

Analysis using finite element method

Topology

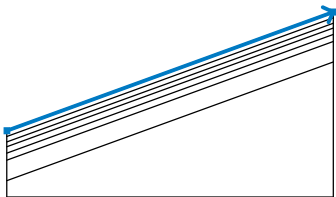
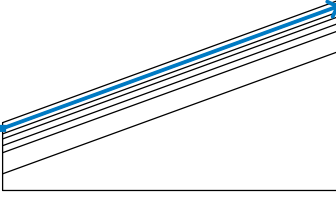
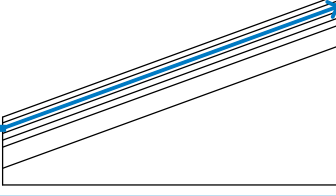
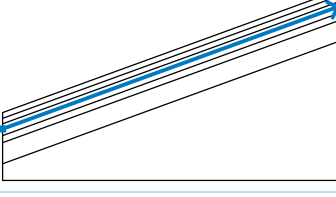
Project

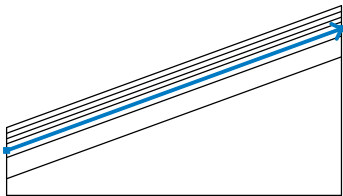
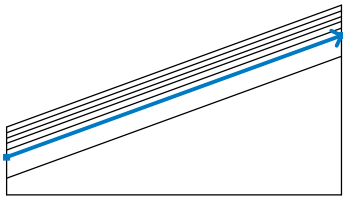
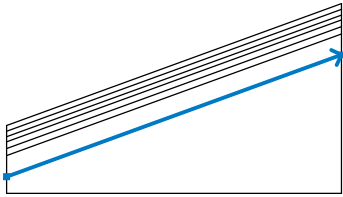
Date : 2014/9/22

Global settings

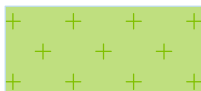
Task geometry :	Plane strain
Analysis type :	Stress
Tunnels :	yes
Allow to input water as the result of steady state water flow analysis :	no
Allow the dynamic analysis of earthquake :	no
Concrete structures :	GB 50010-2010
Calculation of geostatic stress (1st stage) :	Geostatic stress
Advanced mesh generating parameters :	no
Advanced soil parameters :	no
Advanced soil models :	no
Temperature load :	no
Detailed results :	yes

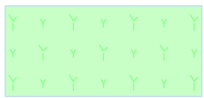
Interface

No.	Interface location	Coordinates of interface points [m]					
		x	z	x	z	x	z
1		-100.00	-21.39	100.81	51.70		
2		-100.00	-24.91	100.81	48.18		
3		-100.00	-28.23	100.81	44.86		
4		-100.00	-31.26	100.81	41.83		

No.	Interface location	Coordinates of interface points [m]					
		x	z	x	z	x	z
5		-100.00	-35.23	100.81	37.86		
6		-100.00	-39.61	100.81	33.48		
7		-100.00	-52.19	100.81	20.90		

Soil parameters - basic data

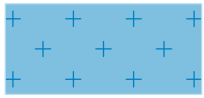
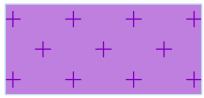
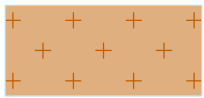
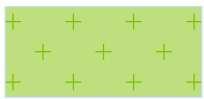
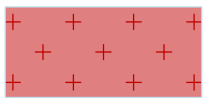
No.	Name	Sample	γ [kN/m ³]	E [MPa]	ν [-]
1	□ □ □ □ □ □ □		18.50	30.00	0.36
2	□ □ □ □ □ □ □		18.50	30.00	0.34
3	□ □ □ □ □ □		19.00	300.00	0.32
4	□ □ □ □ □ □ □ □ □		20.00	400.00	0.30
5	□ □ □ □ □ □ □ □ □		20.00	500.00	0.30
6	□ □ □ □ □ □ □		22.00	1000.00	0.30
7	□ □ □ □ □ □ □		23.00	3000.00	0.25
8	□ □ □ □ □ □		23.00	500.00	0.28

No.	Name	Sample	γ [kN/m ³]	E [MPa]	ν [-]
9	☐ ☐ ☐ ☐		23.00	500.00	0.28

Soil parameters - data according to model

No.	Material model	c_{ef} [kPa]	ϕ_{ef} [°]	ψ [°]
1	Mohr - Coulomb	20.00	15.00	0.00
2	Mohr - Coulomb	22.00	17.00	0.00
3	Mohr - Coulomb	20.00	30.00	0.00
4	Mohr - Coulomb	40.00	35.00	0.00
5	Mohr - Coulomb	40.00	35.00	0.00
6	Mohr - Coulomb	70.00	38.00	0.00
7	Mohr - Coulomb	150.00	45.00	0.00
8	Mohr - Coulomb	60.00	30.00	0.00
9	Mohr - Coulomb	100.00	30.00	0.00

Soil parameters - uplift

No.	Name	Sample	γ_{sat} [kN/m ³]	γ_s [kN/m ³]	n [-]
1	☐ ☐ ☐ ☐ ☐ ☐		18.50		
2	☐ ☐ ☐ ☐ ☐ ☐		18.50		
3	☐ ☐ ☐ ☐ ☐		19.00		
4	☐ ☐ ☐ ☐ ☐ ☐ ☐		20.00		
5	☐ ☐ ☐ ☐ ☐ ☐ ☐		20.00		
6	☐ ☐ ☐ ☐ ☐		22.00		
7	☐ ☐ ☐ ☐ ☐		23.00		
8	☐ ☐ ☐ ☐		23.00		

Unit weight :	γ	=	20.00 kN/m ³
Poisson's ratio :	ν	=	0.30
Elastic modulus :	E	=	500.00 MPa
Modulus unloading / reloading :	E_{ur}	=	500.00 MPa
Angle of internal friction :	φ_{ef}	=	35.00 °
Cohesion of soil :	c_{ef}	=	40.00 kPa
Dilation angle :	ψ	=	0.00 °
Saturated unit weight :	γ_{sat}	=	20.00 kN/m ³

□ □ □ □ □ □

Material model :	Mohr - Coulomb
Unit weight :	γ = 22.00 kN/m ³
Poisson's ratio :	ν = 0.30
Elastic modulus :	E = 1000.00 MPa
Modulus unloading / reloading :	E_{ur} = 1000.00 MPa
Angle of internal friction :	φ_{ef} = 38.00 °
Cohesion of soil :	c_{ef} = 70.00 kPa
Dilation angle :	ψ = 0.00 °
Saturated unit weight :	γ_{sat} = 22.00 kN/m ³

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Material model :	Mohr - Coulomb
Unit weight :	γ = 23.00 kN/m ³
Poisson's ratio :	ν = 0.25
Elastic modulus :	E = 3000.00 MPa
Modulus unloading / reloading :	E_{ur} = 3000.00 MPa
Angle of internal friction :	φ_{ef} = 45.00 °
Cohesion of soil :	c_{ef} = 150.00 kPa
Dilation angle :	ψ = 0.00 °
Saturated unit weight :	γ_{sat} = 23.00 kN/m ³

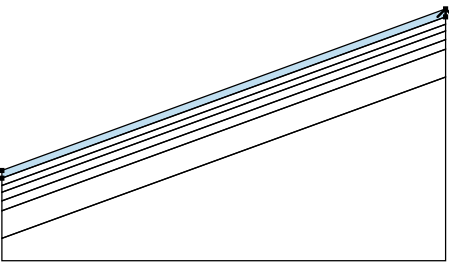
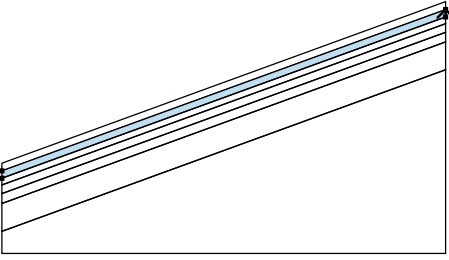
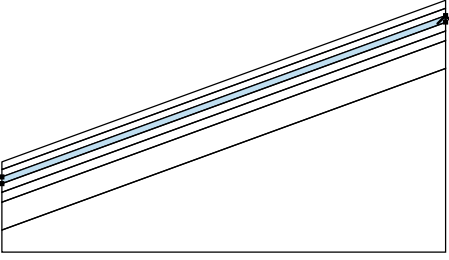
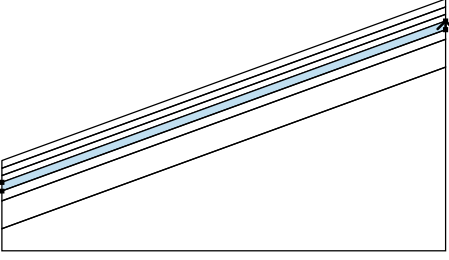
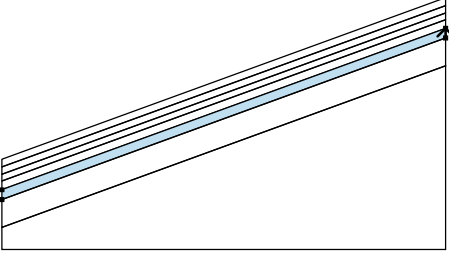
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Material model :	Mohr - Coulomb
Unit weight :	γ = 23.00 kN/m ³
Poisson's ratio :	ν = 0.28
Elastic modulus :	E = 500.00 MPa
Modulus unloading / reloading :	E_{ur} = 500.00 MPa
Angle of internal friction :	φ_{ef} = 30.00 °
Cohesion of soil :	c_{ef} = 60.00 kPa
Dilation angle :	ψ = 0.00 °
Saturated unit weight :	γ_{sat} = 23.00 kN/m ³

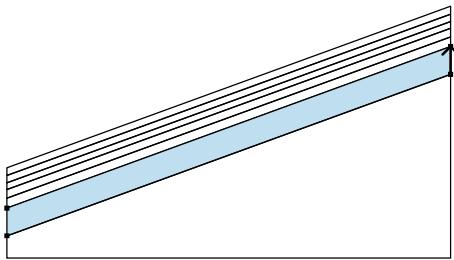
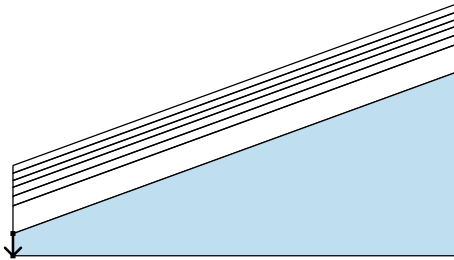
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Material model :	Mohr - Coulomb
Unit weight :	γ = 23.00 kN/m ³
Poisson's ratio :	ν = 0.28
Elastic modulus :	E = 500.00 MPa
Modulus unloading / reloading :	E_{ur} = 500.00 MPa
Angle of internal friction :	φ_{ef} = 30.00 °
Cohesion of soil :	c_{ef} = 100.00 kPa
Dilation angle :	ψ = 0.00 °
Saturated unit weight :	γ_{sat} = 23.00 kN/m ³

Assigning and surfaces

No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
1		100.81	48.18	100.81	51.70	
		-100.00	-21.39	-100.00	-24.91	
2		100.81	44.86	100.81	48.18	
		-100.00	-24.91	-100.00	-28.23	
3		100.81	41.83	100.81	44.86	
		-100.00	-28.23	-100.00	-31.26	
4		100.81	37.86	100.81	41.83	
		-100.00	-31.26	-100.00	-35.23	
5		100.81	33.48	100.81	37.86	
		-100.00	-35.23	-100.00	-39.61	

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No.	Surface position	Coordinates of surface points [m]				Assigned soil
		x	z	x	z	
6		100.81	20.90	100.81	33.48	□ □ □ □ □ + + + + + + + + + + + + + + +
		-100.00	-39.61	-100.00	-52.19	
7		-100.00	-52.19	-100.00	-62.19	□ □ □ □ □ + + + + + + + + + + + + + + +
		100.81	-62.19	100.81	20.90	

Free points

No.	Location		No.	Location		No.	Location		No.	Location	
	x [m]	z [m]		x [m]	z [m]		x [m]	z [m]		x [m]	z [m]
1	8.35	-4.83	2	10.07	-2.67	3	-10.07	-2.67	4	-8.35	-4.83
5	4.82	6.28	6	4.24	-5.96	7	-9.76	0.48	8	-3.89	0.08
9	3.89	0.07	10	9.76	0.47	11	-4.24	-5.96	12	-4.82	6.28
13	15.02	-3.37	14	-15.04	-3.25	15	-7.16	10.70	16	-14.49	2.08
17	7.16	10.70	18	14.49	2.08	19	11.06	-2.81	20	10.70	0.80
21	5.29	7.16	22	-5.29	7.16	23	-10.70	0.80	24	-11.06	-2.81
25	82.57	1.06	26	82.93	-26.49						

Free lines

No.	Type of line	Mode of input	Lines topology
1	arc	center	Origin (8.35; -4.83) [m] , end (10.07; -2.67) [m], center (7.40; -2.30) [m] , orientation positive
2	arc	center	Origin (-10.07; -2.67) [m] , end (-8.35; -4.83) [m], center (-7.40; -2.30) [m] , orientation positive
3	arc	center	Origin (-9.76; 0.48) [m] , end (-3.89; 0.08) [m], center (0.02; 100.00) [m] , orientation positive
4	arc	center	Origin (-3.89; 0.08) [m] , end (3.89; 0.07) [m], center (0.02; 100.00) [m] , orientation positive
5	arc	center	Origin (3.89; 0.07) [m] , end (9.76; 0.47) [m], center (0.02; 100.00) [m] , orientation positive
6	segment		Origin (15.02; -3.37) [m] , end (10.07; -2.67) [m]
7	arc	center	Origin (9.76; 0.47) [m] , end (4.82; 6.28) [m], center (0.00; -2.82) [m] , orientation positive
8	arc	center	Origin (4.82; 6.28) [m] , end (-4.82; 6.28) [m], center (0.00; -2.82) [m] , orientation positive
9	arc	center	Origin (-4.82; 6.28) [m] , end (-9.76; 0.48) [m], center (0.00; -2.82) [m] , orientation positive

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No.	Type of line	Mode of input	Lines topology
10	arc	center	Origin (10.07; -2.67) [m] , end (9.76; 0.47) [m], center (3.43; -1.75) [m] , orientation positive
11	arc	center	Origin (-9.76; 0.48) [m] , end (-10.07; -2.67) [m], center (-3.43; -1.75) [m] , orientation positive
12	arc	radius	Origin (-7.16; 10.70) [m] , end (-14.49; 2.08) [m], radius 15.30 [m] , orientation positive , angle acute
13	arc	radius	Origin (7.16; 10.70) [m] , end (-7.16; 10.70) [m], radius 15.30 [m] , orientation positive , angle acute
14	arc	radius	Origin (14.49; 2.08) [m] , end (7.16; 10.70) [m], radius 15.30 [m] , orientation positive , angle acute
15	arc	radius	Origin (-14.49; 2.08) [m] , end (-15.04; -3.25) [m], radius 11.70 [m] , orientation positive , angle acute
16	arc	radius	Origin (15.02; -3.37) [m] , end (14.49; 2.08) [m], radius 11.70 [m] , orientation positive , angle acute
17	arc	center	Origin (-4.24; -5.96) [m] , end (-3.89; 0.08) [m], center (-33.86; -1.24) [m] , orientation positive
18	arc	center	Origin (-3.89; 0.08) [m] , end (-4.82; 6.28) [m], center (-33.86; -1.24) [m] , orientation positive
19	arc	center	Origin (4.82; 6.28) [m] , end (3.89; 0.07) [m], center (33.86; -1.24) [m] , orientation positive
20	arc	center	Origin (3.89; 0.07) [m] , end (4.24; -5.96) [m], center (33.86; -1.24) [m] , orientation positive
21	arc	center	Origin (-8.35; -4.83) [m] , end (-4.24; -5.96) [m], center (0.00; 17.35) [m] , orientation positive
22	arc	center	Origin (-4.24; -5.96) [m] , end (4.24; -5.96) [m], center (0.00; 17.35) [m] , orientation positive
23	arc	center	Origin (4.24; -5.96) [m] , end (8.35; -4.83) [m], center (0.00; 17.35) [m] , orientation positive
24	segment		Origin (11.06; -2.81) [m] , end (10.07; -2.67) [m]
25	arc	radius	Origin (10.70; 0.80) [m] , end (5.29; 7.16) [m], radius 11.30 [m] , orientation positive , angle acute
26	segment		Origin (10.70; 0.80) [m] , end (9.76; 0.47) [m]
27	segment		Origin (5.29; 7.16) [m] , end (4.82; 6.28) [m]
28	arc	radius	Origin (5.29; 7.16) [m] , end (-5.29; 7.16) [m], radius 11.30 [m] , orientation positive , angle acute
29	segment		Origin (-5.29; 7.16) [m] , end (-4.82; 6.28) [m]
30	arc	radius	Origin (-5.29; 7.16) [m] , end (-10.70; 0.80) [m], radius 11.30 [m] , orientation positive , angle acute
31	segment		Origin (-10.70; 0.80) [m] , end (-9.76; 0.48) [m]
32	segment		Origin (-11.06; -2.81) [m] , end (-10.07; -2.67) [m]
33	segment		Origin (14.49; 2.08) [m] , end (10.70; 0.80) [m]
34	arc	radius	Origin (11.06; -2.81) [m] , end (10.70; 0.80) [m], radius 7.71 [m] , orientation positive , angle acute
35	segment		Origin (7.16; 10.70) [m] , end (5.29; 7.16) [m]
36	segment		Origin (-7.16; 10.70) [m] , end (-5.29; 7.16) [m]
37	segment		Origin (-10.70; 0.80) [m] , end (-14.49; 2.08) [m]
38	segment		Origin (-15.04; -3.25) [m] , end (-11.06; -2.81) [m]
39	arc	radius	Origin (-11.06; -2.81) [m] , end (-10.70; 0.80) [m], radius 7.71 [m] , orientation negative , angle acute
40	segment		Origin (82.57; 1.06) [m] , end (82.93; -26.49) [m]

Points refinement

No.	Location	Radius r [m]	Length l [m]
1	Free point No. 1	30.00	0.50
2	Free point No. 4	30.00	0.50
3	Free point No. 21	3.00	0.10
4	Free point No. 20	3.00	0.10
5	Free point No. 24	3.00	0.10
6	Free point No. 18	3.00	0.10
7	Free point No. 12	3.00	0.10

Lines refinement

No.	Location	Radius r [m]	Length l [m]
1	Free line No. 40	20.00	4.00
2	Edge bottom	20.00	4.00

Mesh generation

Mesh generation parameters

Element edge length : 3.00 [m]
 Mesh smoothing : yes
 Generate multinode elements : yes

Mesh generation result

Finite element mesh was successfully generated.

