Tab 1 - Current Ground structure

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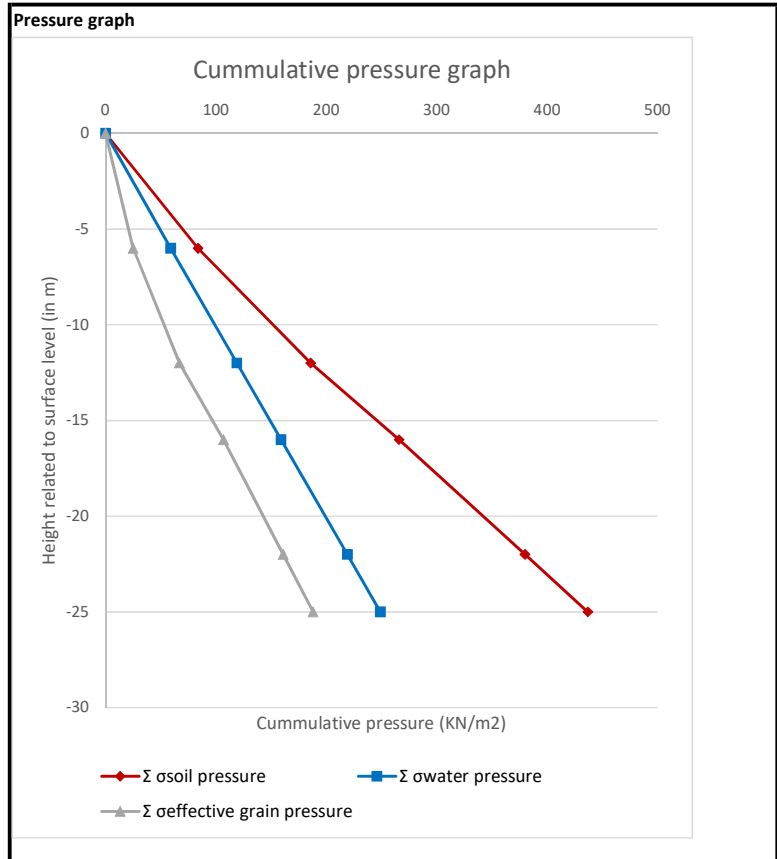σgroundwater pressure (KN/m2) 10

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	-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	83,9
Σ σsoil pressure	**83,9**
σwater pressure	59
Σ σwater pressure	**59**
σeffective grain pressure	24,9
Σ σeffective grain pressure	**24,9**
Heights and thickness	
Startingpoint layer A	0
Height ground water	5,9
Bottom level layer A	-6
Layer thickness	6

Soil Layer 2	
Clay , silty	
σsoil pressure	102
Σ σsoil pressure	**185,9**
σwater pressure	60
Σ σwater pressure	**119**
σeffective grain pressure	42
Σ σeffective grain pressure	**66,9**
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	**265,9**
σwater pressure	40
Σ σwater pressure	**159**
σeffective grain pressure	40
Σ σeffective grain pressure	**106,9**
Heights and thickness	
Startingpoint layer A	-12
Height ground water	4
Bottom level layer A	-16
Layer thickness	4

Pressure graph

Cummulative pressure graph

- Σ σsoil pressure
- Σ σwater pressure
- Σ σeffective grain pressure

(y-axis: Height related to surface level (in m); x-axis: Cummulative pressure (KN/m2))

Soil Layer 4	
Medium Sand	
σsoil pressure	114
Σ σsoil pressure	**379,9**
σwater pressure	60
Σ σwater pressure	**219**
σeffective grain pressure	54
Σ σeffective grain pressure	**160,9**
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	**436,9**
σwater pressure	30
Σ σwater pressure	**249**
σeffective grain pressure	27
Σ σeffective grain pressure	**187,9**
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

Chosen solution:	1

Weight solution kg	2800
Force (in KN)	28
Thickness solution	1,4

Picture of the solution

Current situation road 1
Samerang (Unnisula campus)
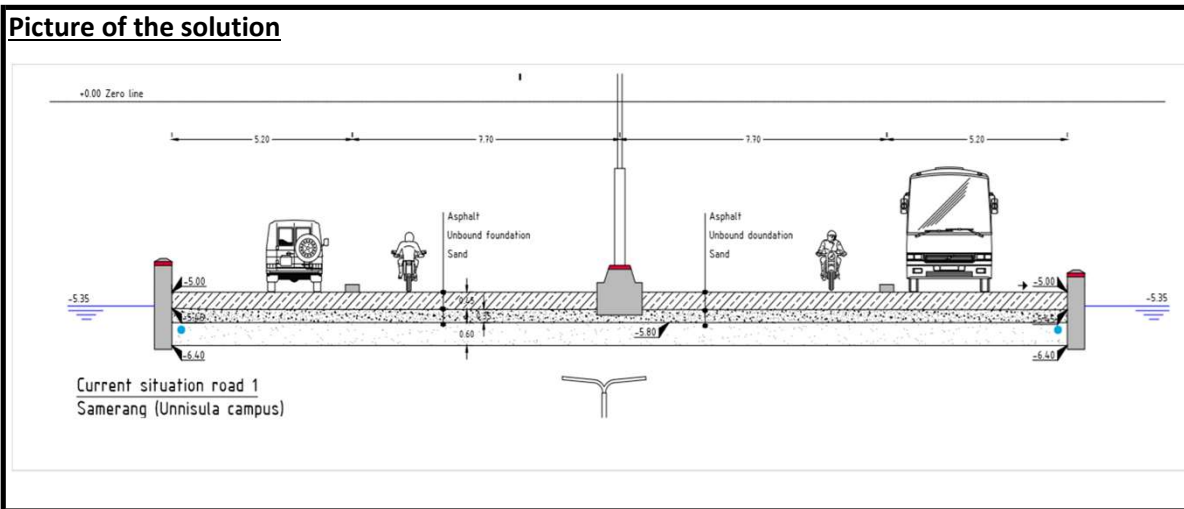
Tab - 3 Output soil subsidence

New road construction	
Chosen solution	1
Height of top road related to layer 1	1,4
Load (KN/m2)	28

Time of subsidence calculated (in days)	3650

Subsidence calculation table

Layer	Layer thickness	Preconsolidation pressure	Σ σeffective grain pressure (KN/m2)	ǩ	Cp	Cs	C'p	C's	Subsidence	Σ Subsidence
Clay weak, silty	6,0	0	25	12	50	340	30	270	0,329	0,668
Clay , silty	6,0	0	67	46	59	240	12	110	0,331	0,339
Loose Sand, silty	4,0	0	107	87	300	1E+09	550	1E+09	0,002	0,008
Medium Sand	6,0	0	161	134	600	1E+09	200	1E+09	0,006	0,006
Coarse Sand	3,0	0	188	174	1800	1E+09	600	1E+09	0,001	0,001
								Total subsidence		0,668

Subsidence graph

Subsidence graph