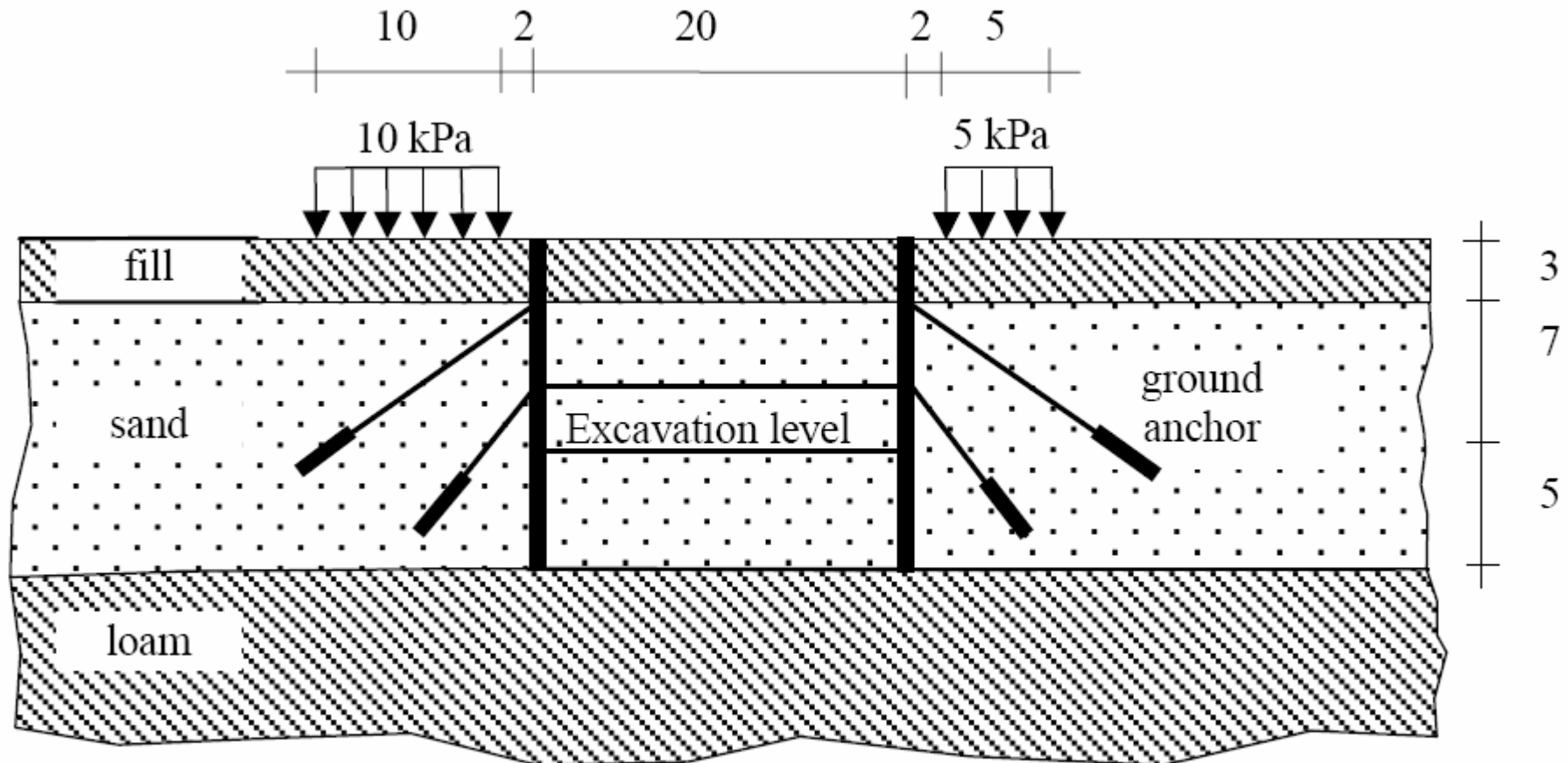


## ● BIỆN PHÁP THI CÔNG HỒ ĐÀO SỬ DỤNG NEO TRONG ĐẤT



Excavation supported by tie back walls

# 2 TẠO MÔ HÌNH



**General settings** [X]

Project **Dimensions**

**Units**

Length: m  
Force: kN  
Time: day

Stress:  $\text{kN/m}^2$   
Weights:  $\text{kN/m}^3$

**Geometry dimensions**

Left: 0.000 m  
Right: 80.000 m  
Bottom: 0.000 m  
Top: 20.000 m

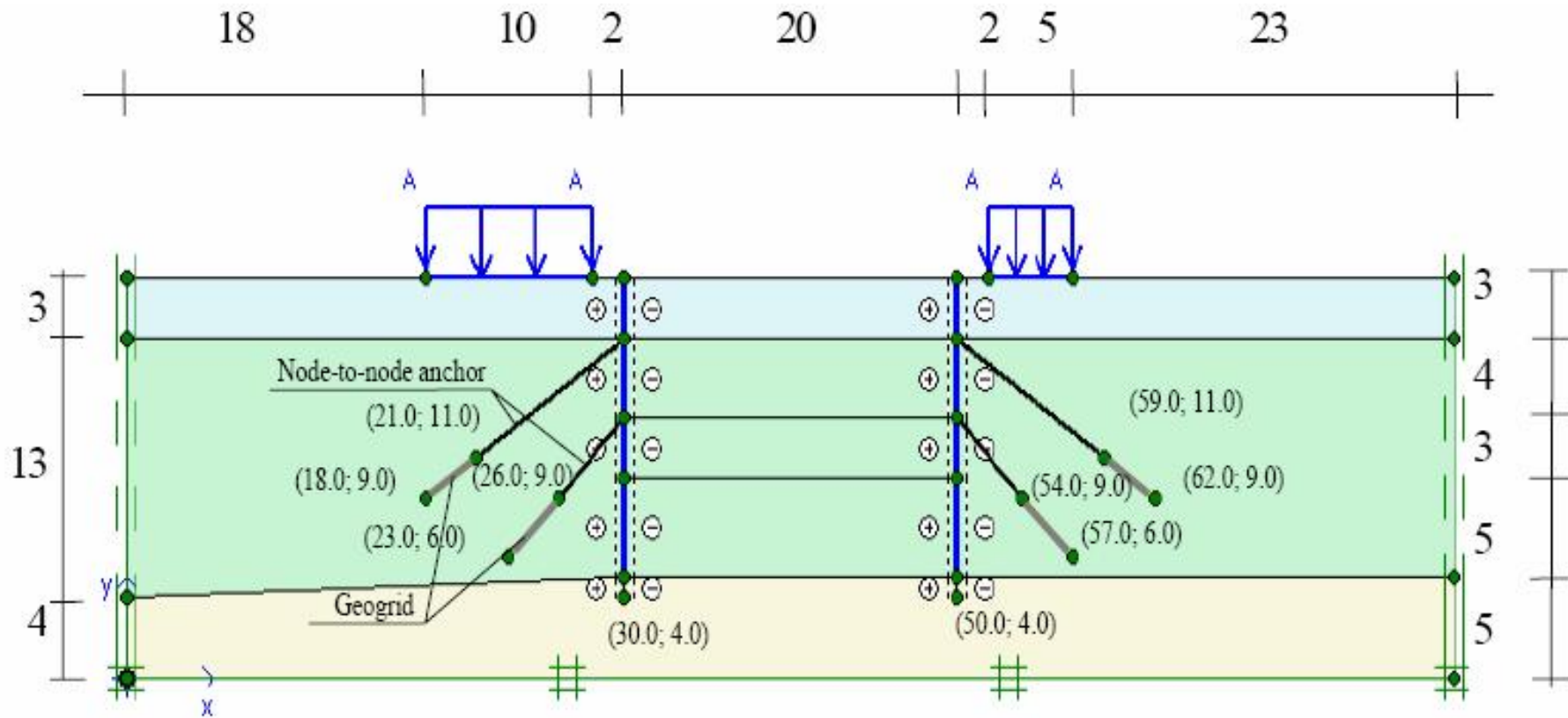
**Grid**

Spacing: 1.000 m  
Number of intervals: 1

Set as default

Next OK Cancel Help

# 2 TẠO MÔ HÌNH



## 2 TẠO MÔ HÌNH



### Soil and interface properties

Parameter	Name	Fill	Sand	Loam	Unit
Material model	<i>Model</i>	MC	MC	MC	-
Type of material behaviour	<i>Type</i>	Drained	Drained	Drained	-
Soil unit weight above p.l.	$\gamma_{unsat}$	16	17	17	kN/m <sup>3</sup>