Number of nodes 12030

Number of elements 7588 (region 4076, beam 878, interface 2634)

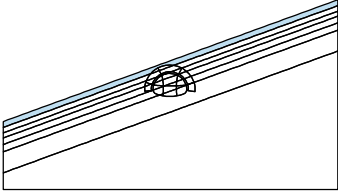
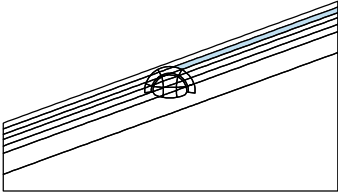
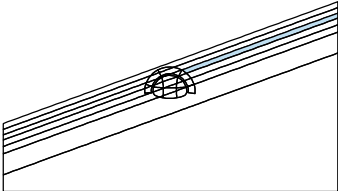
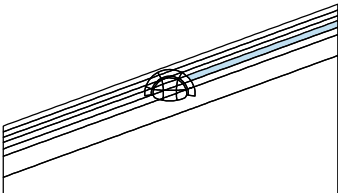
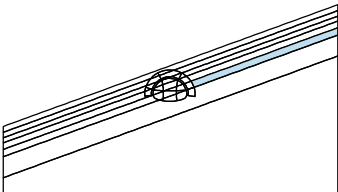
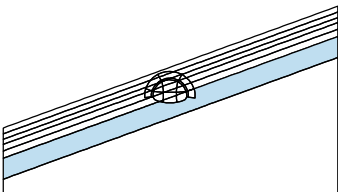
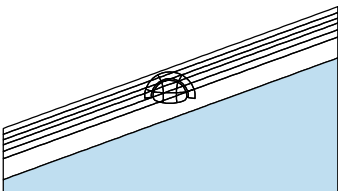
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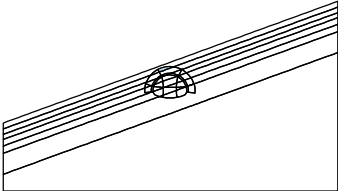
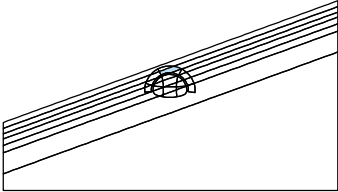
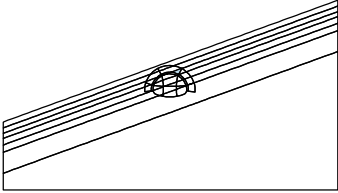
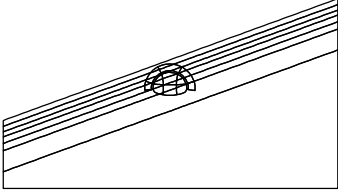
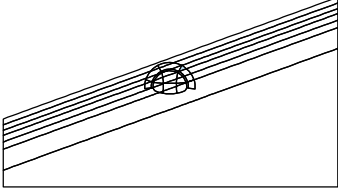
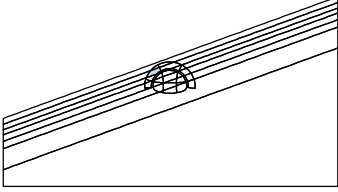
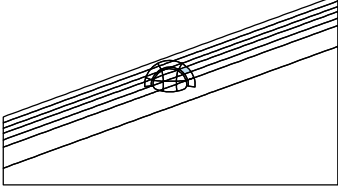
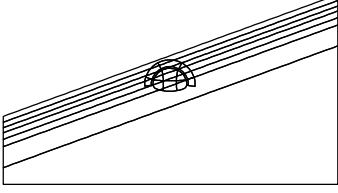
- [W085] Mesh points (-10.07; -2.67) and (-10.09; -2.51) are found too close to each other.
 [W085] Mesh points (9.76; 0.47) and (9.80; 0.35) are found too close to each other.
 [W085] Mesh points (-4.82; 6.28) and (-4.88; 6.39) are found too close to each other.
 [W085] Mesh points (7.16; 10.70) and (7.08; 10.74) are found too close to each other.
 [W085] Mesh points (14.49; 2.08) and (14.50; 2.06) are found too close to each other.
 [W085] Mesh points (10.70; 0.80) and (10.74; 0.70) are found too close to each other.
 [W085] Mesh points (5.29; 7.16) and (5.40; 7.10) are found too close to each other.
 [W085] Mesh points (5.29; 7.16) and (5.23; 7.04) are found too close to each other.
 [W085] Mesh points (-11.06; -2.81) and (-10.85; -2.78) are found too close to each other.
 [W085] Mesh points (5.40; 7.10) and (5.23; 7.04) are found too close to each other.
 [W086] Mesh point (7.16; 10.70) is found too close to line LI{(100.81; 44.86) .. (7.08; 10.74)}.
 [W086] Mesh point (14.49; 2.08) is found too close to line LI{(100.81; 33.48) .. (14.50; 2.06)}.
 [W086] Mesh point (-4.88; 6.39) is found too close to line AR{(-4.82; 6.28) .. (-9.21; 1.78); C=(0.00; -2.82); R=10.30; +}.
 [W086] Mesh point (10.74; 0.70) is found too close to line LI{(10.70; 0.80) .. (9.76; 0.47)}.
 [W086] Mesh point (5.40; 7.10) is found too close to line LI{(5.29; 7.16) .. (5.23; 7.04)}.
 [W086] Mesh point (5.23; 7.04) is found too close to line AR{(5.29; 7.16) .. (0.77; 8.45); C=(0.00; -2.82); R=11.30; +}.
 [W086] Mesh point (10.74; 0.70) is found too close to line LI{(14.49; 2.08) .. (10.70; 0.80)}.
 [W086] Mesh point (7.08; 10.74) is found too close to line LI{(7.16; 10.70) .. (5.29; 7.16)}.
 [W086] Mesh point (-4.82; 6.28) is found too close to line LI{(0.77; 8.45) .. (-4.88; 6.39)}.
 [W086] Mesh point (5.29; 7.16) is found too close to line LI{(5.40; 7.10) .. (5.23; 7.04)}.
 [W086] Mesh point (-10.07; -2.67) is found too close to line LI{(-10.09; -2.51) .. (-10.85; -2.78)}.
 [W086] Mesh point (-11.06; -2.81) is found too close to line LI{(-10.85; -2.78) .. (-100.00; -35.23)}.
 [W086] Mesh point (10.70; 0.80) is found too close to line LI{(14.50; 2.06) .. (10.74; 0.70)}.
 [W086] Mesh point (9.76; 0.47) is found too close to line LI{(10.74; 0.70) .. (9.80; 0.35)}.

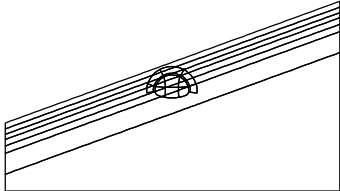
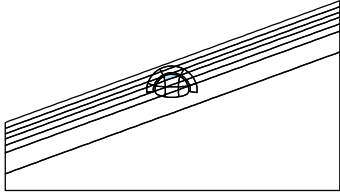
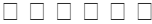
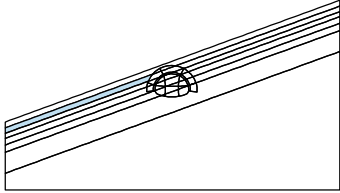
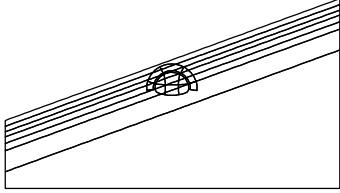
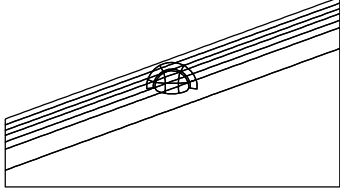
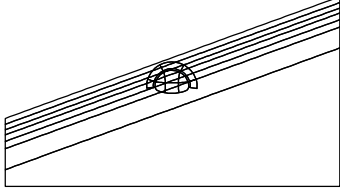
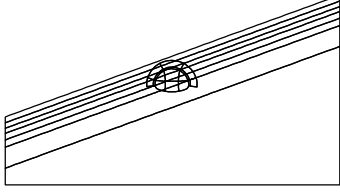
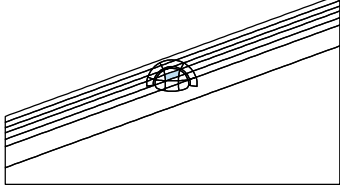
- [W087] Mesh lines $LI\{0.77; 8.45\} \dots (-4.88; 6.39)$ and $AR\{4.09; 6.63\} \dots (-4.82; 6.28)$; $C=(0.00; -2.82)$; $R=10.30$; $+$ are too close to each other.
- [W088] Area of mesh region $LI\{5.23; 7.04\}$; $LI\{5.40; 7.10\}$; $AR\{5.29; 7.16\}$; $C=(0.00; -2.82)$; $R=11.30$ is too small.
- [W088] Area of mesh region $AR\{-10.07; -2.67\}$; $C=(-3.43; -1.74)$; $R=6.71$; $LI\{-10.85; -2.78\}$; $LI\{-10.09; -2.51\}$ is too small.

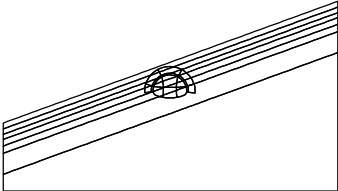
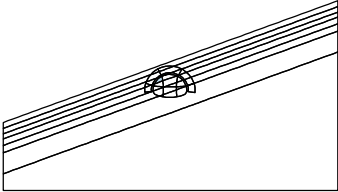
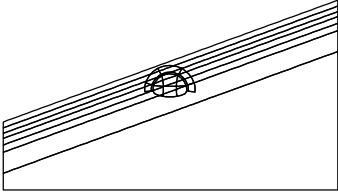
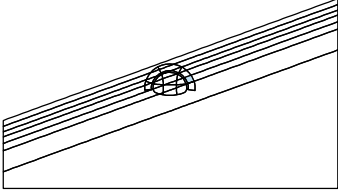
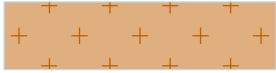
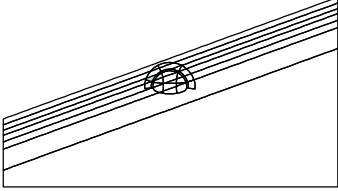
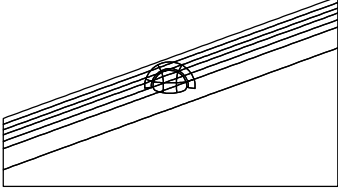
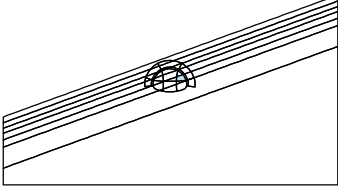
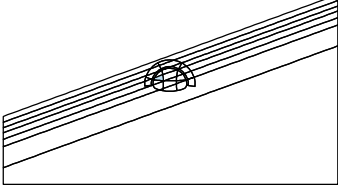
Input data (Stage of construction 1)

Assignment and activation

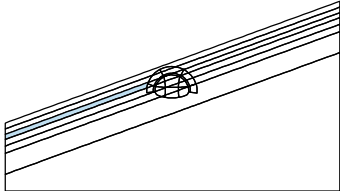
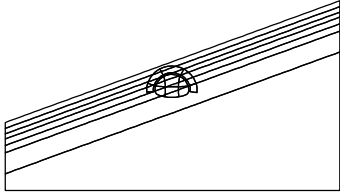
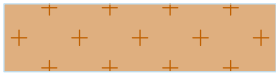
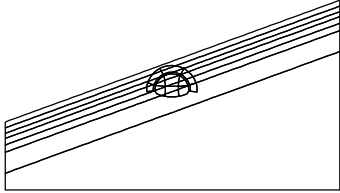
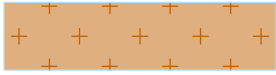
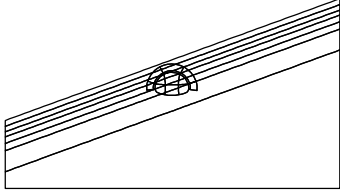
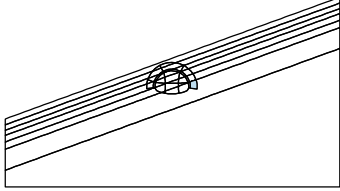
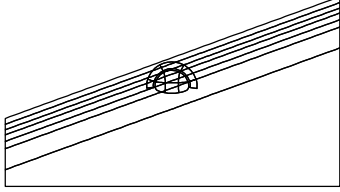
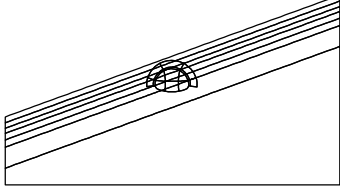
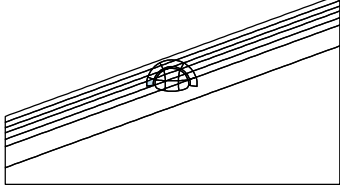
No.	Region	Active / inactive	Assigned soil
1		Active	□ □ □ □ □ □ 
2		Active	□ □ □ □ □ □ 
3		Active	□ □ □ □ □ □ 
4		Active	□ □ □ □ □ □ □ □ 
5		Active	□ □ □ □ □ □ □ □ 
6		Active	□ □ □ □ □ □ 
7		Active	□ □ □ □ □ □ 

No.	Region	Active / inactive	Assigned soil
8		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
9		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
10		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
11		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
12		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
13		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
14		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
			
15		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			

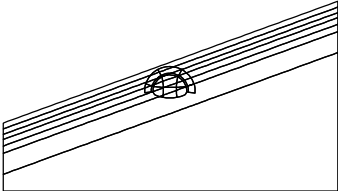
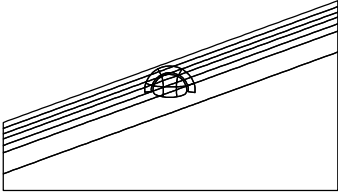
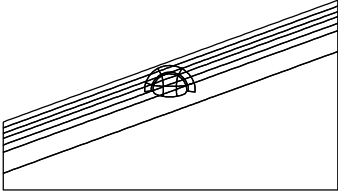
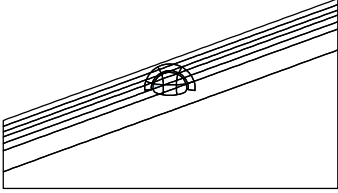
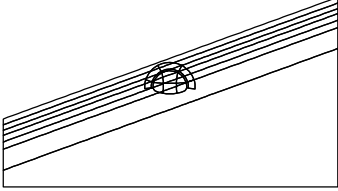
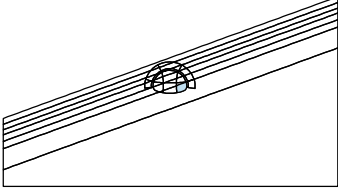
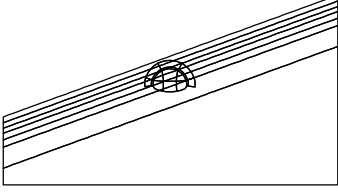
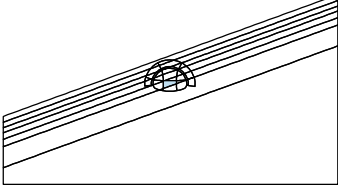
No.	Region	Active / inactive	Assigned soil
16		Active	
			
