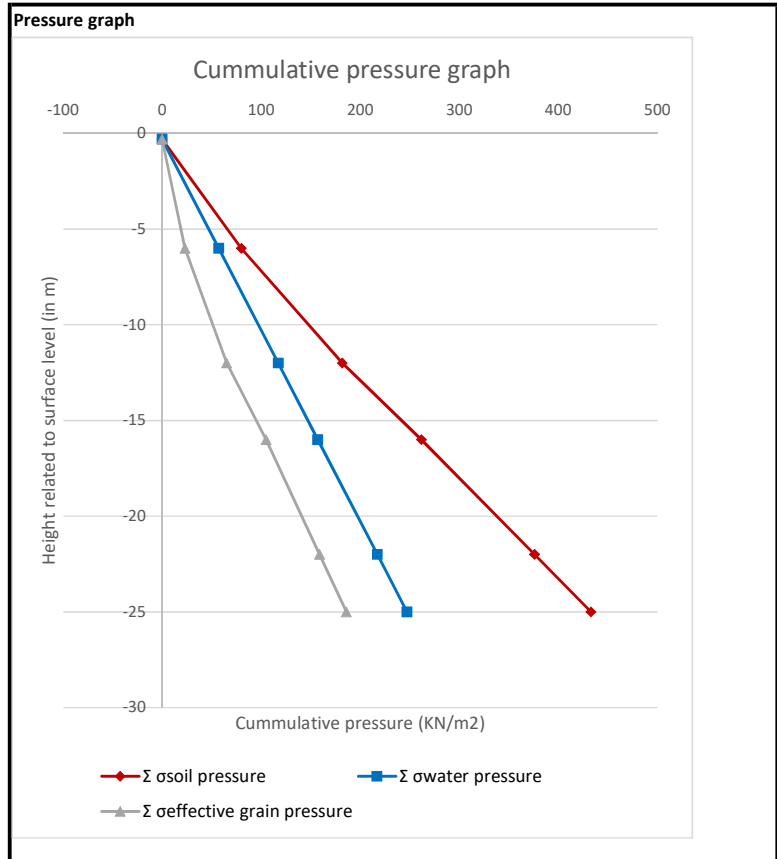
Soil types		Top level of layer	Bottom level of layer	Preconsolidation pressure	Opore pressure not filled with water (KN/m2)	Opore pressure filled with water (KN/m2)	Cp	Cs	C'p	C's
Layer 1	Clay weak, silty	-0,3	-6	0	13	14	50	340	30	270
Layer 2	Clay, silty	-6	-12	0	16	17	59	240	12	110
Layer 3	Loose Sand, silty	-12	-16	0	18	20	300	1E+09	550	1E+09
Layer 4	Medium Sand	-16	-22	0	17	19	600	1E+09	200	1E+09
Layer 5	Coarse Sand	-22	-25	0	17	19	1800	1E+09	600	1E+09

*All parameters are related to surface level

Soil Layer 1	
Clay weak, silty	
σsoil pressure	79,8
Σ σsoil pressure	79,8
σwater pressure	57
Σ σwater pressure	57
σeffective grain pressure	22,8
Σ σeffective grain pressure	22,8
<u>Heights and thickness</u>	
Startingpoint layer A	-0,3
Height ground water	5,7
Bottom level layer A	-6
Layer thickness	5,7

Soil Layer 2	
Clay, silty	
σsoil pressure	102
Σ σsoil pressure	181,8
σwater pressure	60
Σ σwater pressure	117
σeffective grain pressure	42
Σ σeffective grain pressure	64,8
<u>Heights and thickness</u>	
Startingpoint layer A	-6
Height ground water	6
Bottom level layer A	-12
Layer thickness	6

Soil Layer 3	
Loose Sand, silty	
σsoil pressure	80
Σ σsoil pressure	261,8
σwater pressure	40
Σ σwater pressure	157
σeffective grain pressure	40
Σ σeffective grain pressure	104,8
<u>Heights and thickness</u>	
Startingpoint layer A	-12
Height ground water	4
Bottom level layer A	-16
Layer thickness	4