Soil unit weight below p.l.	$\gamma_{sat}$	20	20	19	kN/m <sup>3</sup>
Horizontal permeability	$k_x$	1.0	0.5	0.1	m/day
Vertical permeability	$k_y$	1.0	0.5	0.1	m/day
Young's modulus	$E_{ref}$	8000	30000	20000	kN/m <sup>2</sup>
Poisson's ratio	$\nu$	0.30	0.30	0.33	-
Cohesion	$c_{ref}$	1.0	1.0	8.0	kN/m <sup>2</sup>
Friction angle	$\phi$	30	34	29	°
Dilatancy angle	$\psi$	0.0	4.0	0.0	°
Interface reduction factor	$R_{inter}$	0.65	0.70	Rigid	-

## 2 TẠO MÔ HÌNH



Properties of the diaphragm wall (plate)

Parameter	Name	Value	Unit
Type of behaviour	<i>Material type</i>	Elastic	-
Normal stiffness	<i>EA</i>	$12 \cdot 10^6$	kN/m
Flexural rigidity	<i>EI</i>	$0.12 \cdot 10^6$	$\text{kNm}^2/\text{m}$
Equivalent thickness	<i>d</i>	0.346	m
Weight	<i>w</i>	8.3	kN/m/m
Poisson's ratio	<i>v</i>	0.15	-

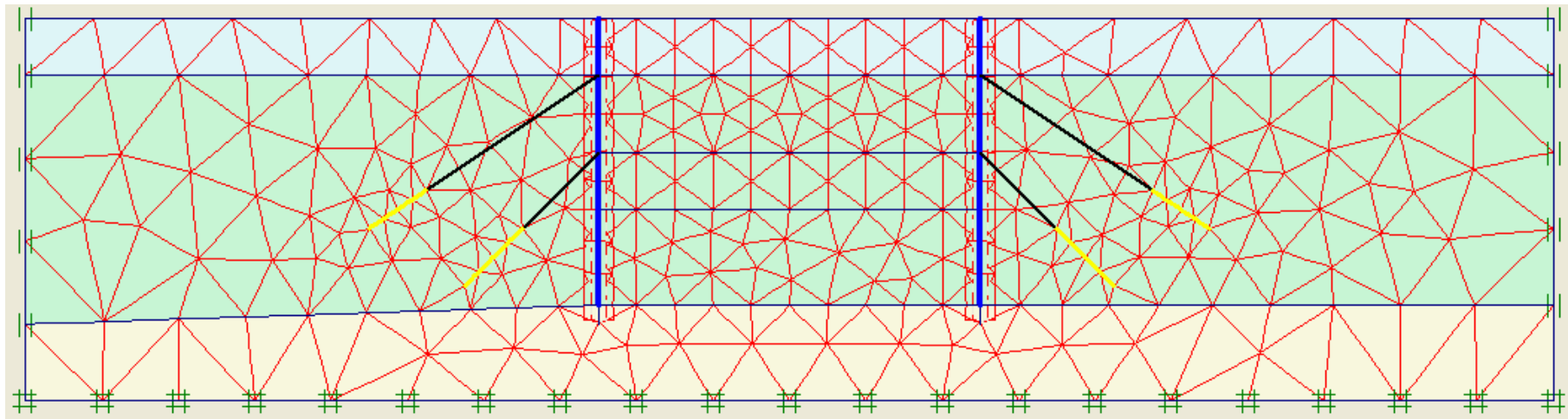
Properties of the anchor rod (node-to-node anchor)