17		Active	
			
18		Active	
			
19		Active	
			
20		Active	
			
21		Active	
			
22		Active	
			
23		Active	
			

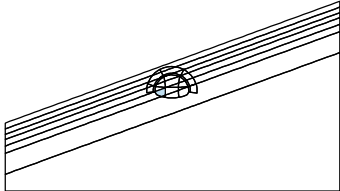
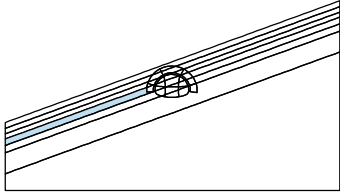
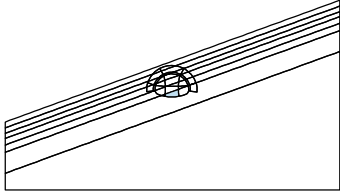
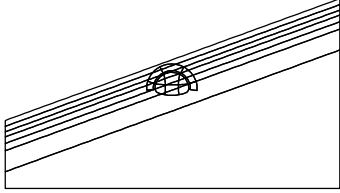
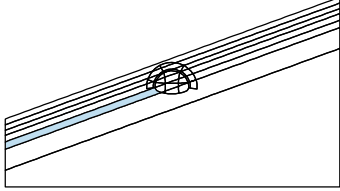
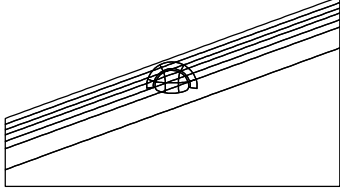
No.	Region	Active / inactive	Assigned soil
24		Active	□ □ □ □ □ □
			
25		Active	□ □ □ □ □ □
			
26		Active	□ □ □ □ □ □ □ □
			
27		Active	□ □ □ □ □ □ □ □
			
28		Active	□ □ □ □ □ □
			
29		Active	□ □ □ □ □ □ □ □
			
30		Active	□ □ □ □ □ □ □ □
			
31		Active	□ □ □ □ □ □ □ □
			

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No.	Region	Active / inactive	Assigned soil
32		Active	□ □ □ □ □ □ 
33		Active	□ □ □ □ □ □ □ □ 
34		Active	□ □ □ □ □ □ □ □ 
35		Active	□ □ □ □ □ □ 
36		Active	□ □ □ □ □ □ 
37		Active	□ □ □ □ □ □ □ □ 
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39		Active	□ □ □ □ □ □ □ □ 

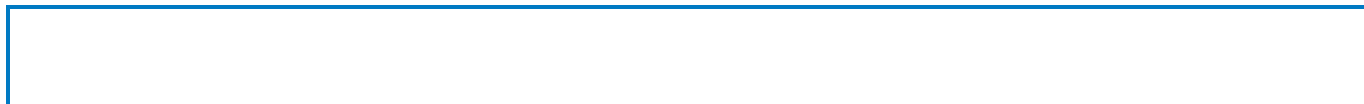


No.	Region	Active / inactive	Assigned soil
40		Active	□ □ □ □ □ □ □ □ 
41		Active	□ □ □ □ □ □ □ □ 
42		Active	□ □ □ □ □ □ 
43		Active	□ □ □ □ □ □ □ □ 
44		Active	□ □ □ □ □ □ □ □ 
45		Active	□ □ □ □ □ □ 
46		Active	□ □ □ □ □ □ □ □ 
47		Active	□ □ □ □ □ □ □ □ 

No.	Region	Active / inactive	Assigned soil
48		Active	□ □ □ □ □ □ □ □ 
49		Active	□ □ □ □ □ □ □ □ 
50		Active	□ □ □ □ □ □ 
51		Active	□ □ □ □ □ □ □ □ 
52		Active	□ □ □ □ □ □ □ □ 
53		Active	□ □ □ □ □ □ 

Line supports

No.	Location	Support	
		Direction X	Direction Z
A1	Mesh line No. 20	fixed	free
A2	Mesh line No. 18	fixed	free
A3	Mesh line No. 15	fixed	free
A4	Mesh line No. 12	fixed	free
A5	Mesh line No. 9	fixed	free
A6	Mesh line No. 6	fixed	free
A1 up to A15 - automatically generated line supports along model edges			



No.	Location	Support	
		Direction X	Direction Z
A7	Mesh line No. 3	fixed	free
A8	Mesh line No. 22	fixed	free
A9	Mesh line No. 17	fixed	free
A10	Mesh line No. 14	fixed	free
A11	Mesh line No. 11	fixed	free
A12	Mesh line No. 8	fixed	free
A13	Mesh line No. 5	fixed	free
A14	Mesh line No. 1	fixed	free
A15	Mesh line No. 21	fixed	fixed
A1 up to A15 - automatically generated line supports along model edges			

Water

Water type : No water

Analysis settings

Stress

Method : Newton - Raphson
Stiffness matrix change : after each iteration
Max. number of iterations for one calc. step : 100
Initial calculation step : 0.25
Displacement error : 0.0100
Imbalanced forces error : 0.0100
Energy error : 0.0100
Respect material interfaces : no

Plasticity

Return mapping error : 0.00100
Max. number of iterations for one plast. step : 20

Newton - Raphson

Relaxation factor of calculation step : 2.00
Maximum number of relaxations of calculation step : 2
Min. number of iterations for one calc. step : 1

Line search

Solution method : iterate no
Line search limit - minimum : 0.100
Line search limit - maximum : 1.000

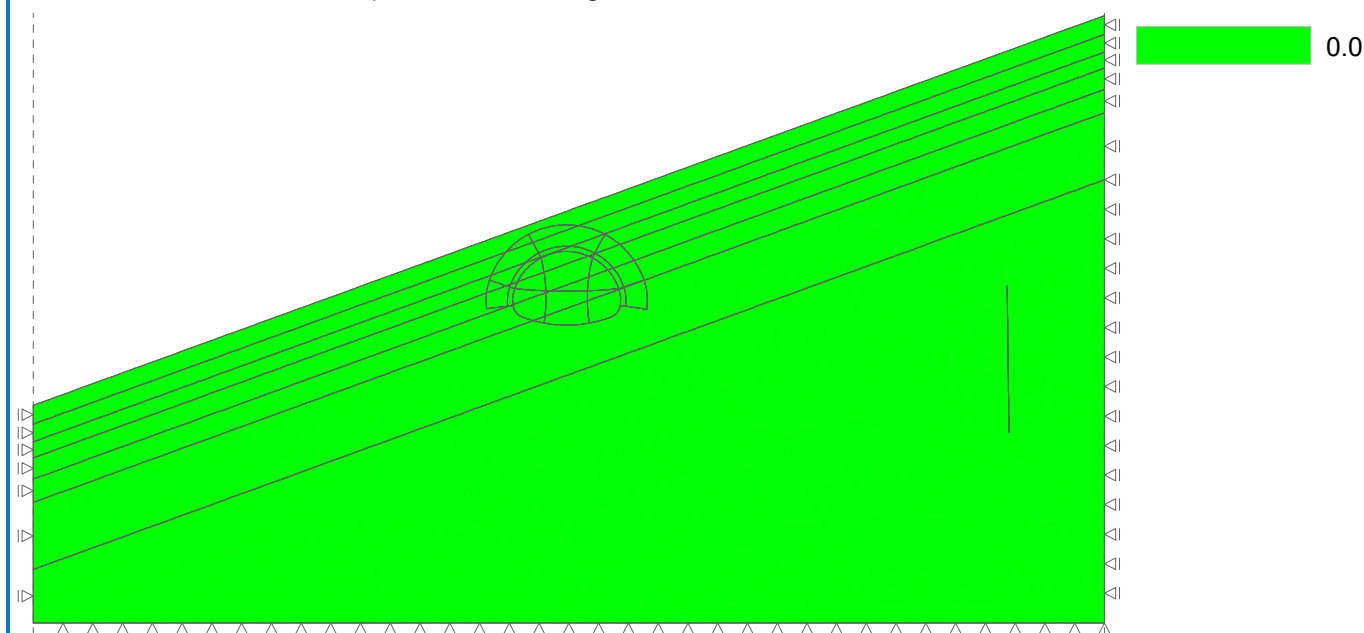
Results (Stage of construction 1)

Stress analysis was successfully completed.

Analysis settings : **user-defined**

Attained loading = 100.00 %

Name : Analysis
Stage : 1

 Results : overall; variable : Displacement d_z ; range : <0.0; 0.0> mm

Extremes
Stress (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Total stress $\sigma_{z, tot}$ [kPa]	-5.45	13.03	0.00	96.79	-62.19	2206.04
Effective stress $\sigma_{z, eff}$ [kPa]	-5.45	13.03	0.00	96.79	-62.19	2206.04
Total stress $\sigma_{x, tot}$ [kPa]	100.81	51.70	-9.46	90.93	-62.19	723.88
Effective stress $\sigma_{x, eff}$ [kPa]	100.81	51.70	-9.46	90.93	-62.19	723.88
Shear stress τ_{xz} [kPa]	-100.00	-49.53	-9.83	-0.13	-62.19	159.11
Total mean stress $\sigma_{m, tot}$ [kPa]	100.81	51.70	5.39	90.93	-62.19	1220.35
Effective mean stress $\sigma_{m, eff}$ [kPa]	100.81	51.70	5.39	90.93	-62.19	1220.35
Equivalent deviatoric stress J [kPa]	-5.45	13.03	3.55	96.79	-62.19	853.79
Total principal stress $\sigma_{1, tot}$ [kPa]	100.81	51.70	-9.47	90.93	-62.19	723.38
Effective principal stress $\sigma_{1, eff}$ [kPa]	100.81	51.70	-9.47	90.93	-62.19	723.38
Total principal stress $\sigma_{2, tot}$ [kPa]	-5.45	13.03	10.46	96.79	-62.19	2206.17
Effective principal stress $\sigma_{2, eff}$ [kPa]	-5.45	13.03	10.46	96.79	-62.19	2206.17
Total principal stress $\sigma_{3, tot}$ [kPa]	100.81	51.70	4.28	90.93	-62.19	732.21
Effective principal stress $\sigma_{3, eff}$ [kPa]	100.81	51.70	4.28	90.93	-62.19	732.21

Strain (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Equivalent deviatoric strain E_d [%]	100.81	18.37	0.02	-0.80	8.45	0.40
Plastic equivalent deviatoric strain $E_{d, pl}$ [%]	-7.16	10.70	0.00	100.81	48.18	0.06
Strain ϵ_x [%]	100.81	48.18	-0.11	-100.00	-21.39	0.11

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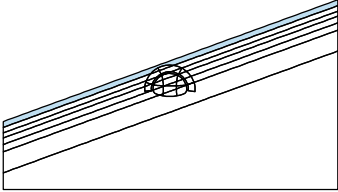
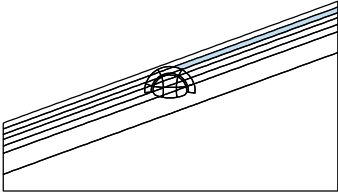
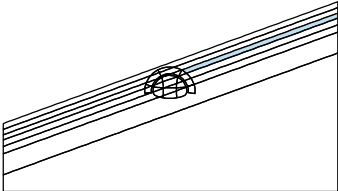
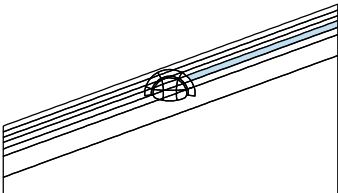
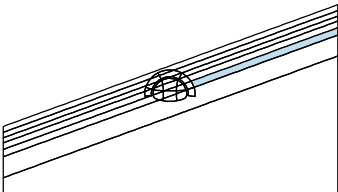
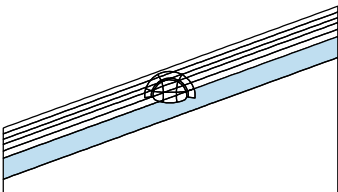
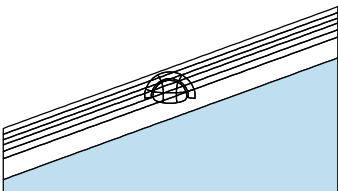
	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Strain ε_z [%]	-97.18	-20.36	0.02	-0.80	8.45	0.29
Shear strain γ_{xz} [%]	95.17	49.65	-0.03	-6.63	6.33	0.12
Plastic strain $\varepsilon_{x, pl}$ [%]	100.81	48.18	-0.03	-7.16	10.70	0.00
Plastic strain $\varepsilon_{z, pl}$ [%]	-7.16	10.70	0.00	100.81	48.18	0.03
Plastic shear strain $\gamma_{xz, pl}$ [%]	100.81	48.18	0.00	-4.88	6.39	0.01
Volumetric strain ε_v [%]	100.81	51.70	0.02	-6.63	6.33	0.21
Plastic volumetric strain $\varepsilon_{v, pl}$ [%]			0.00			0.00
Principal strain ε_1 [%]	100.81	48.18	-0.11	-100.00	-24.91	0.05
Principal strain ε_2 [%]	100.81	18.37	0.02	-0.80	8.45	0.29
Principal strain ε_3 [%]			0.00			0.00

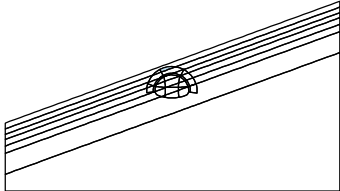
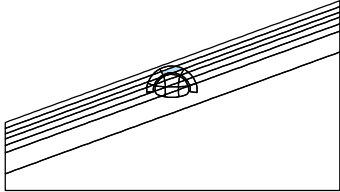
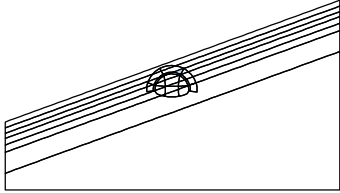
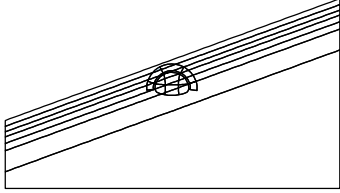
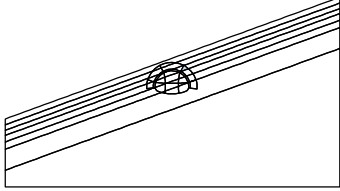
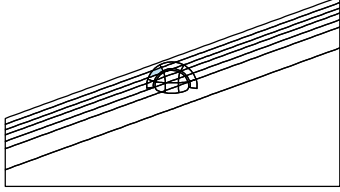
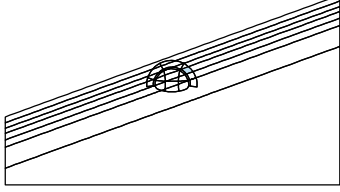
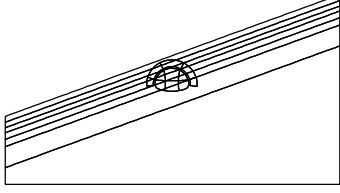
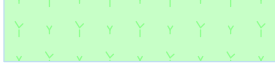
Pore pressures (extremes)

	Location		Max
	x [m]	z [m]	
Total pore pressure u_{tot} [kPa]			0.00

Input data (Stage of construction 2)

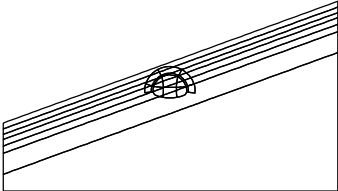
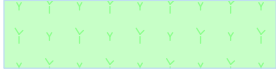
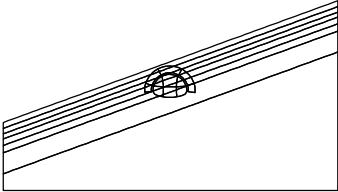
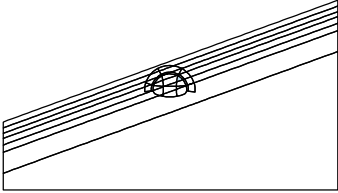
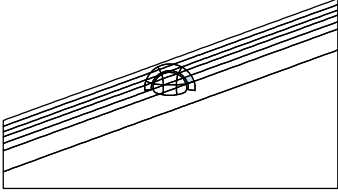
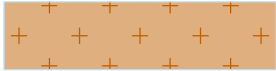
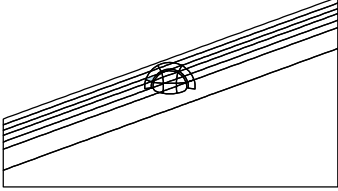
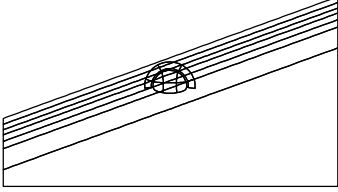
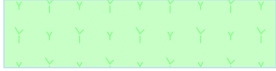
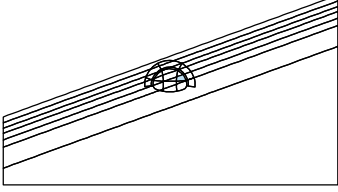
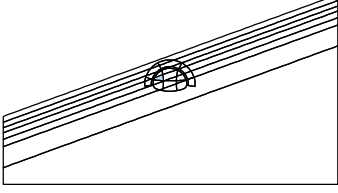
Assignment and activation

No.	Region	Active / inactive	Assigned soil
1		Active	□ □ □ □ □ □ □ 
2		Active	□ □ □ □ □ □ □ 
3		Active	□ □ □ □ □ □ □ 
4		Active	□ □ □ □ □ □ □ □ 
5		Active	□ □ □ □ □ □ □ □ 
6		Active	□ □ □ □ □ □ □ 
7		Active	□ □ □ □ □ □ □ 

