Tab 1 - Current Ground structure

Groundwater level (related to ground level)	-0,1	**Valid input**
Groundwater level (after excavation)	-0,9	
σgroundwater pressure (KN/m2)	10	

Soil types		Top level of layer	Bottom level of layer	Preconsolidation pressure	σpore pressure not filled with water (KN/m2)	σpore pressure filled with water (KN/m2)	Cp	Cs	C'p	C's
Layer 1	Clay weak, silty	-0,9	-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

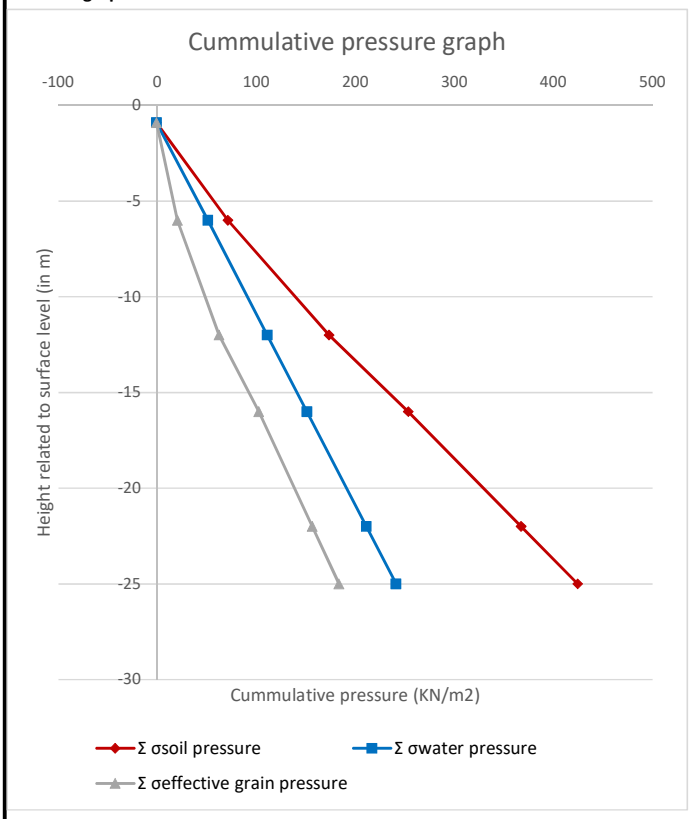
**All parameters are related to surface level*

Soil Layer 1	
Clay weak, silty	
σsoil pressure	71,4
Σ σsoil pressure	**71,4**
σwater pressure	51
Σ σwater pressure	**51**
σeffective grain pressure	20,4
Σ σeffective grain pressure	**20,4**
Heights and thickness	
Startingpoint layer A	-0,9
Height ground water	5,1
Bottom level layer A	-6
Layer thickness	5,1

Soil Layer 2	
Clay , silty	
σsoil pressure	102
Σ σsoil pressure	**173,4**
σwater pressure	60
Σ σwater pressure	**111**
σeffective grain pressure	42
Σ σeffective grain pressure	**62,4**
Heights and thickness	
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	**253,4**
σwater pressure	40
Σ σwater pressure	**151**
σeffective grain pressure	40
Σ σeffective grain pressure	**102,4**
Heights and thickness	
Startingpoint layer A	-12
Height ground water	4
Bottom level layer A	-16
Layer thickness	4

Pressure graph



Soil Layer 4	
Medium Sand	
σsoil pressure	114
Σ σsoil pressure	**367,4**
σwater pressure	60
Σ σwater pressure	**211**
σeffective grain pressure	54
Σ σeffective grain pressure	**156,4**
Heights and thickness	
Startingpoint layer A	-16
Height ground water	6
Bottom level layer A	-22
Layer thickness	6

Soil Layer 5	
Coarse Sand	
σsoil pressure	57
Σ σsoil pressure	**424,4**
σwater pressure	30
Σ σwater pressure	**241**
σeffective grain pressure	27
Σ σeffective grain pressure	**183,4**
Heights and thickness	
Startingpoint layer A	-22
Height ground water	3
Bottom level layer A	-25
Layer thickness	3

Tab 2 - Load new road construction

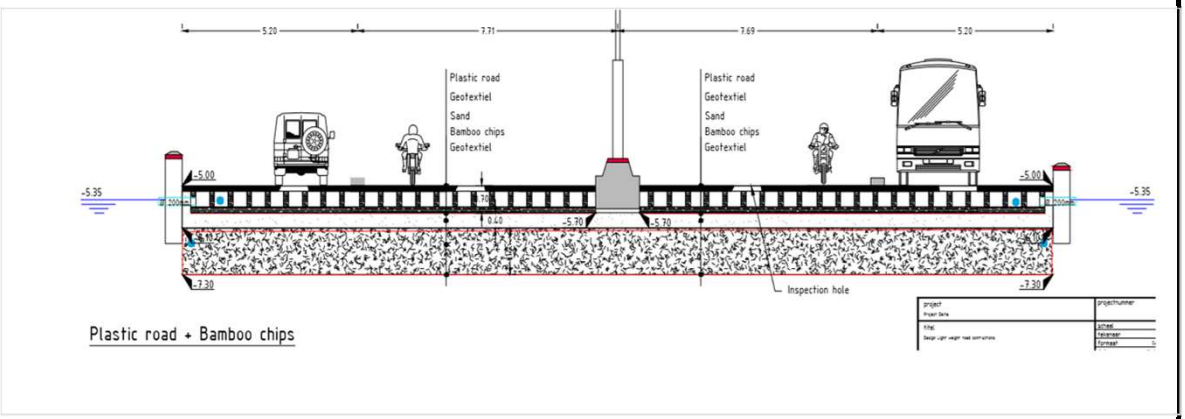
Possible road constructions:	
	○ Solution 1 : Raising with current method ○ Solution 2: Water buffer crates ○ Solution 3: Lava stones ○ Solution 4: Bamboo chips ○ Solution 5: Plastic road ◉ Solution 6: Bamboo chips + plastic

New situation	
Height on top of layer 1	1,4
Excavation height of layer 1	0,9

Chosen solution:	6

Weight solution kg	1820
Force (in KN)	18,2
Thickness solution	2,3

Picture of the solution



Tab - 3 Output soil subsidence

New road construction	
Chosen solution	6
Height of top road related to layer 1	**1,4**
Load (KN/m2)	**18,2**

Time of subsidence calculated (in days): **3650**

Subsidence calculation table

Layer	Layer thickness	Preconsolidation pressure	Σ σeffective grain pressure (KN/m2)	k̆	Cp	Cs	C'p	C's	Subsidence	Σ Subsidence
Clay weak, silty	5,1	0	20	10	50	340	30	270	0,243	0,502
Clay , silty	6,0	0	62	41	59	240	12	110	0,253	0,259
Loose Sand, silty	4,0	0	102	82	300	1E+09	550	1E+09	0,001	0,006
Medium Sand	6,0	0	156	129	600	1E+09	200	1E+09	0,004	0,004
Coarse Sand	3,0	0	183	170	1800	1E+09	600	1E+09	0,001	0,001
								Total subsidence		0,502

Subsidence graph