Parameter	Name	Value	Unit
Type of behaviour	<i>Material type</i>	Elastic	-
Normal stiffness	<i>EA</i>	$2 \cdot 10^5$	kN
Spacing out of plane	<i>L<sub>s</sub></i>	2.5	m
Maximum force	<i>F<sub>max,comp</sub></i>	$1 \cdot 10^{15}$	kN
	<i>F<sub>max,tens</sub></i>	$1 \cdot 10^{15}$	kN

Property of the grout body (geogrid)

Parameter	Name	Value	Unit
Normal stiffness	<i>EA</i>	$1 \cdot 10^5$	kN/m

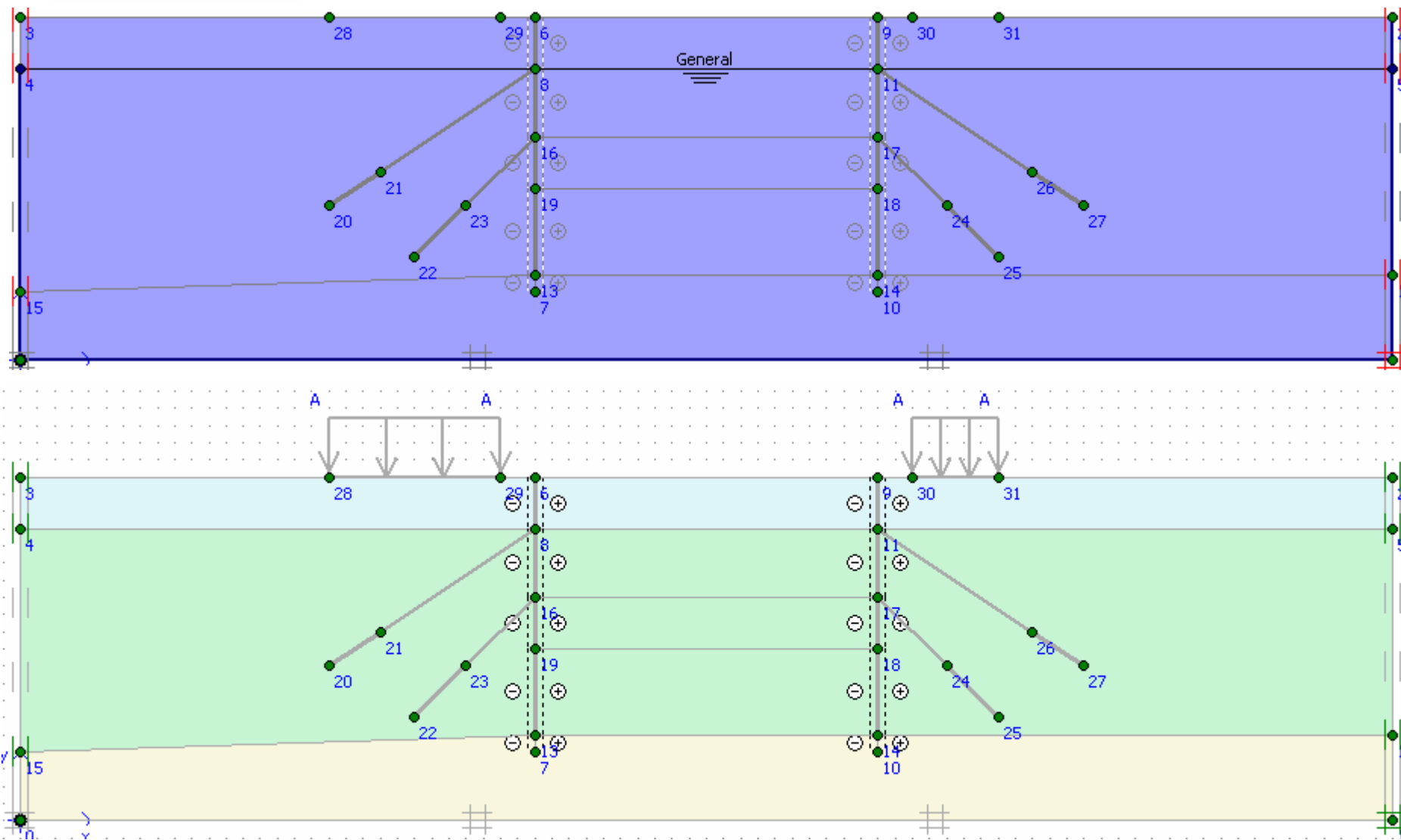
# 2 TẠO MÔ HÌNH



# 3 ĐIỀU KIỆN BAN ĐẦU



➔ Initial conditions



# 4 TÍNH TOÁN

Plaxis 7.2 Calculations - Lesson 4. plx

File Edit View Calculate Help

Input Output Curves [Folder] [Save] [Print] [Grid] Calculate...

General Parameters **Multipliers**

Control parameters  
Additional Steps: 100  
 Reset displacements to zero  
 Ignore undrained behaviour  
 Delete intermediate steps

Iterative procedure  
 Standard setting  
 Manual setting  
Define...

Loading input  
 Total multipliers  
 Staged construction Advanced...  
Time interval: 0.0000 day  
Estimated end time: 0.0000 day Define...