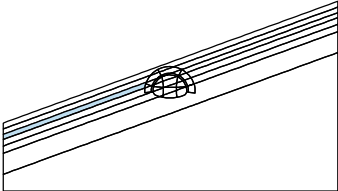
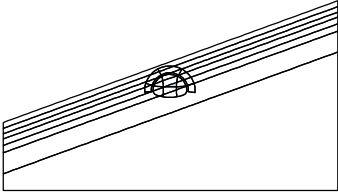
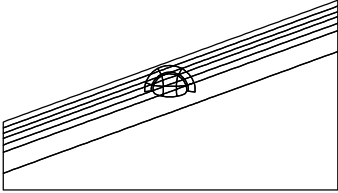
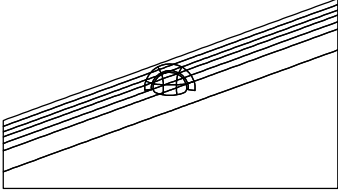
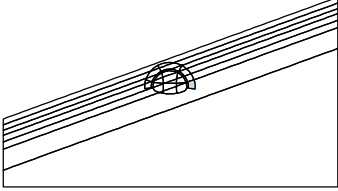
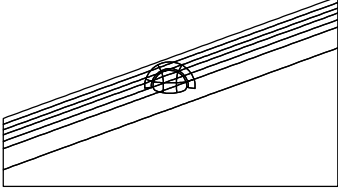
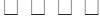
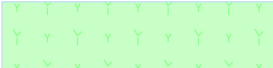
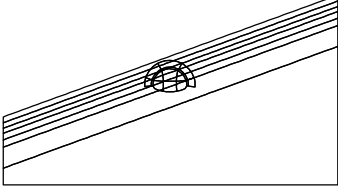
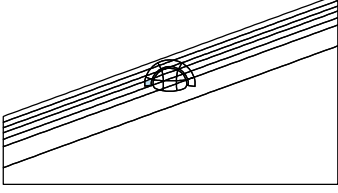
No.	Region	Active / inactive	Assigned soil
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9		Active	□ □ □ □ □ □ □
			
10		Active	□ □ □ □ □ □ □
			
11		Active	□ □ □ □ □ □ □
			
12		Active	□ □ □ □ □ □ □
			
13		Active	□ □ □ □ □ □ □
			
14		Active	□ □ □ □ □ □ □ □ □
			
15		Active	□ □ □ □
			



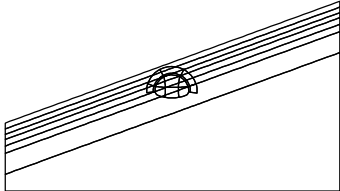
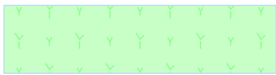
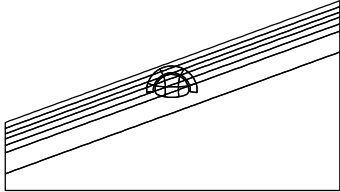
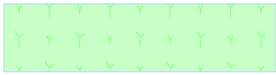
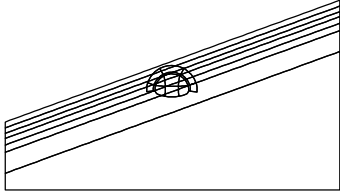
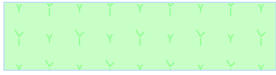
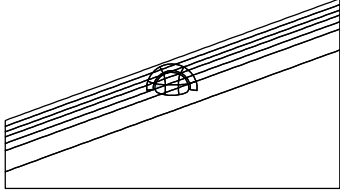
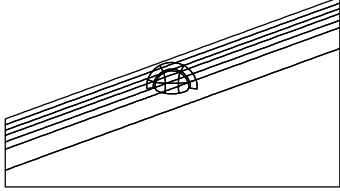
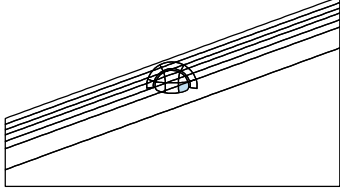
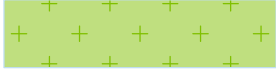
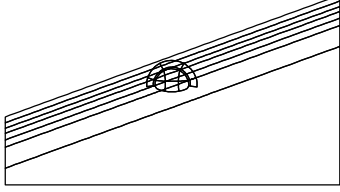
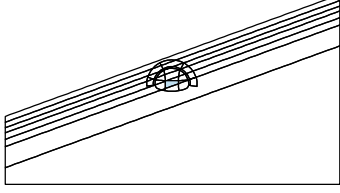
No.	Region	Active / inactive	Assigned soil
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17		Active	□ □ □ □ □ □
18		Active	□ □ □ □ □ □ □
19		Active	□ □ □ □ □ □
20		Active	□ □ □ □
21		Active	□ □ □ □
22		Active	□ □ □ □
23		Active	□ □ □ □ □ □ □ □

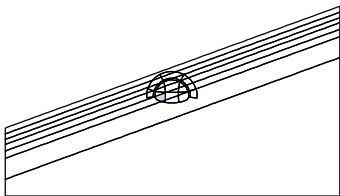
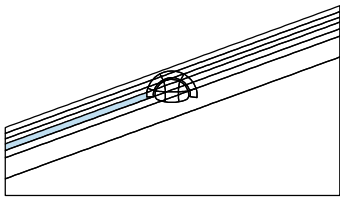
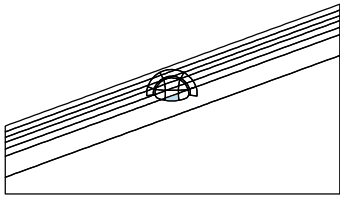
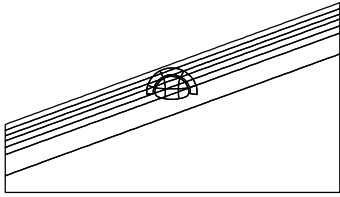
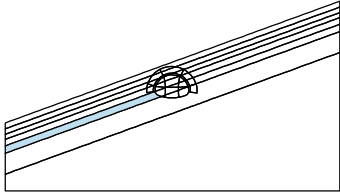
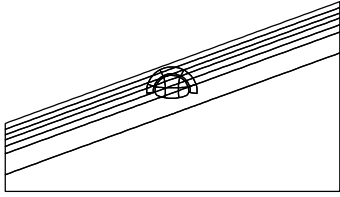
No.	Region	Active / inactive	Assigned soil
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25		Active	□ □ □ □ □ □
			
26		Active	□ □ □ □ □ □ □ □
			
27		Active	□ □ □ □ □ □ □ □
			
28		Active	□ □ □ □ □ □
			
29		Active	□ □ □ □
			
30		Active	□ □ □ □ □ □ □ □
			
31		Active	□ □ □ □ □ □ □ □
			



No.	Region	Active / inactive	Assigned soil
32		Active	
			
33		Active	
			
34		Active	
			
35		Active	
			
36		Active	
			
37		Active	
			
38		Active	
			
39		Active	
			

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No.	Region	Active / inactive	Assigned soil
40		Active	□ □ □ □
			
41		Active	□ □ □ □
			
42		Active	□ □ □ □
			
43		Active	□ □ □ □ □ □ □ □
			
44		Active	□ □ □ □ □ □ □ □
			
45		Active	□ □ □ □ □ □
			
46		Active	□ □ □ □ □ □ □ □
			
47		Active	□ □ □ □ □ □ □ □
			

No.	Region	Active / inactive	Assigned soil
48		Active	□ □ □ □ □ □ □ □ 
49		Active	□ □ □ □ □ □ □ □ 
50		Active	□ □ □ □ □ □ 
51		Active	□ □ □ □ □ □ □ □ 
52		Active	□ □ □ □ □ □ □ □ 
53		Active	□ □ □ □ □ □ 

Line supports

No.	Line support		Location	Support	
	new	modified		Direction X	Direction Z
A1	Yes		Mesh line No. 20	fixed	free
A2	Yes		Mesh line No. 18	fixed	free
A3	Yes		Mesh line No. 15	fixed	free
A4	Yes		Mesh line No. 12	fixed	free
A5	Yes		Mesh line No. 9	fixed	free
A6	Yes		Mesh line No. 6	fixed	free
A1 up to A15 - automatically generated line supports along model edges					

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No.	Line support		Location	Support	
	new	modified		Direction X	Direction Z
A7	Yes		Mesh line No. 3	fixed	free
A8	Yes		Mesh line No. 22	fixed	free
A9	Yes		Mesh line No. 17	fixed	free
A10	Yes		Mesh line No. 14	fixed	free
A11	Yes		Mesh line No. 11	fixed	free
A12	Yes		Mesh line No. 8	fixed	free
A13	Yes		Mesh line No. 5	fixed	free
A14	Yes		Mesh line No. 1	fixed	free
A15	Yes		Mesh line No. 21	fixed	fixed
A1 up to A15 - automatically generated line supports along model edges					

Water

Water type : No water

Analysis settings

Stress

Method : Newton - Raphson
 Stiffness matrix change : after each iteration
 Max. number of iterations for one calc. step : 100
 Initial calculation step : 0.25
 Displacement error : 0.0100
 Imbalanced forces error : 0.0100
 Energy error : 0.0100
 Respect material interfaces : no

Plasticity

Return mapping error : 0.00100
 Max. number of iterations for one plast. step : 20

Newton - Raphson

Relaxation factor of calculation step : 2.00
 Maximum number of relaxations of calculation step : 2
 Min. number of iterations for one calc. step : 1

Line search

Solution method : iterate no
 Line search limit - minimum : 0.100
 Line search limit - maximum : 1.000

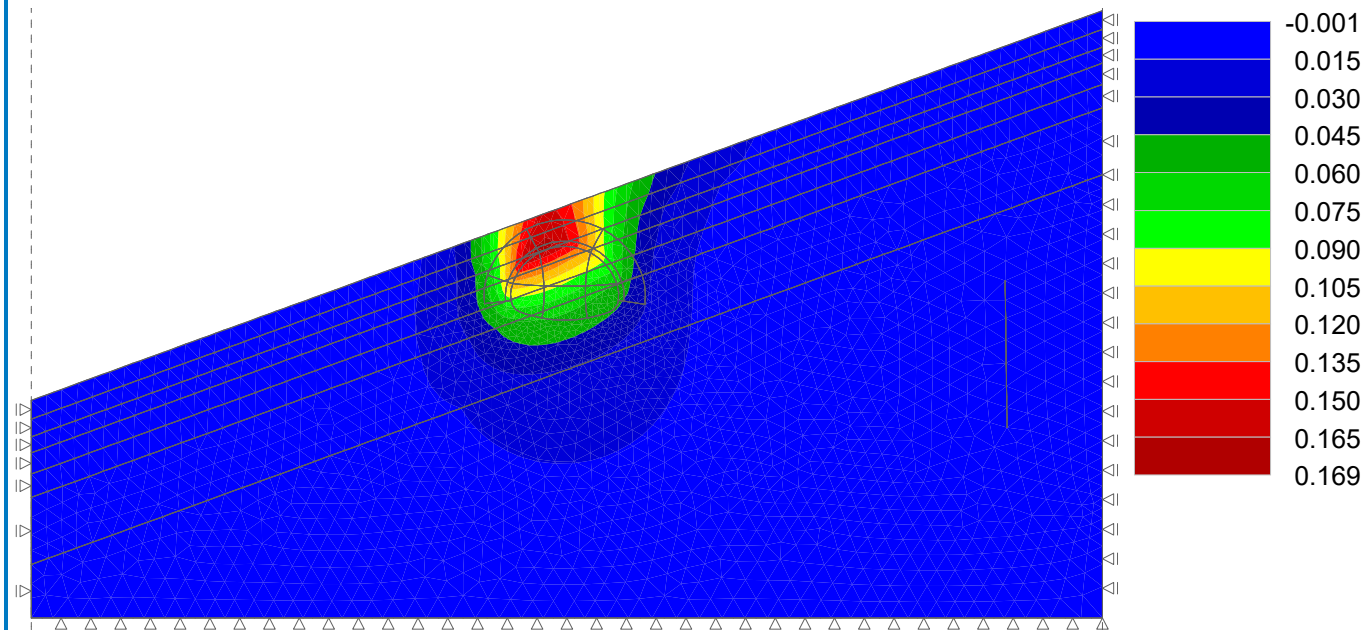
Results (Stage of construction 2)

Stress analysis was successfully completed.

Analysis settings : **user-defined**

Attained loading = 100.00 %

Name : Analysis
Stage : 2

 Results : overall; variable : Displacement d_z; range : <0.0; 0.2> mm

Extremes
Displacements (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Displacements x [mm]	0.00	0.00	0.0	6.62	17.42	0.1
Displacements z [mm]	6.62	17.42	0.0	-3.86	7.80	0.2

Stress (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Total stress $\sigma_{z, tot}$ [kPa]	-5.45	13.03	0.00	96.79	-62.19	2206.09
Effective stress $\sigma_{z, eff}$ [kPa]	-5.45	13.03	0.00	96.79	-62.19	2206.09
Total stress $\sigma_{x, tot}$ [kPa]	100.81	51.70	-9.46	90.93	-62.19	723.92
Effective stress $\sigma_{x, eff}$ [kPa]	100.81	51.70	-9.46	90.93	-62.19	723.92
Shear stress τ_{xz} [kPa]	-100.00	-49.53	-9.83	-0.13	-62.19	159.10
Total mean stress $\sigma_{m, tot}$ [kPa]	100.81	51.70	5.39	90.93	-62.19	1220.39
Effective mean stress $\sigma_{m, eff}$ [kPa]	100.81	51.70	5.39	90.93	-62.19	1220.39
Equivalent deviatoric stress J [kPa]	-5.45	13.03	3.51	96.79	-62.19	853.80
Total principal stress $\sigma_{1, tot}$ [kPa]	100.81	51.70	-9.47	90.93	-62.19	723.42
Effective principal stress $\sigma_{1, eff}$ [kPa]	100.81	51.70	-9.47	90.93	-62.19	723.42
Total principal stress $\sigma_{2, tot}$ [kPa]	-5.45	13.03	10.52	96.79	-62.19	2206.22
Effective principal stress $\sigma_{2, eff}$ [kPa]	-5.45	13.03	10.52	96.79	-62.19	2206.22
Total principal stress $\sigma_{3, tot}$ [kPa]	100.81	51.70	4.28	90.93	-62.19	732.24
Effective principal stress $\sigma_{3, eff}$ [kPa]	100.81	51.70	4.28	90.93	-62.19	732.24

Strain (extremes)

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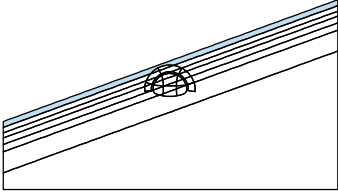
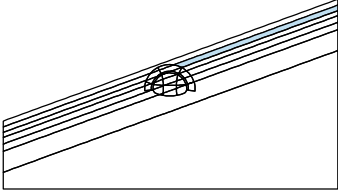
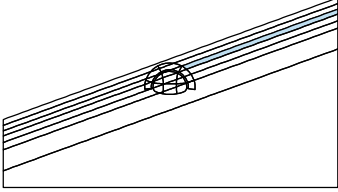
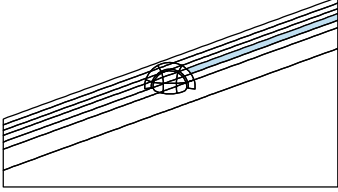
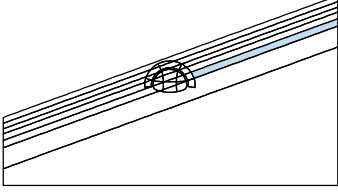
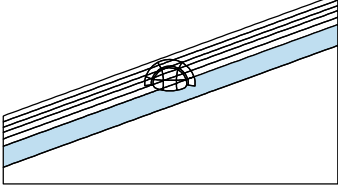
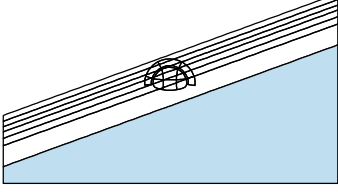
	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Equivalent deviatoric strain E_d [%]	100.81	18.37	0.02	-0.80	8.45	0.40
Plastic equivalent deviatoric strain $E_{d, pl}$ [%]	-7.16	10.70	0.00	100.81	48.18	0.06
Strain ε_x [%]	100.81	48.18	-0.11	-100.00	-21.39	0.11
Strain ε_z [%]	-97.18	-20.36	0.02	-0.80	8.45	0.29
Shear strain γ_{xz} [%]	95.17	49.65	-0.03	-6.63	6.33	0.12
Plastic strain $\varepsilon_{x, pl}$ [%]	100.81	48.18	-0.03	-7.16	10.70	0.00
Plastic strain $\varepsilon_{z, pl}$ [%]	-7.16	10.70	0.00	100.81	48.18	0.03
Plastic shear strain $\gamma_{xz, pl}$ [%]	100.81	48.18	0.00	-4.88	6.39	0.01
Volumetric strain ε_v [%]	100.81	51.70	0.02	-6.63	6.33	0.21
Plastic volumetric strain $\varepsilon_{v, pl}$ [%]			0.00			0.00
Principal strain ε_1 [%]	100.81	48.18	-0.11	-100.00	-24.91	0.05
Principal strain ε_2 [%]	100.81	18.37	0.02	-0.80	8.45	0.29
Principal strain ε_3 [%]			0.00			0.00

Pore pressures (extremes)