Soil Layer 4	
Medium Sand	
$\sigma_{\text{soil pressure}}$	114
$\Sigma \sigma_{\text{soil pressure}}$	375,8
$\sigma_{\text{water pressure}}$	60
$\Sigma \sigma_{\text{water pressure}}$	217
$\sigma_{\text{effective grain pressure}}$	54
$\Sigma \sigma_{\text{effective grain pressure}}$	158,8
<i>Heights and thickness</i>	
Startingpoint layer A	-16
Height ground water	6
Bottom level layer A	-22
Layer thickness	6

Soil Layer 5	
Coarse Sand	
$\sigma_{\text{soil pressure}}$	57
$\Sigma \sigma_{\text{soil pressure}}$	432,8
$\sigma_{\text{water pressure}}$	30
$\Sigma \sigma_{\text{water pressure}}$	247
$\sigma_{\text{effective grain pressure}}$	27
$\Sigma \sigma_{\text{effective grain pressure}}$	185,8
<i>Heights and thickness</i>	
Startingpoint layer A	-22
Height ground water	3
Bottom level layer A	-25
Layer thickness	3

Tab 2 - Load new road construction

Possible road constructions:

- Solution 1 : Raising with current method
- Solution 2: Water buffer crates
- Solution 3: Lava stones
- Solution 4: Bamboo chips
- Solution 5: Plastic road
- Solution 6: Bamboo chips + plastic

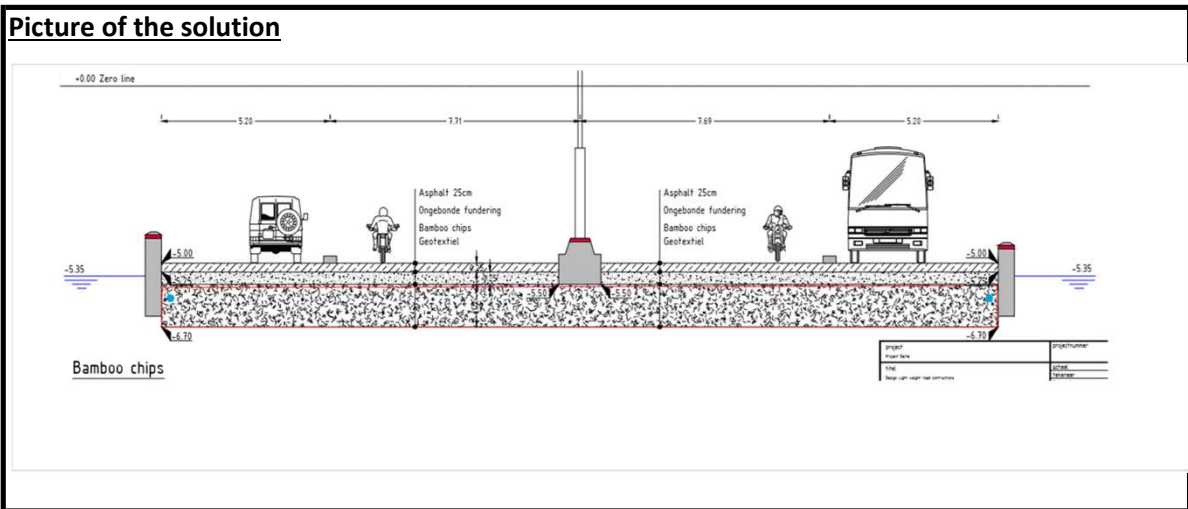
New situation

Height on top of layer 1	1,4
Excavation height of layer 1	0,3

Chosen solution: 4

Weight solution kg	1990
Force (in KN)	19,9
Thickness solution	1,7

Picture of the solution



Tab - 3 Output soil subsidence

New road construction	
Chosen solution	4
Height of top road related to layer 1	1,4
Load (KN/m ²)	19,9

Time of subsidence calculated (in days)

3650

Subsidence calculation table

Layer	Layer thickness	Preconsolidation pressure	Σ σ effective grain pressure (KN/m ²)	\checkmark	Cp	Cs	C'p	C's	Subsidence	Σ Subsidence
Clay weak, silty	5,7	0	23	11	50	340	30	270	0,268	0,534
Clay, silty	6,0	0	65	44	59	240	12	110	0,260	0,266
Loose Sand, silty	4,0	0	105	85	300	1E+09	550	1E+09	0,002	0,006
Medium Sand	6,0	0	159	132	600	1E+09	200	1E+09	0,004	0,005
Coarse Sand	3,0	0	186	172	1800	1E+09	600	1E+09	0,001	0,001
Total subsidence										0,534

Subsidence graph