Next Insert Delete...

Identification	Phase no.	Start from	Calculation	Loading input	First	Last	Water
Initial phase	0	0	N/A	N/A	0	0	0
→ <Phase 1>	1	0	Plastic	Staged construction	1	5	0
→ <Phase 2>	2	1	Plastic	Staged construction	6	12	0
→ <Phase 3>	3	2	Plastic	Staged construction	13	17	3
→ <Phase 4>	4	3	Plastic	Staged construction	18	20	3
→ <Phase 5>	5	4	Plastic	Staged construction	21	35	5

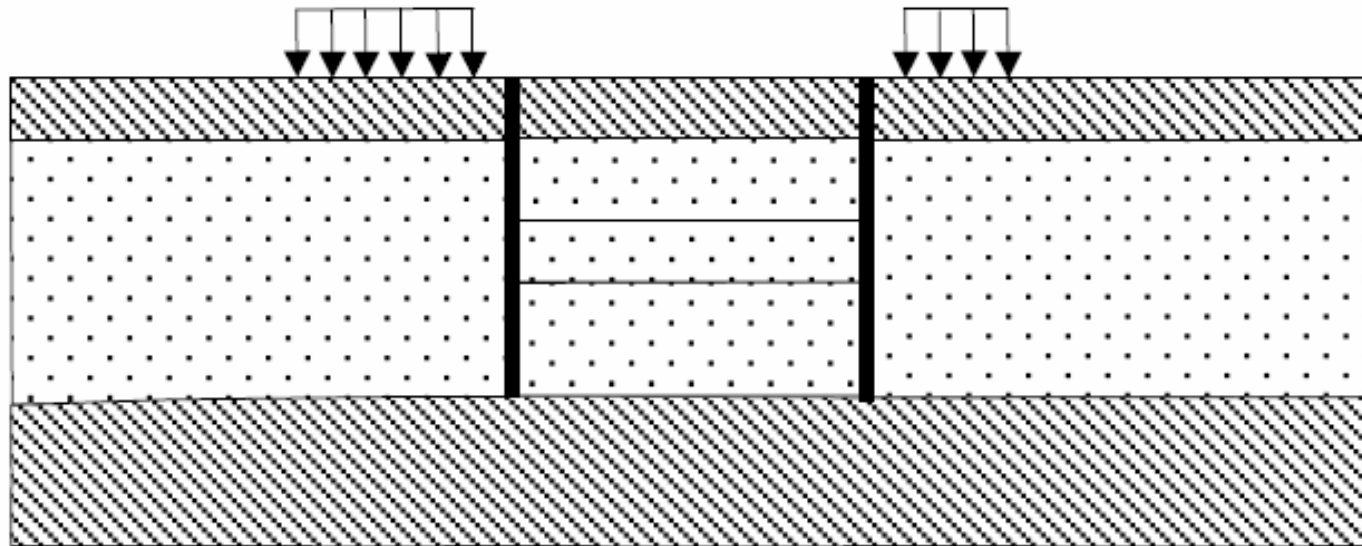


# 4 TÍNH TỐÁN



## *Phase 1:*

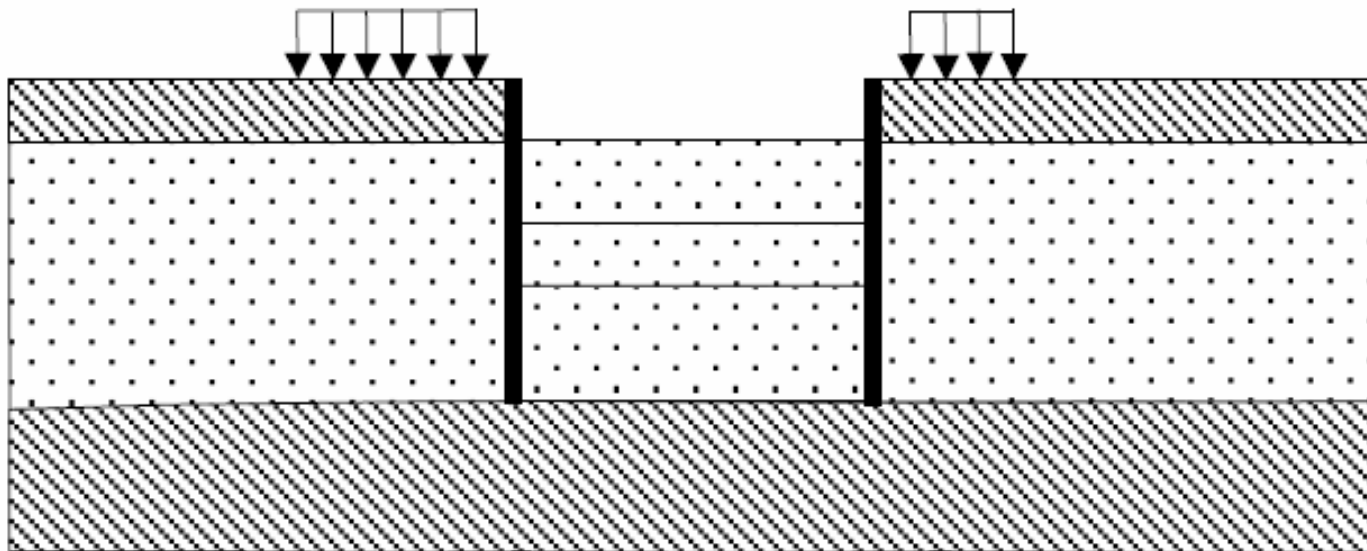
- Activate the walls.
- Activate the surface loads and assign a load value. Enter a *Y-value* =  $-10$  kPa for the load on the left side and  $-5$  kPa for the load on the right side of the excavation.