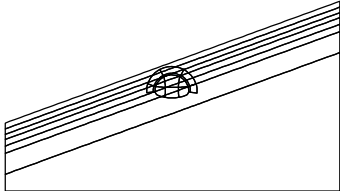
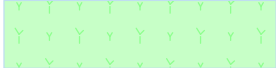
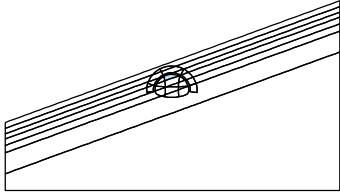
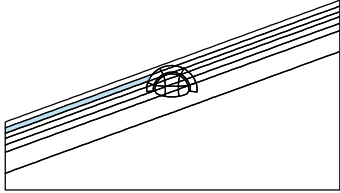
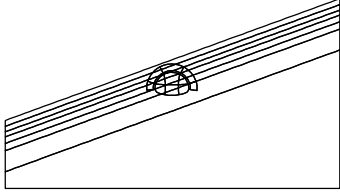
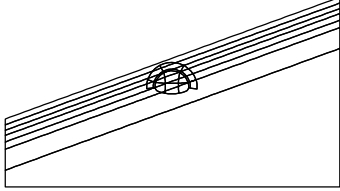
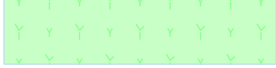
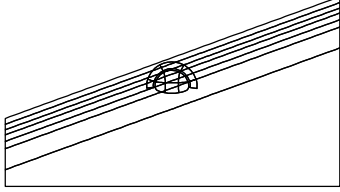
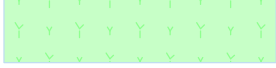
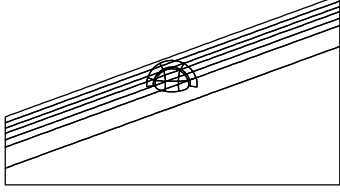
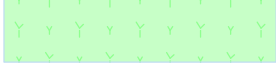
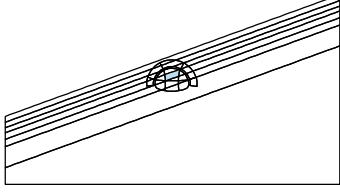
	Location		Max
	x [m]	z [m]	
Total pore pressure u_{tot} [kPa]			0.00

Input data (Stage of construction 3)

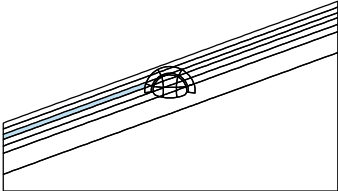
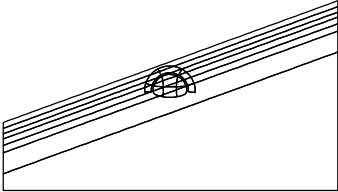
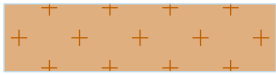
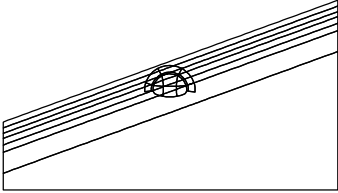
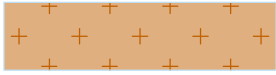
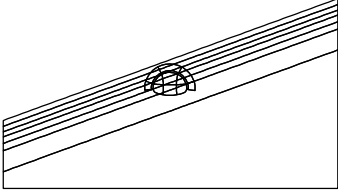
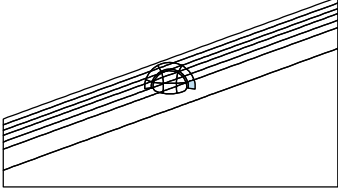
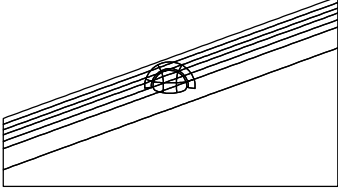
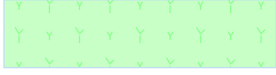
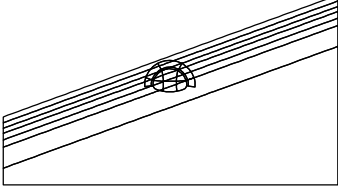
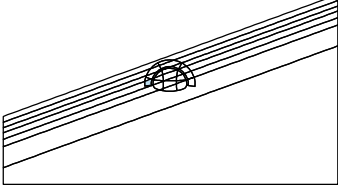
Assignment and activation

No.	Region	Active / inactive	Assigned soil
1		Active	□ □ □ □ □ □ □ 
2		Active	□ □ □ □ □ □ □ 
3		Active	□ □ □ □ □ □ □ 
4		Active	□ □ □ □ □ □ □ □ 
5		Active	□ □ □ □ □ □ □ □ 
6		Active	□ □ □ □ □ □ □ 
7		Active	□ □ □ □ □ □ □ 

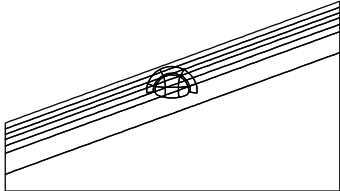
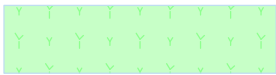
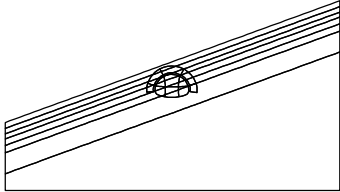
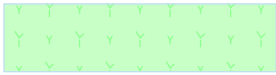
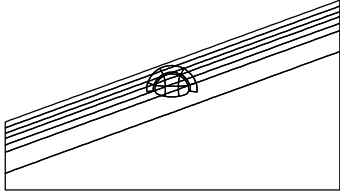
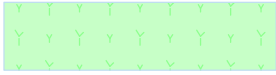
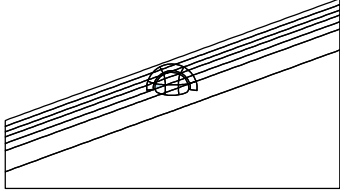
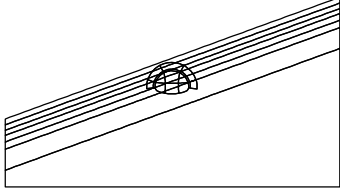
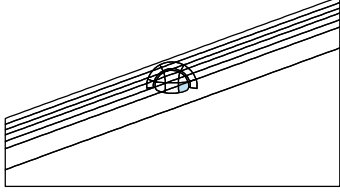
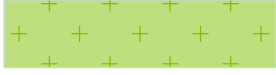
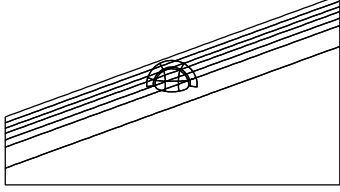
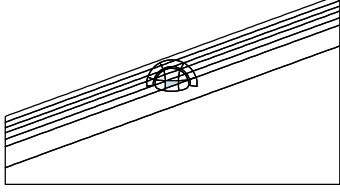
No.	Region	Active / inactive	Assigned soil
8		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
9		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
10		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
11		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
12		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
13		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
14		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
15		Active	☐ ☐ ☐ ☐

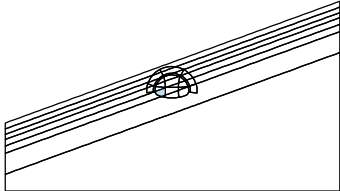
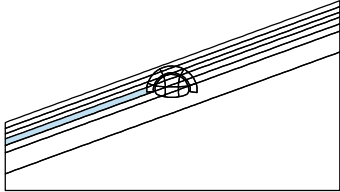
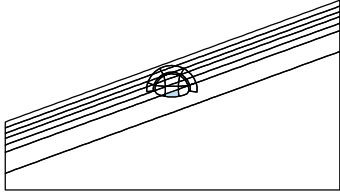
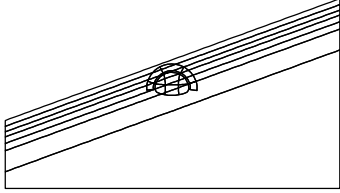
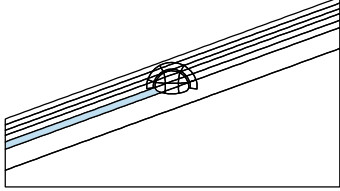
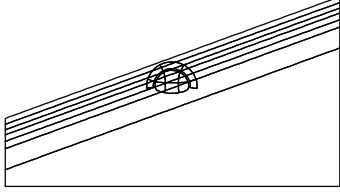
No.	Region	Active / inactive	Assigned soil
16		Active	□ □ □ □
			
17		Active	□ □ □ □ □ □
			
18		Active	□ □ □ □ □ □ □
			
19		Active	□ □ □ □ □ □
			
20		Active	□ □ □ □
			
21		Active	□ □ □ □
			
22		Active	□ □ □ □
			
23		Active	□ □ □ □ □ □ □ □
			

No.	Region	Active / inactive	Assigned soil
24		Active	□ □ □ □
25		Excavation	Excavation No. 1 (□ □ 3 - 1)
			Soil remaining activity: 60.0 %
26		Active	□ □ □ □ □ □ □ □
27		Active	□ □ □ □ □ □ □ □
28		Active	□ □ □ □ □ □
29		Active	□ □ □ □
30		Active	□ □ □ □ □ □ □ □
31		Excavation	Excavation No. 1 (□ □ 3 - 1)
			Soil remaining activity: 60.0 %

No.	Region	Active / inactive	Assigned soil
32		Active	□ □ □ □ □ □
			
33		Active	□ □ □ □ □ □ □ □
			
34		Active	□ □ □ □ □ □ □ □
			
35		Active	□ □ □ □ □ □
			
36		Active	□ □ □ □ □ □
			
37		Active	□ □ □ □
			
38		Active	□ □ □ □ □ □ □ □
			
39		Active	□ □ □ □ □ □ □ □
			

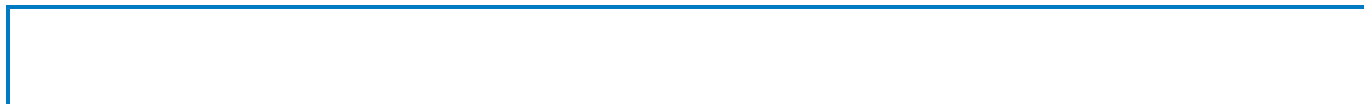
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No.	Region	Active / inactive	Assigned soil
40		Active	□ □ □ □
			
41		Active	□ □ □ □
			
42		Active	□ □ □ □
			
43		Active	□ □ □ □ □ □ □ □
			
44		Active	□ □ □ □ □ □ □ □
			
45		Active	□ □ □ □ □ □
			
46		Active	□ □ □ □ □ □ □ □
			
47		Active	□ □ □ □ □ □ □ □
			

No.	Region	Active / inactive	Assigned soil
48		Active	□ □ □ □ □ □ □ □ 
49		Active	□ □ □ □ □ □ □ □ 
50		Active	□ □ □ □ □ □ 
51		Active	□ □ □ □ □ □ □ □ 
52		Active	□ □ □ □ □ □ □ □ 
53		Active	□ □ □ □ □ □ 

Line supports

No.	Line support		Location	Support	
	new	modified		Direction X	Direction Z
A1	Yes		Mesh line No. 20	fixed	free
A2	Yes		Mesh line No. 18	fixed	free
A3	Yes		Mesh line No. 15	fixed	free
A4	Yes		Mesh line No. 12	fixed	free
A5	Yes		Mesh line No. 9	fixed	free
A6	Yes		Mesh line No. 6	fixed	free
A1 up to A15 - automatically generated line supports along model edges					



No.	Line support		Location	Support	
	new	modified		Direction X	Direction Z
A7	Yes		Mesh line No. 3	fixed	free
A8	Yes		Mesh line No. 22	fixed	free
A9	Yes		Mesh line No. 17	fixed	free
A10	Yes		Mesh line No. 14	fixed	free
A11	Yes		Mesh line No. 11	fixed	free
A12	Yes		Mesh line No. 8	fixed	free
A13	Yes		Mesh line No. 5	fixed	free
A14	Yes		Mesh line No. 1	fixed	free
A15	Yes		Mesh line No. 21	fixed	fixed
A1 up to A15 - automatically generated line supports along model edges					

Water

Water type : No water

Analysis settings

Stress

Method :	Newton - Raphson
Stiffness matrix change :	after each iteration
Max. number of iterations for one calc. step :	100
Initial calculation step :	0.25
Displacement error :	0.0100
Imbalanced forces error :	0.0100
Energy error :	0.0100
Respect material interfaces :	no

Plasticity

Return mapping error :	0.00100
Max. number of iterations for one plast. step :	20

Newton - Raphson

Relaxation factor of calculation step :	2.00
Maximum number of relaxations of calculation step :	2
Min. number of iterations for one calc. step :	1

Line search

Solution method :	iterate no
Line search limit - minimum :	0.100
Line search limit - maximum :	1.000

Results (Stage of construction 3)

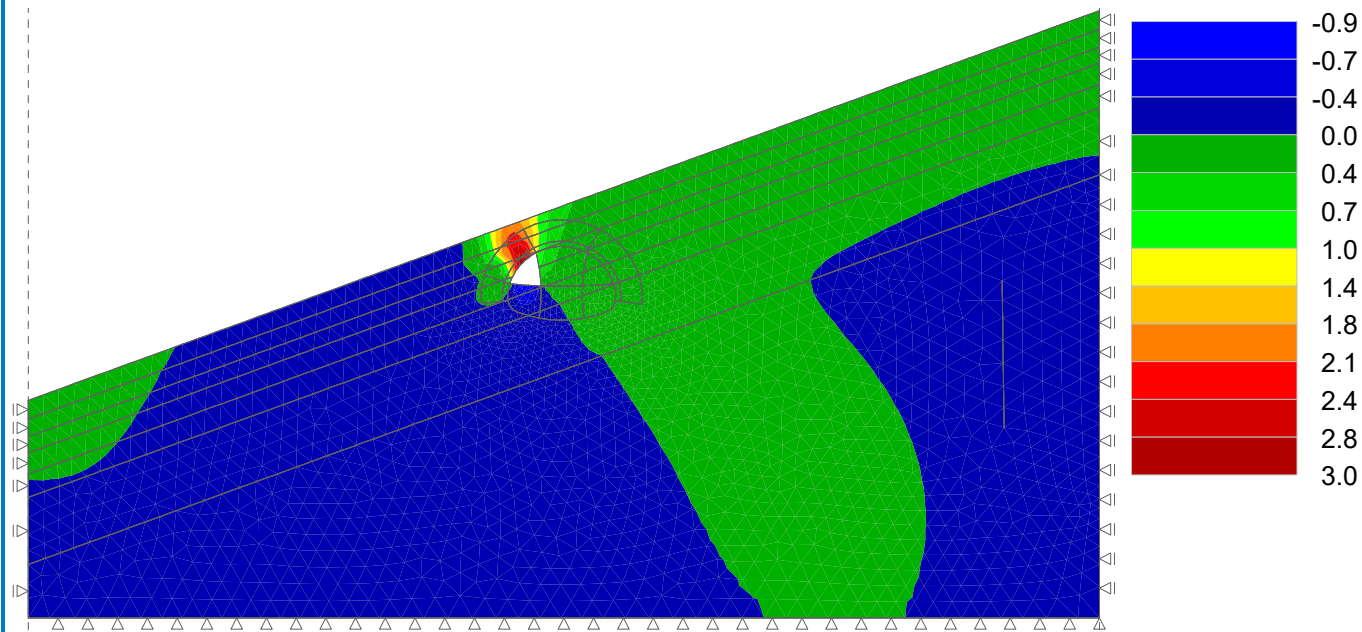
Stress analysis was successfully completed.