## *Phase 2:*

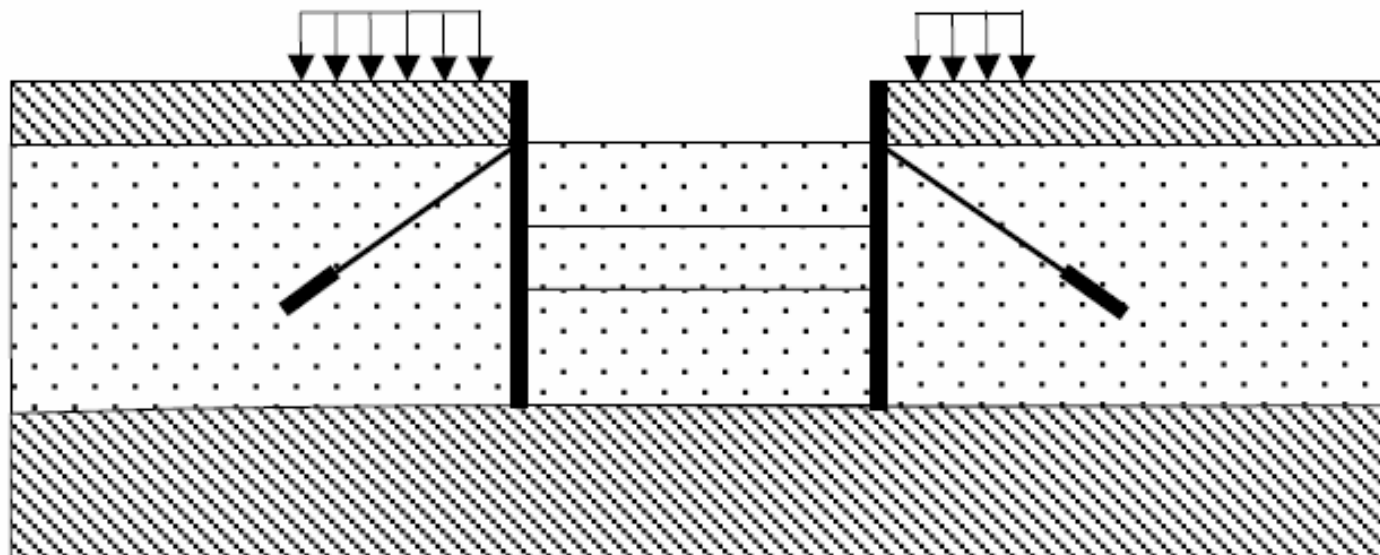
- De-activate the upper cluster of the excavation.





## *Phase 3:*

- Activate the upper geogrids
- Double click the upper node-to-node anchors. A node-to-node anchor properties window appears with the anchor pre-stress options. Select the *Adjust pre-stress force* box and enter a pre-stress force of 120 kN/m. Press <OK> to close the window.

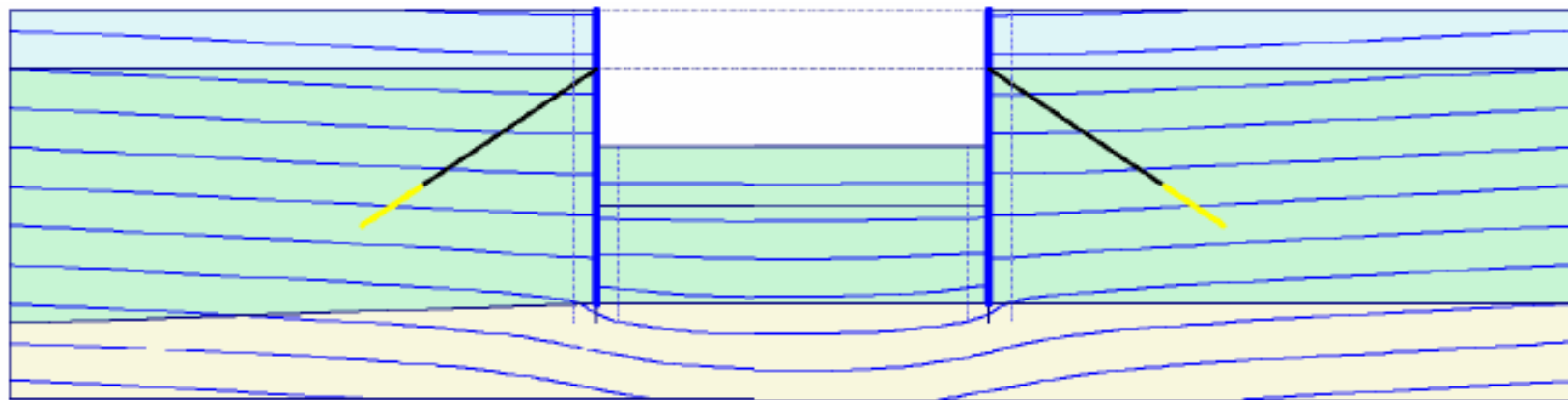
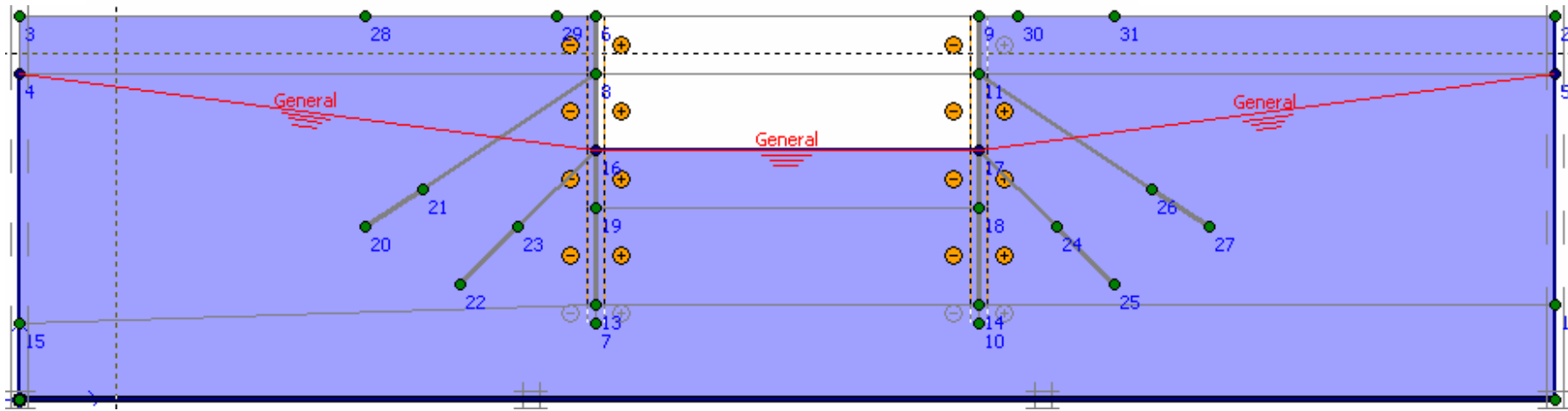


# 4 TÍNH TOÁN



## Phase 4:

- Deactivate the second cluster of the excavation.



Active pore pressure contours resulting from groundwater calculation

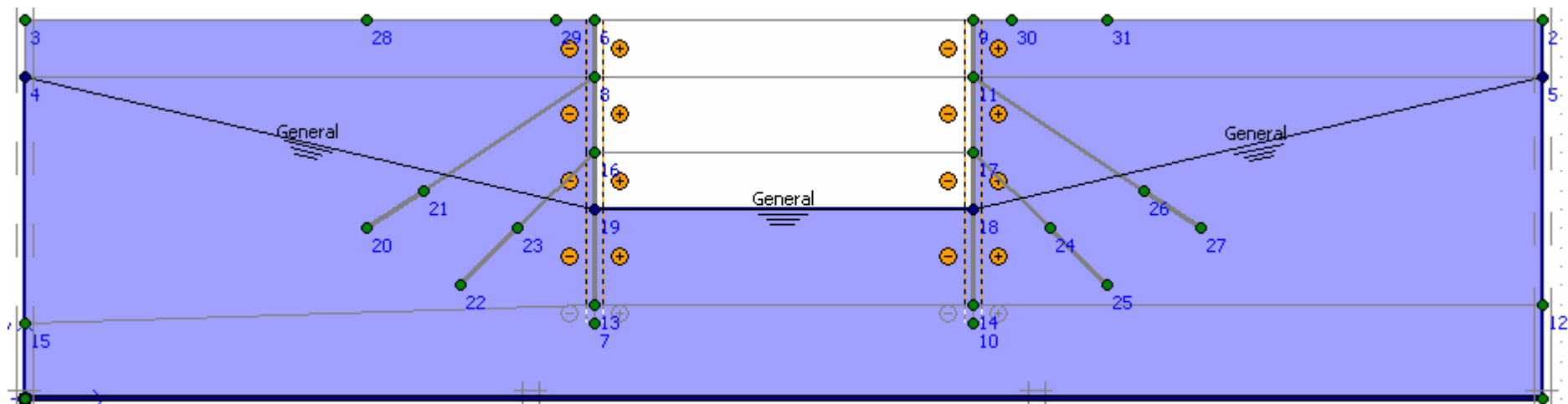


# 4 TÍNH TOÁN



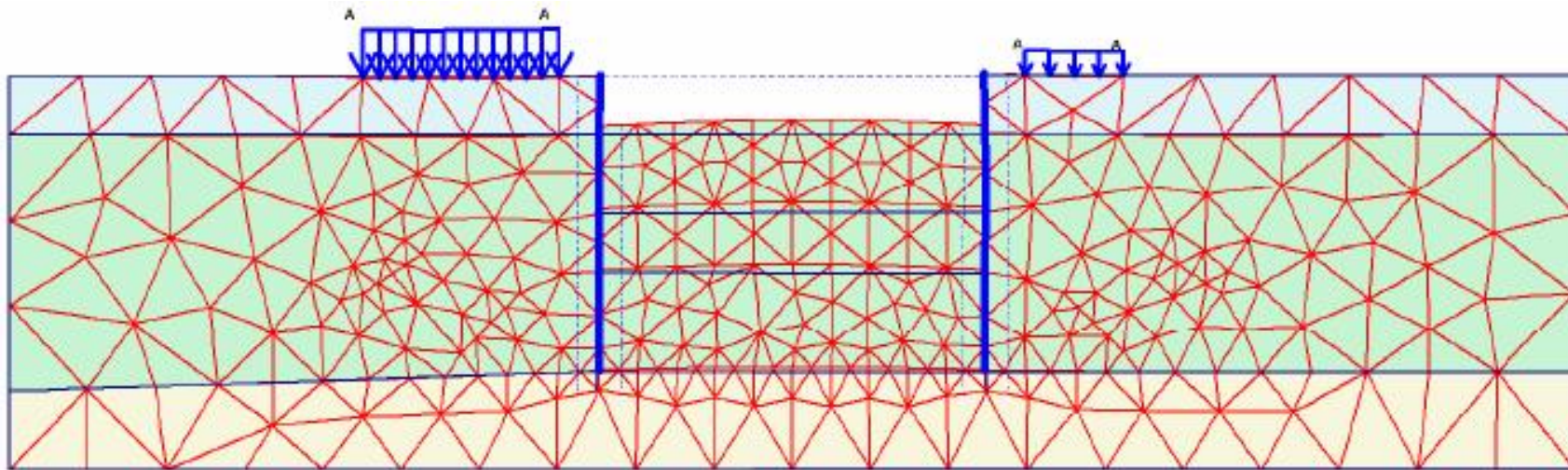
## Phase 6:

- Deactivate the third cluster of the excavation.
- Click on the 'switch' to go to the water pressures mode.
- The boundary conditions were already defined in phase 3. They are still valid for the current groundwater calculation. However it is now necessary to lower the water level within the excavation to the new construction depth. In order to do this, draw a new *General phreatic level* from (0.0; 17.0) through points (30.0; 10.0), (50.0; 10.0) and (80.0; 17.0). Click on the *Generate water pressures* button and select *Groundwater flow* from the *Generate by* box and click <OK> to start the groundwater flow calculation.