Analysis settings : **user-defined**

Attained loading = 100.00 %

Name : Analysis

Stage : 3

Results : overall; variable : Displacement d_z; range : <-0.9; 3.0> mm

Extremes

Displacements (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Displacements x [mm]	0.00	0.00	-1.7	-4.08	13.52	0.6
Displacements z [mm]	-4.08	13.52	-0.9	-6.91	4.82	3.0

Stress (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Total stress $\sigma_{z, \text{tot}}$ [kPa]	-5.45	13.03	0.00	96.79	-62.19	2206.01
Effective stress $\sigma_{z, \text{eff}}$ [kPa]	-5.45	13.03	0.00	96.79	-62.19	2206.01
Total stress $\sigma_{x, \text{tot}}$ [kPa]	100.81	51.70	-9.46	90.93	-62.19	723.87
Effective stress $\sigma_{x, \text{eff}}$ [kPa]	100.81	51.70	-9.46	90.93	-62.19	723.87
Shear stress τ_{xz} [kPa]	-4.50	4.94	-16.72	-0.13	-62.19	159.32
Total mean stress $\sigma_{m, \text{tot}}$ [kPa]	100.81	51.70	5.39	90.93	-62.19	1220.34
Effective mean stress $\sigma_{m, \text{eff}}$ [kPa]	100.81	51.70	5.39	90.93	-62.19	1220.34
Equivalent deviatoric stress J [kPa]	-5.45	13.03	3.11	96.79	-62.19	853.77
Total principal stress $\sigma_{1, \text{tot}}$ [kPa]	100.81	51.70	-9.47	90.93	-62.19	723.37
Effective principal stress $\sigma_{1, \text{eff}}$ [kPa]	100.81	51.70	-9.47	90.93	-62.19	723.37
Total principal stress $\sigma_{2, \text{tot}}$ [kPa]	-5.45	13.03	9.95	96.79	-62.19	2206.14
Effective principal stress $\sigma_{2, \text{eff}}$ [kPa]	-5.45	13.03	9.95	96.79	-62.19	2206.14
Total principal stress $\sigma_{3, \text{tot}}$ [kPa]	100.81	51.70	4.28	90.93	-62.19	732.20
Effective principal stress $\sigma_{3, \text{eff}}$ [kPa]	100.81	51.70	4.28	90.93	-62.19	732.20

Strain (extremes)

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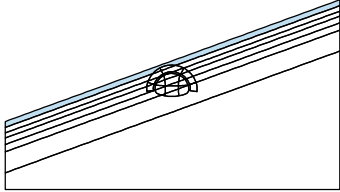
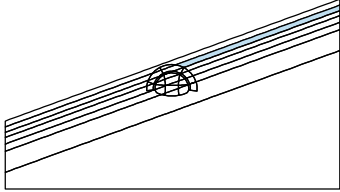
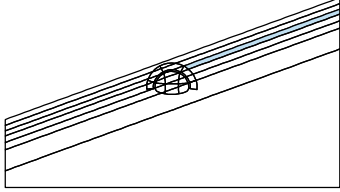
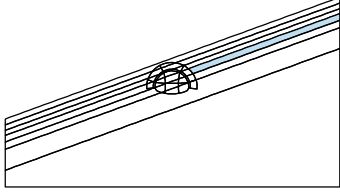
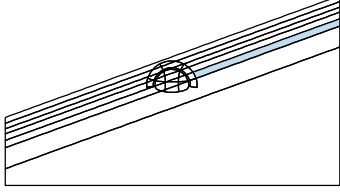
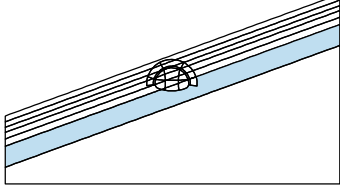
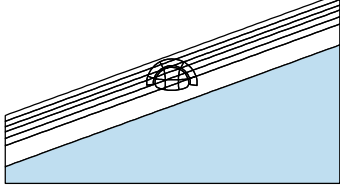
	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Equivalent deviatoric strain E_d [%]	100.81	18.37	0.02	-13.40	4.55	0.41
Plastic equivalent deviatoric strain $E_{d, pl}$ [%]	-7.16	10.70	0.00	-11.14	4.11	0.07
Strain ε_x [%]	100.81	48.18	-0.11	-100.00	-21.39	0.11
Strain ε_z [%]	-97.18	-20.36	0.02	-13.40	4.55	0.29
Shear strain γ_{xz} [%]	95.17	49.65	-0.03	-10.98	5.98	0.15
Plastic strain $\varepsilon_{x, pl}$ [%]	-11.14	4.11	-0.03	-7.16	10.70	0.00
Plastic strain $\varepsilon_{z, pl}$ [%]	-7.16	10.70	0.00	-11.14	4.11	0.03
Plastic shear strain $\gamma_{xz, pl}$ [%]	100.81	48.18	0.00	-9.67	4.65	0.02
Volumetric strain ε_v [%]	100.81	51.70	0.02	-6.63	6.33	0.21
Plastic volumetric strain $\varepsilon_{v, pl}$ [%]			0.00			0.00
Principal strain ε_1 [%]	100.81	48.18	-0.11	-100.00	-24.91	0.05
Principal strain ε_2 [%]	100.81	18.37	0.02	-13.40	4.55	0.30
Principal strain ε_3 [%]			0.00			0.00

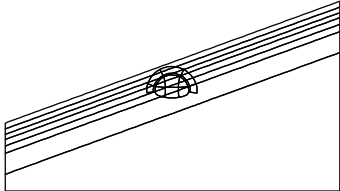
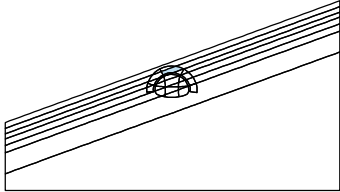
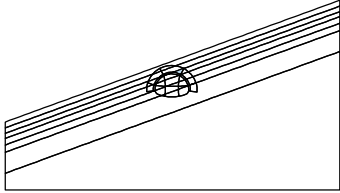
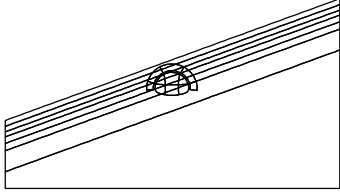
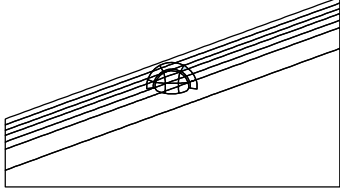
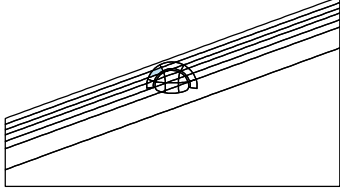
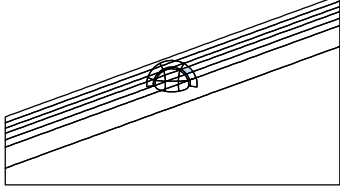
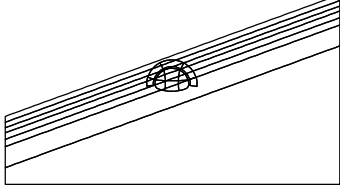
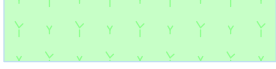
Pore pressures (extremes)

	Location		Max
	x [m]	z [m]	
Total pore pressure u_{tot} [kPa]			0.00

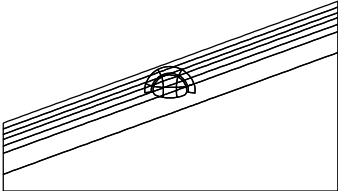
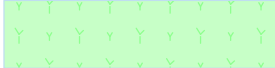
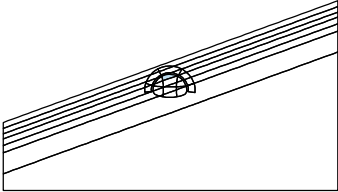
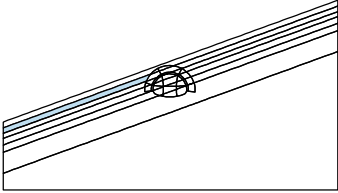
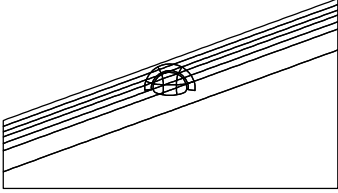
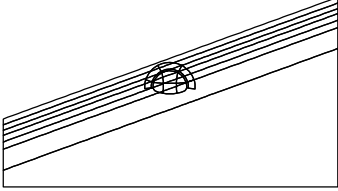
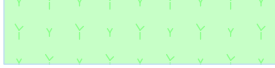
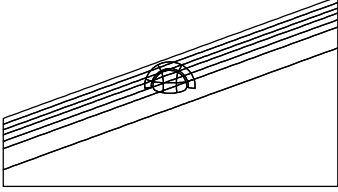
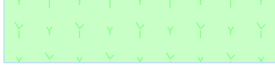
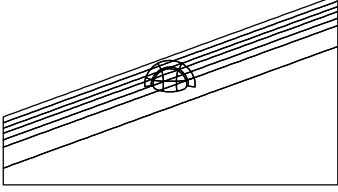
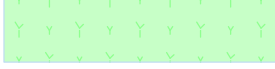
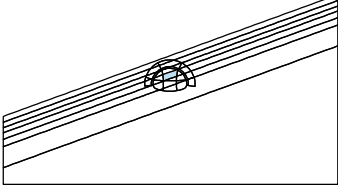
Input data (Stage of construction 4)

Assignment and activation

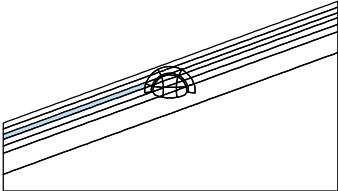
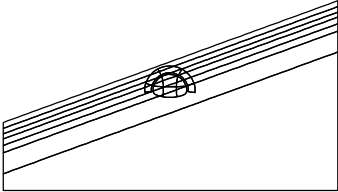
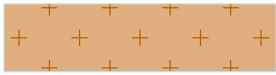
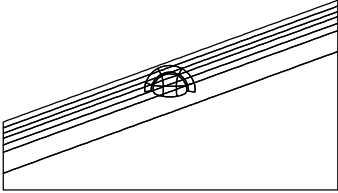
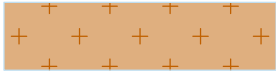
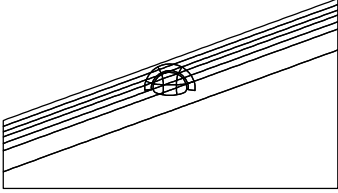
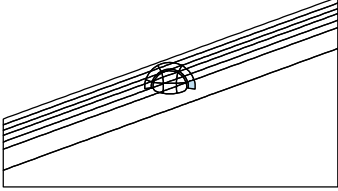
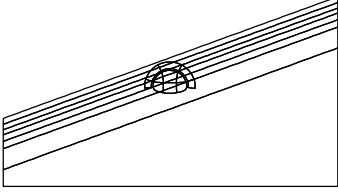
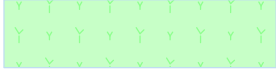
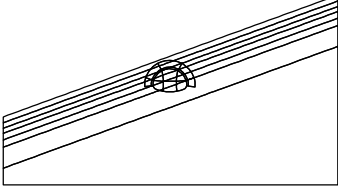
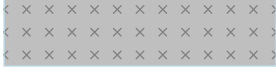
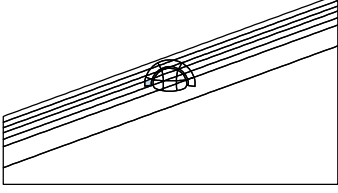
No.	Region	Active / inactive	Assigned soil
1		Active	□ □ □ □ □ □ □ 
2		Active	□ □ □ □ □ □ □ 
3		Active	□ □ □ □ □ □ □ 
4		Active	□ □ □ □ □ □ □ □ □ 
5		Active	□ □ □ □ □ □ □ □ □ 
6		Active	□ □ □ □ □ □ □ 
7		Active	□ □ □ □ □ □ □ 

No.	Region	Active / inactive	Assigned soil
8		Active	□ □ □ □ □ □ □
			
9		Active	□ □ □ □ □ □ □
			
10		Active	□ □ □ □ □ □
			
11		Active	□ □ □ □ □
			
12		Active	□ □ □ □ □ □
			
13		Active	□ □ □ □ □
			
14		Active	□ □ □ □ □ □ □ □
			
15		Active	□ □ □ □
			



No.	Region	Active / inactive	Assigned soil
16		Active	□ □ □ □
			
17		Active	□ □ □ □ □ □
			
18		Active	□ □ □ □ □ □ □
			
19		Active	□ □ □ □ □ □
			
20		Active	□ □ □ □
			
21		Active	□ □ □ □
			
22		Active	□ □ □ □
			
23		Active	□ □ □ □ □ □ □ □
			

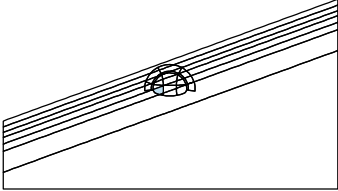
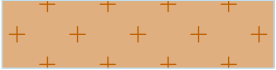
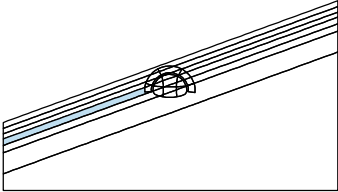
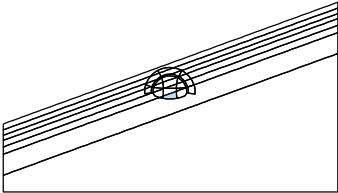
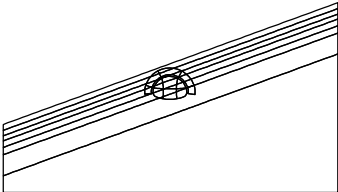
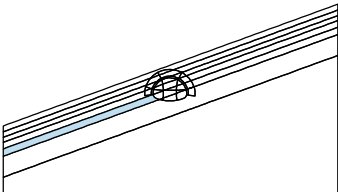
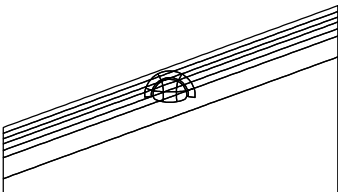
No.	Region	Active / inactive	Assigned soil
24		Active	□ □ □ □
25		Excavation	Excavation No. 1 (□ □ 3 - 1)
			Soil remaining activity: 30.0 %
26		Active	□ □ □ □ □ □ □ □
27		Active	□ □ □ □ □ □ □ □
28		Active	□ □ □ □ □
29		Active	□ □ □ □
30		Active	□ □ □ □ □ □ □ □
31		Excavation	Excavation No. 1 (□ □ 3 - 1)
			Soil remaining activity: 30.0 %

No.	Region	Active / inactive	Assigned soil
32		Active	□ □ □ □ □ □
			
33		Active	□ □ □ □ □ □ □ □
			
34		Active	□ □ □ □ □ □ □ □
			
35		Active	□ □ □ □ □ □
			
36		Active	□ □ □ □ □ □
			
37		Active	□ □ □ □
			
38		Active	□ □ □ □ □
			
39		Active	□ □ □ □ □ □ □ □
			



No.	Region	Active / inactive	Assigned soil
40		Active	□ □ □ □
41		Active	□ □ □ □
42		Active	□ □ □ □
43		Active	□ □ □ □ □ □ □ □
44		Active	□ □ □ □ □ □ □ □
45		Active	□ □ □ □ □ □
46		Active	□ □ □ □ □ □ □ □
47		Active	□ □ □ □ □ □ □ □

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No.	Region	Active / inactive	Assigned soil
48		Active	□ □ □ □ □ □ □ □ 
49		Active	□ □ □ □ □ □ □ □ 
50		Active	□ □ □ □ □ □ 
51		Active	□ □ □ □ □ □ □ □ 
52		Active	□ □ □ □ □ □ □ □ 
53		Active	□ □ □ □ □ □ 

Beams

No.	Beam		Location	Support [m]		Include self weight	Cross-section / Degradation in current stage [%]	Material / Beam current activity [%]	Contacts	
	new	modified		Start pt.	End pt.				left	right
1	Yes		Free line No. 9			Yes	1.00 (b) x 0.45 (h) m	C25; $E = 2800.00$ MPa; $G = 1120.00$ MPa; $\alpha = 0.000010$ 1/K; $\gamma = 25.00$ kN/m ³	(not input)	(not input)
2	Yes		Free line No. 18			Yes	1.00 (b) x 0.45 (h) m	Q345; $E = 206000.00$ MPa; $G = 79000.00$ MPa; $\alpha = 0.000012$ 1/K; $\gamma = 78.50$ kN/m ³	(not input)	(not input)
3	Yes		Free line No. 3			Yes	1.00 (b) x 0.45 (h) m	Q345; $E = 206000.00$ MPa; $G = 79000.00$ MPa; $\alpha = 0.000012$ 1/K; $\gamma = 78.50$ kN/m ³	(not input)	(not input)

No.	Cross-section		Material	
	I_y [m ⁴ /m]	A [m ² /m]	E [MPa]	G [MPa]
1	7.59E-03	4.50E-01	2800.00	1120.00
2	5.94E-05	7.69E-03	206000.00	79000.00
3	5.94E-05	7.69E-03	206000.00	79000.00

Line supports

No.	Line support		Location	Support	
	new	modified		Direction X	Direction Z
A1	Yes		Mesh line No. 20	fixed	free
A2	Yes		Mesh line No. 18	fixed	free
A3	Yes		Mesh line No. 15	fixed	free
A4	Yes		Mesh line No. 12	fixed	free
A5	Yes		Mesh line No. 9	fixed	free
A6	Yes		Mesh line No. 6	fixed	free
A7	Yes		Mesh line No. 3	fixed	free
A8	Yes		Mesh line No. 22	fixed	free

A1 up to A15 - automatically generated line supports along model edges

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No.	Line support		Location	Support	
	new	modified		Direction X	Direction Z
A9	Yes		Mesh line No. 17	fixed	free
A10	Yes		Mesh line No. 14	fixed	free
A11	Yes		Mesh line No. 11	fixed	free
A12	Yes		Mesh line No. 8	fixed	free
A13	Yes		Mesh line No. 5	fixed	free
A14	Yes		Mesh line No. 1	fixed	free
A15	Yes		Mesh line No. 21	fixed	fixed
A1 up to A15 - automatically generated line supports along model edges					

Water

Water type : No water

Analysis settings

Stress

Method : Newton - Raphson
 Stiffness matrix change : after each iteration
 Max. number of iterations for one calc. step : 100
 Initial calculation step : 0.25
 Displacement error : 0.0100
 Imbalanced forces error : 0.0100
 Energy error : 0.0100
 Respect material interfaces : no

Plasticity

Return mapping error : 0.00100
 Max. number of iterations for one plast. step : 20

Newton - Raphson

Relaxation factor of calculation step : 2.00
 Maximum number of relaxations of calculation step : 2
 Min. number of iterations for one calc. step : 1

Line search

Solution method : iterate no
 Line search limit - minimum : 0.100
 Line search limit - maximum : 1.000

Results (Stage of construction 4)

Stress analysis was successfully completed.

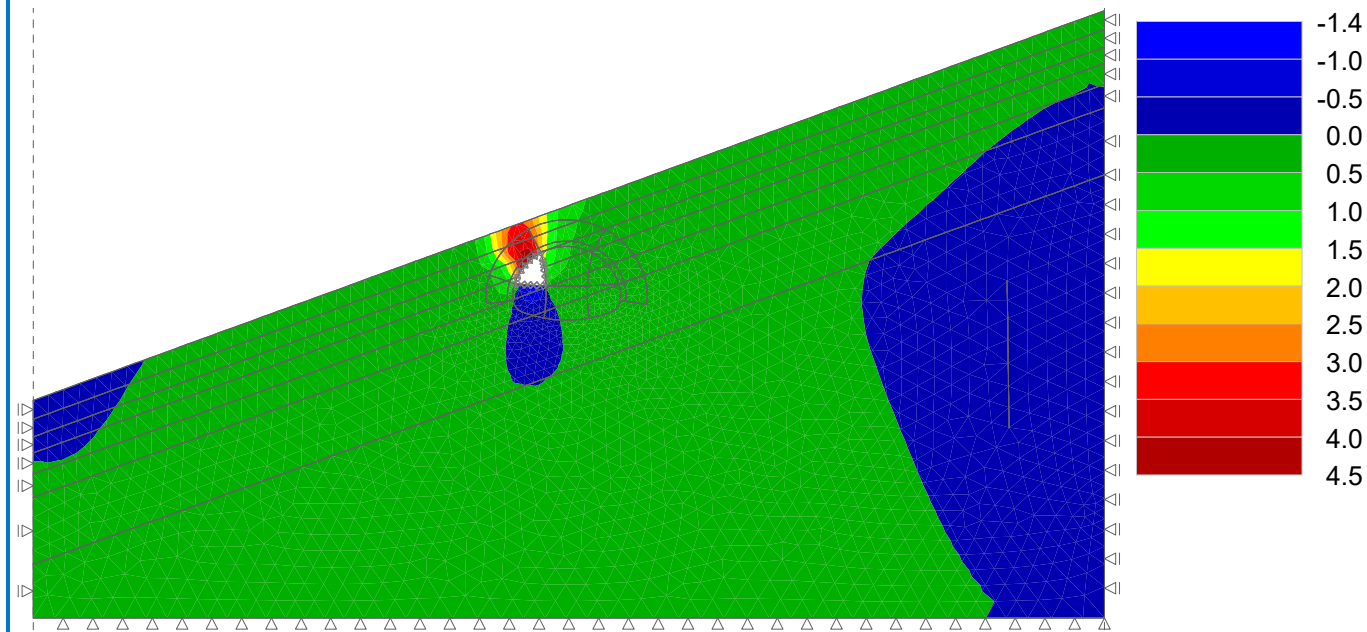
Analysis settings : **user-defined**

Attained loading = 100.00 %

Name : Analysis

Stage : 4

Results : overall; variable : Displacement d_z; range : <-1.4; 4.5> mm



Extremes

Displacements (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Displacements x [mm]	0.00	0.00	-2.1	-4.08	13.52	0.9
Displacements z [mm]	-4.08	13.52	-1.4	-6.91	4.82	4.5

Stress (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Total stress $\sigma_{z, \text{tot}}$ [kPa]	-5.45	13.03	0.00	96.79	-62.19	2206.00
Effective stress $\sigma_{z, \text{eff}}$ [kPa]	-5.45	13.03	0.00	96.79	-62.19	2206.00
Total stress $\sigma_{x, \text{tot}}$ [kPa]	100.81	51.70	-9.46	90.93	-62.19	723.89
Effective stress $\sigma_{x, \text{eff}}$ [kPa]	100.81	51.70	-9.46	90.93	-62.19	723.89
Shear stress τ_{xz} [kPa]	-8.58	0.37	-45.07	-0.13	-62.19	159.12
Total mean stress $\sigma_{m, \text{tot}}$ [kPa]	100.81	51.70	5.39	90.93	-62.19	1220.34
Effective mean stress $\sigma_{m, \text{eff}}$ [kPa]	100.81	51.70	5.39	90.93	-62.19	1220.34
Equivalent deviatoric stress J [kPa]	-5.45	13.03	2.75	96.79	-62.19	853.76
Total principal stress $\sigma_{1, \text{tot}}$ [kPa]	100.81	51.70	-9.47	90.93	-62.19	723.39
Effective principal stress $\sigma_{1, \text{eff}}$ [kPa]	100.81	51.70	-9.47	90.93	-62.19	723.39
Total principal stress $\sigma_{2, \text{tot}}$ [kPa]	-5.45	13.03	9.75	96.79	-62.19	2206.13
Effective principal stress $\sigma_{2, \text{eff}}$ [kPa]	-5.45	13.03	9.75	96.79	-62.19	2206.13
Total principal stress $\sigma_{3, \text{tot}}$ [kPa]	100.81	51.70	4.28	90.93	-62.19	732.21
Effective principal stress $\sigma_{3, \text{eff}}$ [kPa]	100.81	51.70	4.28	90.93	-62.19	732.21

Strain (extremes)

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	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Equivalent deviatoric strain E_d [%]	100.81	18.37	0.02	-13.40	4.55	0.42
Plastic equivalent deviatoric strain $E_{d, pl}$ [%]	-7.16	10.70	0.00	-11.14	4.11	0.07
Strain ε_x [%]	100.81	48.18	-0.11	-100.00	-21.39	0.11
Strain ε_z [%]	-5.91	5.61	0.02	-13.40	4.55	0.29
Shear strain γ_{xz} [%]	-8.84	-0.80	-0.04	-10.98	5.98	0.16
Plastic strain $\varepsilon_{x, pl}$ [%]	-11.14	4.11	-0.03	-7.16	10.70	0.00
Plastic strain $\varepsilon_{z, pl}$ [%]	-7.16	10.70	0.00	-11.14	4.11	0.03
Plastic shear strain $\gamma_{xz, pl}$ [%]	-10.02	-0.49	-0.01	-3.88	-0.24	0.04
Volumetric strain ε_v [%]	-6.24	0.20	0.01	-5.29	7.16	0.22
Plastic volumetric strain $\varepsilon_{v, pl}$ [%]	-3.89	0.08	0.00	-7.16	10.70	0.00
Principal strain ε_1 [%]	-10.98	5.98	-0.11	-100.00	-24.91	0.05
Principal strain ε_2 [%]	100.81	18.37	0.02	-13.40	4.55	0.30
Principal strain ε_3 [%]			0.00			0.00

Pore pressures (extremes)

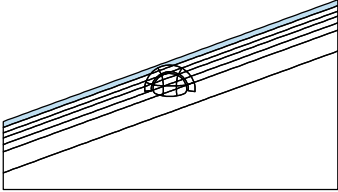
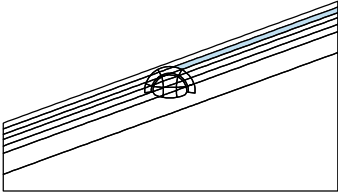
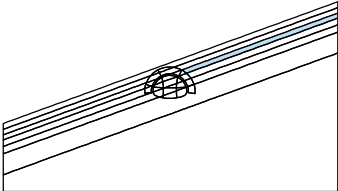
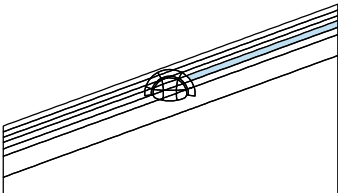
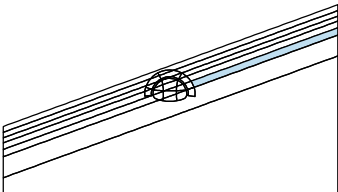
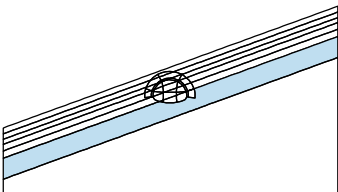
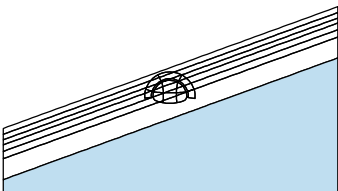
	Location		Max
	x [m]	z [m]	
Total pore pressure u_{tot} [kPa]			0.00

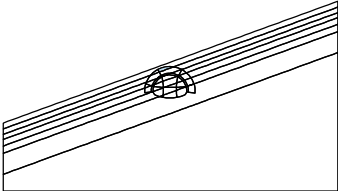
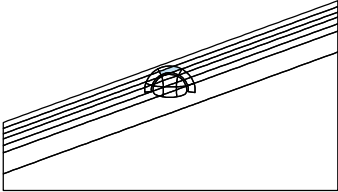
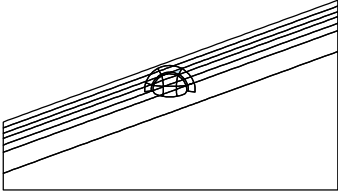
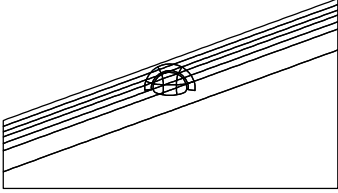
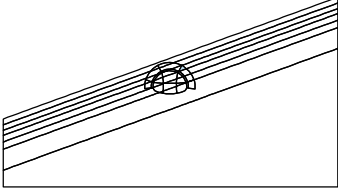
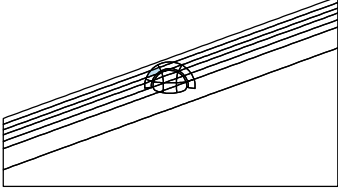
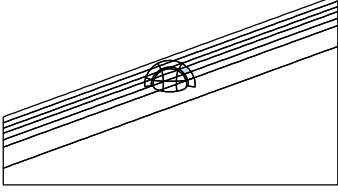
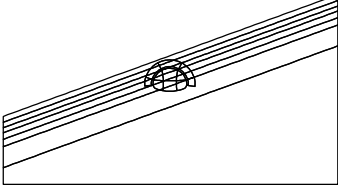
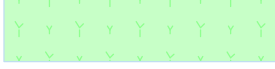
Distributions on beams (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
N [kN/m]	-4.50	4.94	-126.2	-7.41	0.28	33.6
M [kNm/m]	-8.58	0.37	-8.6	-5.91	5.61	7.3
Q [kN/m]	-9.76	0.48	-33.6	-3.89	0.08	26.2

Input data (Stage of construction 5)

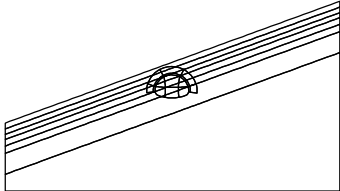
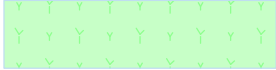
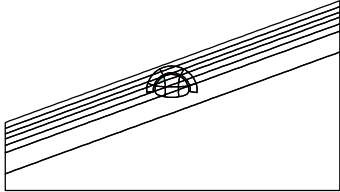
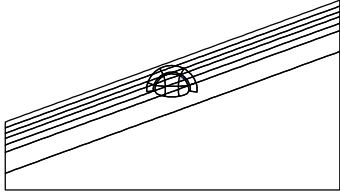
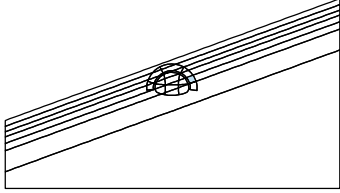
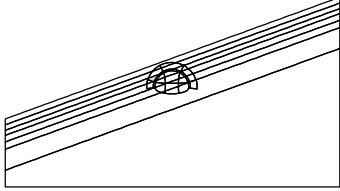
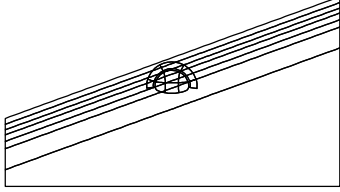
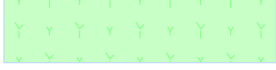
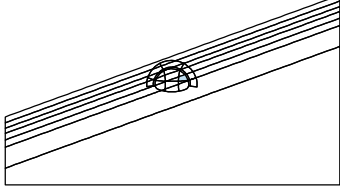
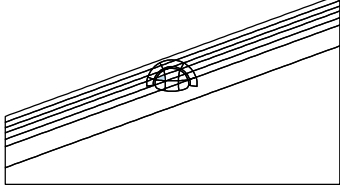
Assignment and activation

No.	Region	Active / inactive	Assigned soil
1		Active	□ □ □ □ □ □ □ 
2		Active	□ □ □ □ □ □ □ 
3		Active	□ □ □ □ □ □ □ 
4		Active	□ □ □ □ □ □ □ □ 
5		Active	□ □ □ □ □ □ □ □ 
6		Active	□ □ □ □ □ □ □ 
7		Active	□ □ □ □ □ □ □ 

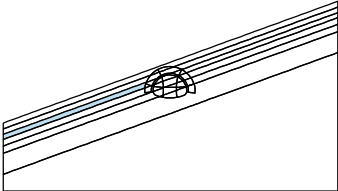
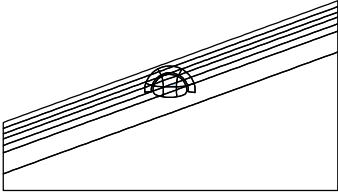
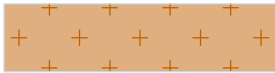
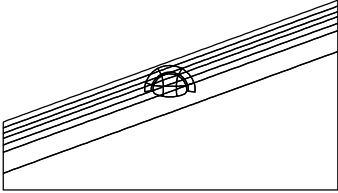
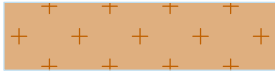
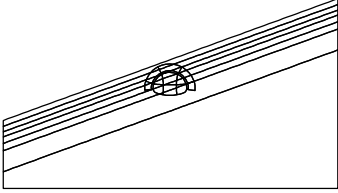
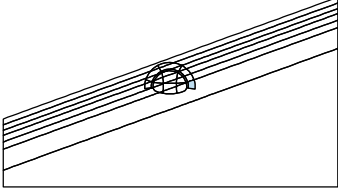
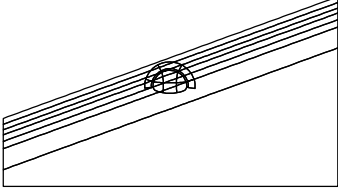
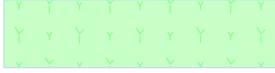
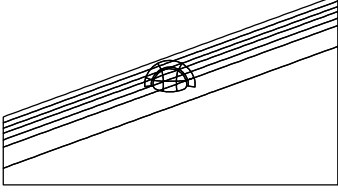
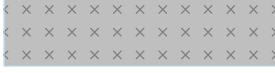
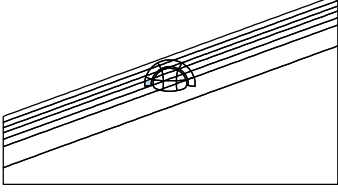
No.	Region	Active / inactive	Assigned soil
8		Active	□ □ □ □ □ □ □
			
9		Active	□ □ □ □ □ □ □
			
10		Active	□ □ □ □ □ □
			
11		Active	□ □ □ □ □
			
12		Active	□ □ □ □ □ □
			
13		Active	□ □ □ □ □
			
14		Active	□ □ □ □ □ □ □ □
			
15		Active	□ □ □ □
			



No.	Region	Active / inactive	Assigned soil
16		Active	□ □ □ □
17		Active	□ □ □ □ □ □
18		Active	□ □ □ □ □ □ □
19		Active	□ □ □ □ □ □
20		Active	□ □ □ □
21		Active	□ □ □ □
22		Active	□ □ □ □
23		Active	□ □ □ □ □ □ □ □

No.	Region	Active / inactive	Assigned soil
24		Active	□ □ □ □
			
25		Excavation	Excavation No. 1 (□ □ 3 - 1)
			Soil remaining activity: 0.0 %
26		Active	□ □ □ □ □ □ □ □
			
27		Active	□ □ □ □ □ □ □ □
			
28		Active	□ □ □ □ □
			
29		Active	□ □ □ □
			
30		Active	□ □ □ □ □ □ □ □
			
31		Excavation	Excavation No. 1 (□ □ 3 - 1)
			Soil remaining activity: 0.0 %

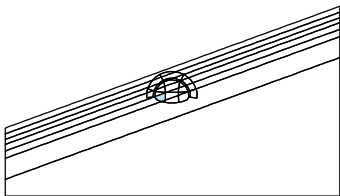
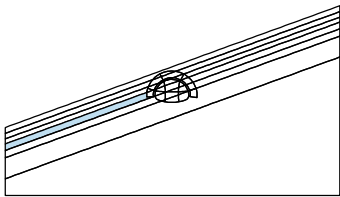
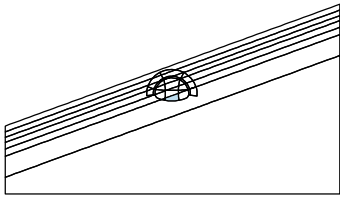
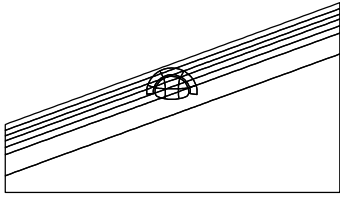
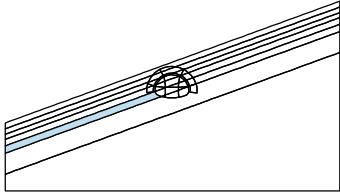
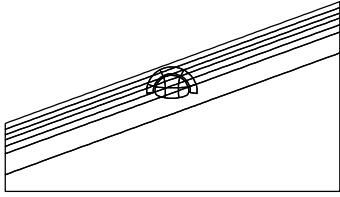


No.	Region	Active / inactive	Assigned soil
32		Active	□ □ □ □ □ □ 
33		Active	□ □ □ □ □ □ □ □ 
34		Active	□ □ □ □ □ □ □ □ 
35		Active	□ □ □ □ □ □ 
36		Active	□ □ □ □ □ □ 
37		Active	□ □ □ □ 
38		Active	□ □ □ □ □ 
39		Active	□ □ □ □ □ □ □ □ 