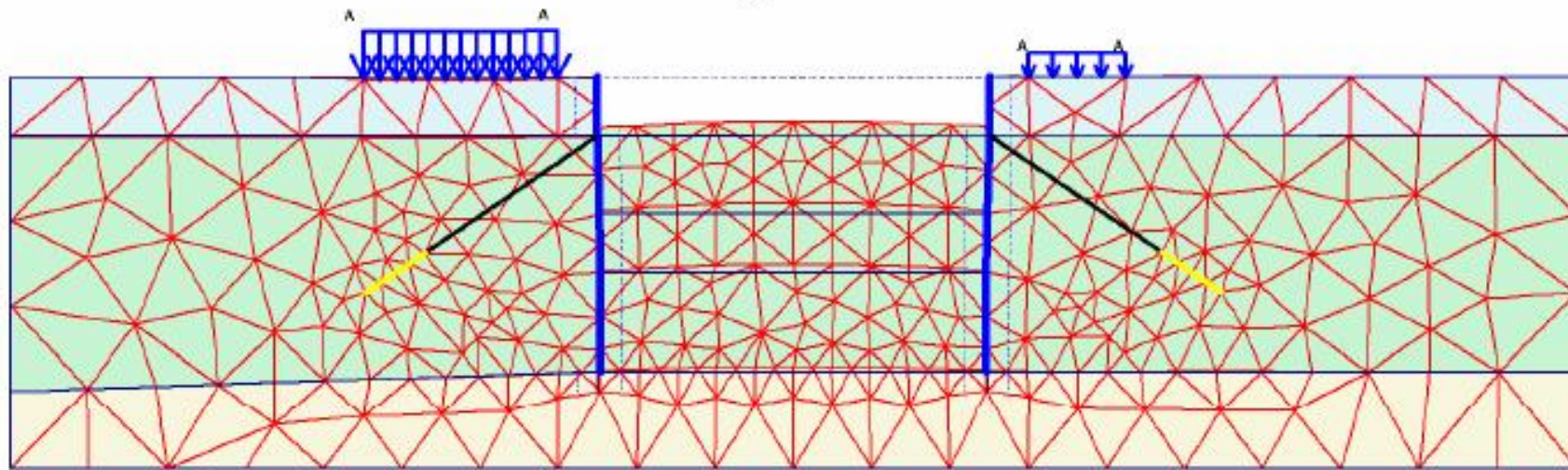


# 5

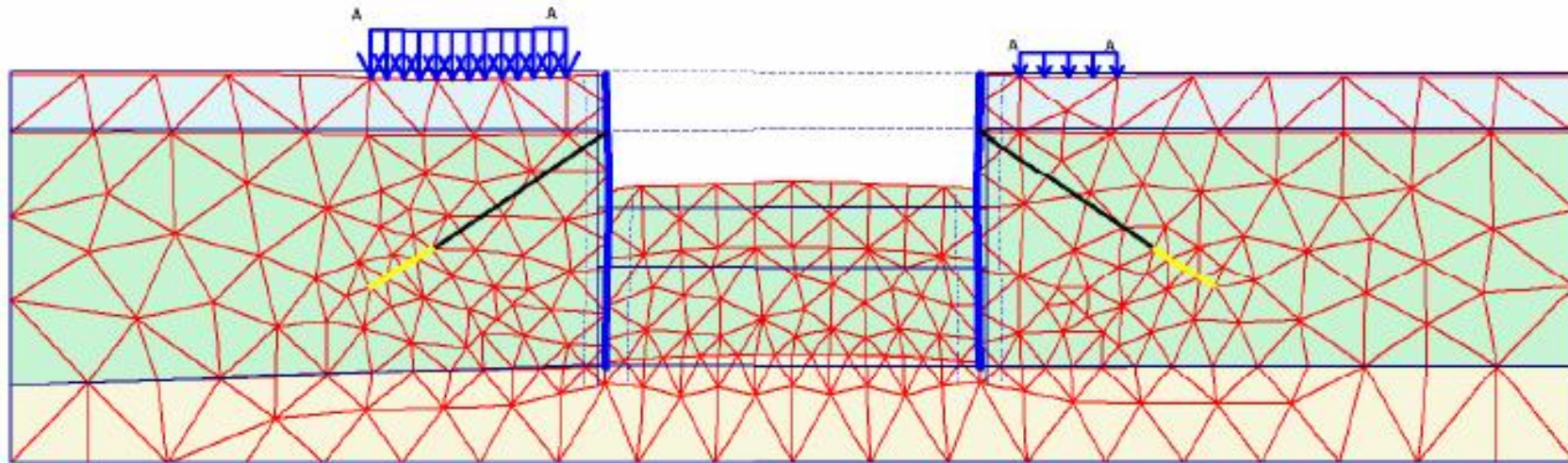
# KẾT QUẢ



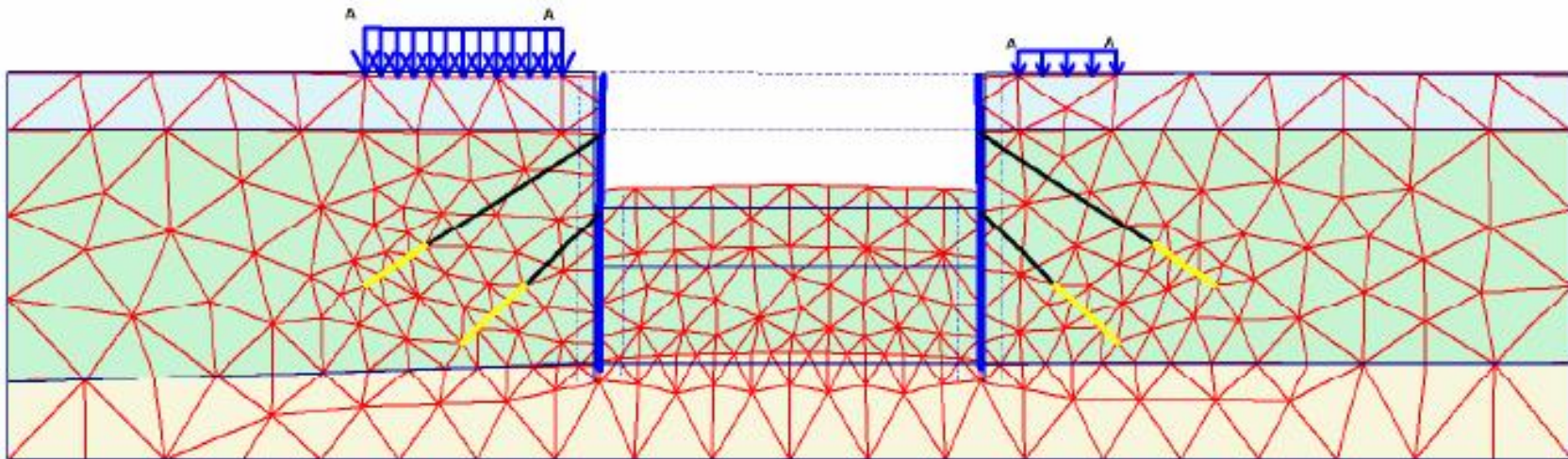
phase 2



phase 3

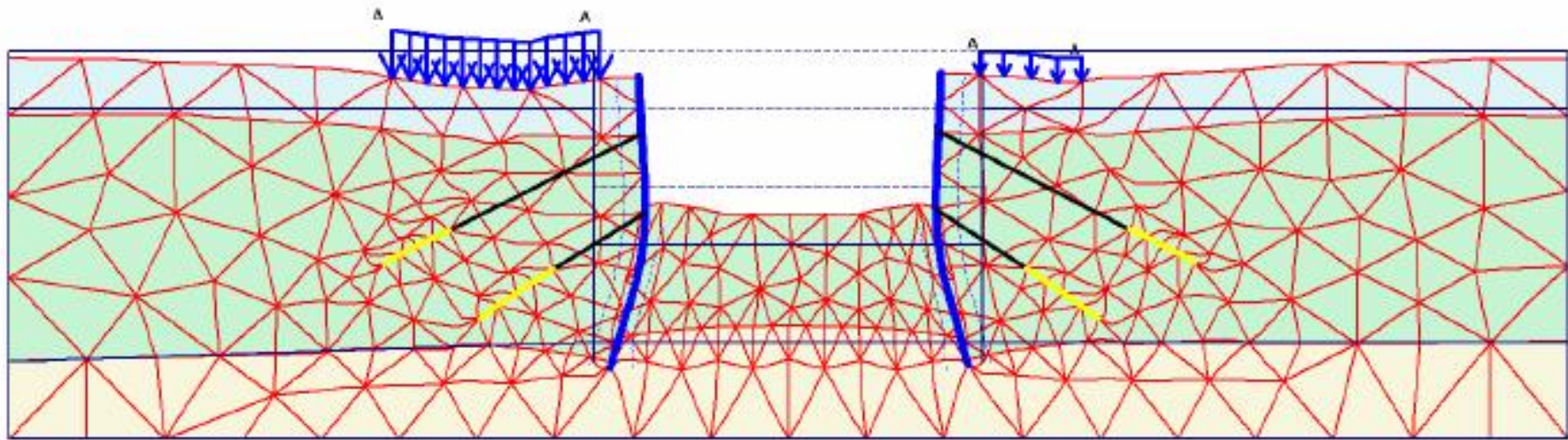


phase 4

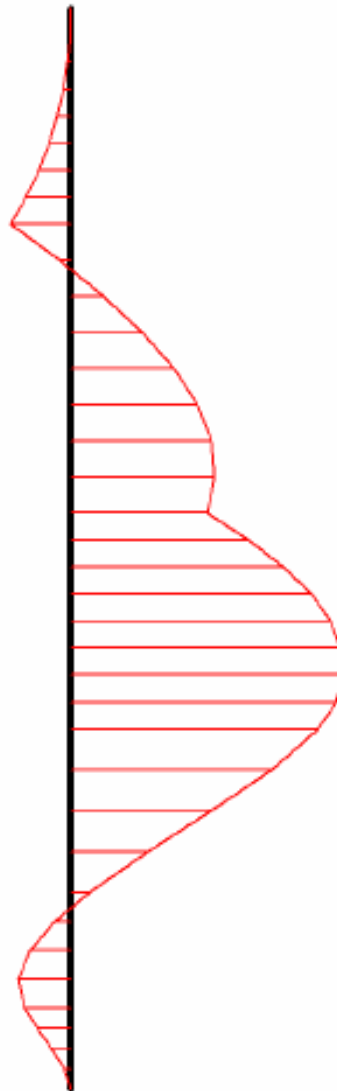


phase 5





final stage



Bending moments in the left diaphragm wall in the final stage