No.	Region	Active / inactive	Assigned soil
40		Active	□ □ □ □
41		Active	□ □ □ □
42		Active	□ □ □ □
43		Active	□ □ □ □ □ □ □ □
44		Active	□ □ □ □ □ □ □ □
45		Active	□ □ □ □ □ □
46		Active	□ □ □ □ □ □ □ □
47		Active	□ □ □ □ □ □ □ □

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No.	Region	Active / inactive	Assigned soil
48		Active	□ □ □ □ □ □ □ □ 
49		Active	□ □ □ □ □ □ □ □ 
50		Active	□ □ □ □ □ □ 
51		Active	□ □ □ □ □ □ □ □ 
52		Active	□ □ □ □ □ □ □ □ 
53		Active	□ □ □ □ □ □ 

Beams

No.	Beam		Location	Support [m]		Include self weight	cross-section / Degradation in current stage [%]	Material / Beam current activity [%]	Contacts	
	new	modified		Start pt.	End pt.				left	right
1	No	Yes	Free line No. 9			Yes	↑ h = 0.45 m	↑ E = 28000.00 MPa; G = 11200.00 MPa	(not input)	(not input)

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No.	Beam		Location	Support [m]		Include self weight	Cross-section / Degradation in current stage [%]	Material / Beam current activity [%]	Contacts	
	new	modified		Start pt.	End pt.				left	right
2	No	No	Free line No. 18	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
3	No	No	Free line No. 3	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)

No.	Cross-section		Material	
	I _y [m ⁴ /m]	A [m ² /m]	E [MPa]	G [MPa]
1	7.59E-03	4.50E-01	28000.00	11200.00
2	5.94E-05	7.69E-03	206000.00	79000.00
3	5.94E-05	7.69E-03	206000.00	79000.00

Line supports

No.	Line support		Location	Support	
	new	modified		Direction X	Direction Z
A1	Yes		Mesh line No. 20	fixed	free
A2	Yes		Mesh line No. 18	fixed	free
A3	Yes		Mesh line No. 15	fixed	free
A4	Yes		Mesh line No. 12	fixed	free
A5	Yes		Mesh line No. 9	fixed	free
A6	Yes		Mesh line No. 6	fixed	free
A7	Yes		Mesh line No. 3	fixed	free
A8	Yes		Mesh line No. 22	fixed	free
A9	Yes		Mesh line No. 17	fixed	free
A10	Yes		Mesh line No. 14	fixed	free
A11	Yes		Mesh line No. 11	fixed	free
A12	Yes		Mesh line No. 8	fixed	free
A13	Yes		Mesh line No. 5	fixed	free
A14	Yes		Mesh line No. 1	fixed	free
A15	Yes		Mesh line No. 21	fixed	fixed
A1 up to A15 - automatically generated line supports along model edges					

Water

Water type : No water

Analysis settings

Stress

Method :	Newton - Raphson
Stiffness matrix change :	after each iteration
Max. number of iterations for one calc. step :	100
Initial calculation step :	0.25
Displacement error :	0.0100
Imbalanced forces error :	0.0100
Energy error :	0.0100
Respect material interfaces :	no

Plasticity

Return mapping error :	0.00100
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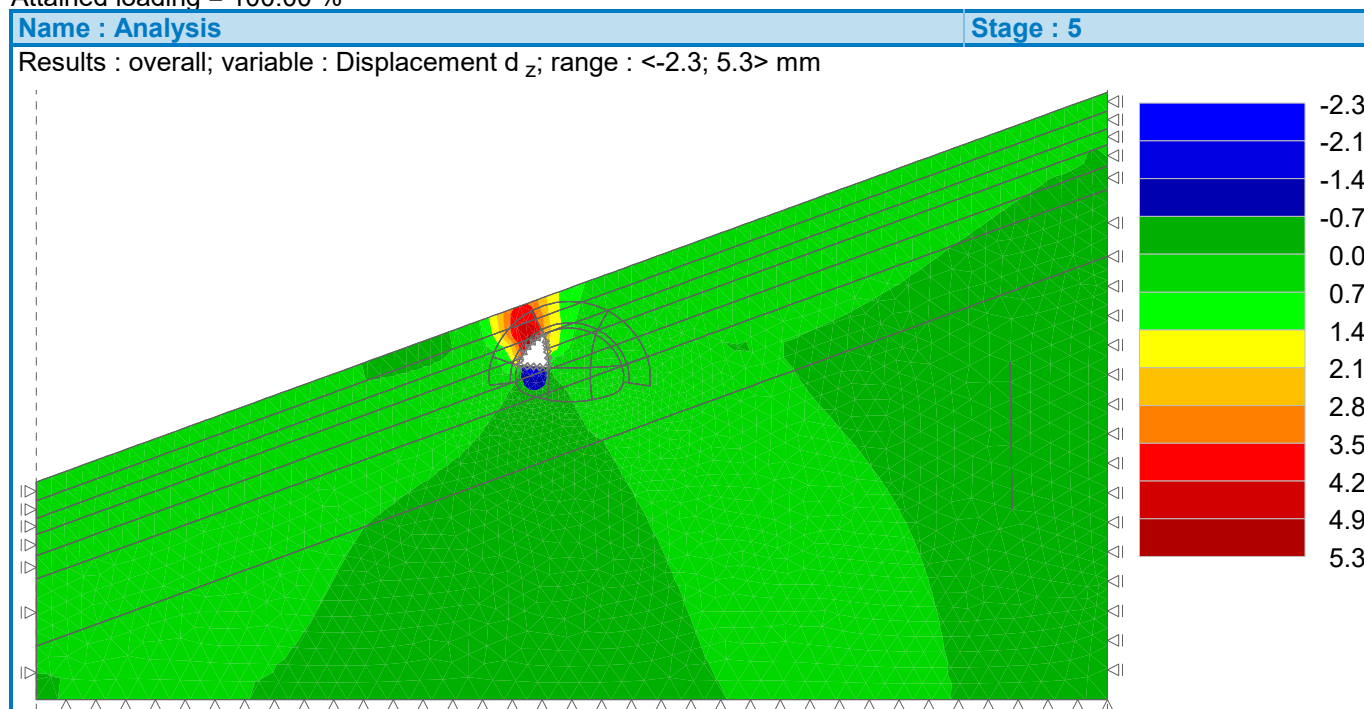
Max. number of iterations for one plast. step : 20
Newton - Raphson
 Relaxation factor of calculation step : 2.00
 Maximum number of relaxations of calculation step : 2
 Min. number of iterations for one calc. step : 1
Line search
 Solution method : iterate no
 Line search limit - minimum : 0.100
 Line search limit - maximum : 1.000

Results (Stage of construction 5)

Stress analysis was successfully completed.

Analysis settings : **user-defined**

Attained loading = 100.00 %



Extremes

Displacements (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Displacements x [mm]	0.00	0.00	-2.4	-4.25	3.59	1.4
Displacements z [mm]	-4.25	3.59	-2.3	-6.91	4.82	5.3

Stress (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Total stress $\sigma_{z, tot}$ [kPa]	-6.24	0.20	0.00	96.79	-62.19	2205.99
Effective stress $\sigma_{z, eff}$ [kPa]	-6.24	0.20	0.00	96.79	-62.19	2205.99
Total stress $\sigma_{x, tot}$ [kPa]	100.81	51.70	-9.46	90.93	-62.19	723.87
Effective stress $\sigma_{x, eff}$ [kPa]	100.81	51.70	-9.46	90.93	-62.19	723.87

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	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Shear stress τ_{xz} [kPa]	-8.58	0.37	-59.44	-0.13	-62.19	159.33
Total mean stress $\sigma_{m, tot}$ [kPa]	100.81	51.70	5.39	90.93	-62.19	1220.33
Effective mean stress $\sigma_{m, eff}$ [kPa]	100.81	51.70	5.39	90.93	-62.19	1220.33
Equivalent deviatoric stress J [kPa]	-5.45	13.03	2.44	96.79	-62.19	853.76
Total principal stress $\sigma_{1, tot}$ [kPa]	100.81	51.70	-9.47	90.93	-62.19	723.37
Effective principal stress $\sigma_{1, eff}$ [kPa]	100.81	51.70	-9.47	90.93	-62.19	723.37
Total principal stress $\sigma_{2, tot}$ [kPa]	-5.45	13.03	9.99	96.79	-62.19	2206.12
Effective principal stress $\sigma_{2, eff}$ [kPa]	-5.45	13.03	9.99	96.79	-62.19	2206.12
Total principal stress $\sigma_{3, tot}$ [kPa]	-6.24	0.20	3.72	90.93	-62.19	732.20
Effective principal stress $\sigma_{3, eff}$ [kPa]	-6.24	0.20	3.72	90.93	-62.19	732.20

Strain (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Equivalent deviatoric strain E_d [%]	-6.24	0.20	0.01	-13.40	4.55	0.43
Plastic equivalent deviatoric strain $E_{d, pl}$ [%]	-7.16	10.70	0.00	-3.88	-0.24	0.12
Strain ϵ_x [%]	100.81	48.18	-0.11	-100.00	-21.39	0.11
Strain ϵ_z [%]	-6.24	0.20	0.00	-13.40	4.55	0.30
Shear strain γ_{xz} [%]	-8.58	0.37	-0.07	-10.98	5.98	0.16
Plastic strain $\epsilon_{x, pl}$ [%]	-4.09	2.42	-0.04	-7.16	10.70	0.00
Plastic strain $\epsilon_{z, pl}$ [%]	-5.06	0.13	0.00	-4.09	2.42	0.04
Plastic shear strain $\gamma_{xz, pl}$ [%]	-10.02	-0.49	-0.04	-3.88	-0.24	0.08
Volumetric strain ϵ_v [%]	-6.24	0.20	0.00	-5.29	7.16	0.22
Plastic volumetric strain $\epsilon_{v, pl}$ [%]	-3.89	0.08	-0.01	-7.16	10.70	0.00
Principal strain ϵ_1 [%]	-10.98	5.98	-0.11	-100.00	-24.91	0.05
Principal strain ϵ_2 [%]	-6.24	0.20	0.00	-13.40	4.55	0.31
Principal strain ϵ_3 [%]			0.00			0.00

Pore pressures (extremes)

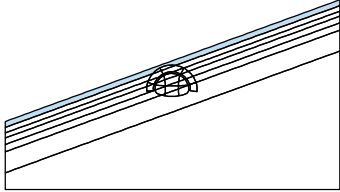
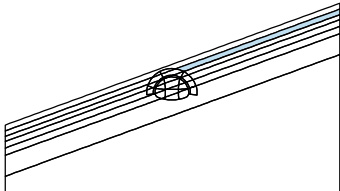
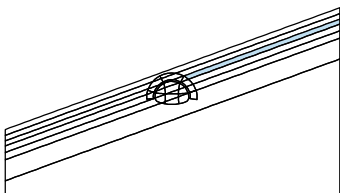
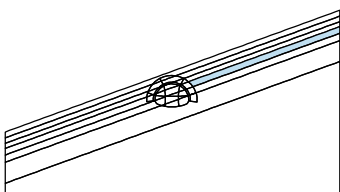
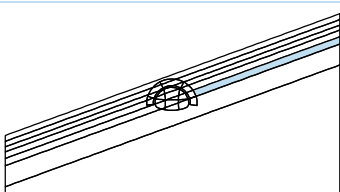
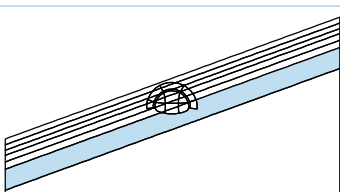
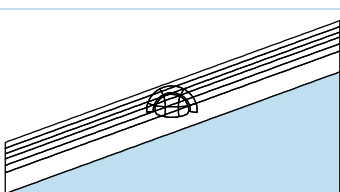
	Location		Max
	x [m]	z [m]	
Total pore pressure u_{tot} [kPa]			0.00

Distributions on beams (extremes)

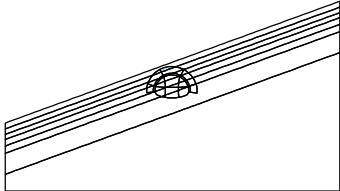
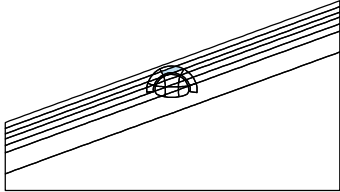
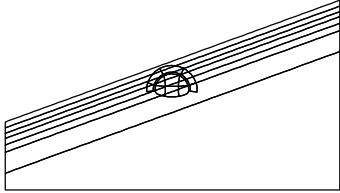
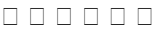
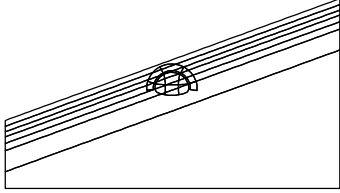
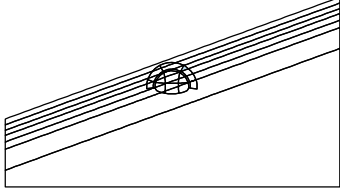
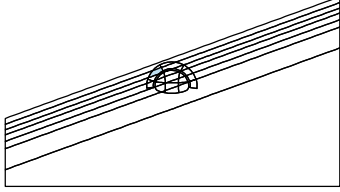
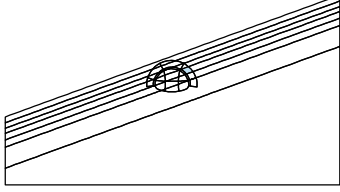
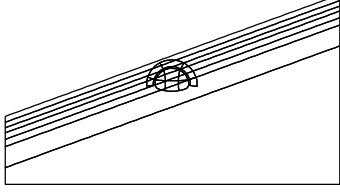
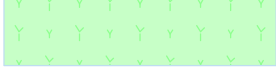
	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
N [kN/m]	-3.96	1.25	-251.9	-8.58	0.37	48.0
M [kNm/m]	-8.58	0.37	-21.3	-5.91	5.61	27.7
Q [kN/m]	-9.76	0.48	-57.2	-3.89	0.08	50.7

Input data (Stage of construction 6)

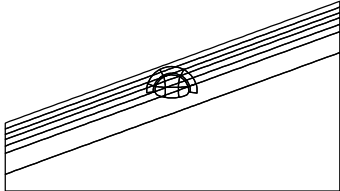
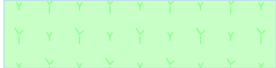
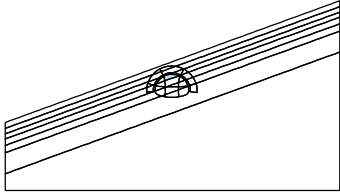
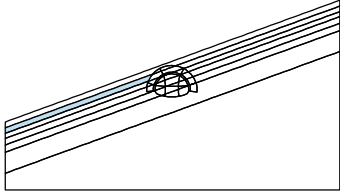
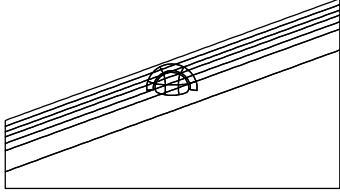
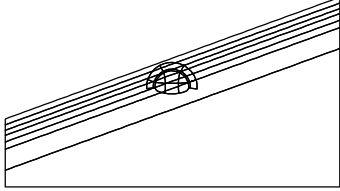
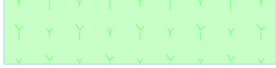
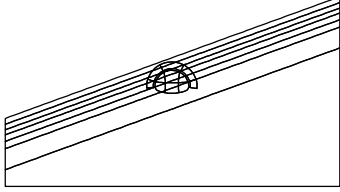
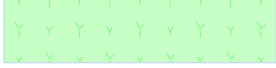
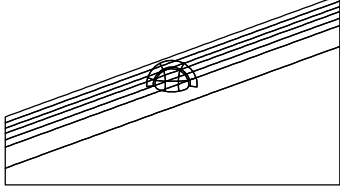
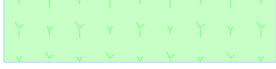
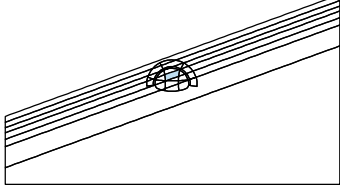
Assignment and activation

No.	Region	Active / inactive	Assigned soil
1		Active	□ □ □ □ □ □ □ 
2		Active	□ □ □ □ □ □ □ 
3		Active	□ □ □ □ □ □ □ 
4		Active	□ □ □ □ □ □ □ □ □ 
5		Active	□ □ □ □ □ □ □ □ □ 
6		Active	□ □ □ □ □ □ □ 
7		Active	□ □ □ □ □ □ □ 



No.	Region	Active / inactive	Assigned soil
8		Active	
			
9		Active	
			
10		Active	
			
11		Active	
			
12		Active	
			
13		Active	
			
14		Active	
			
15		Active	
			

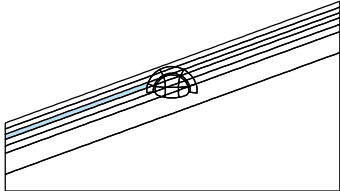
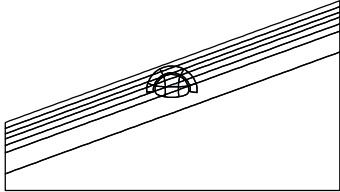
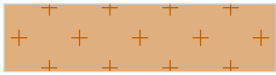
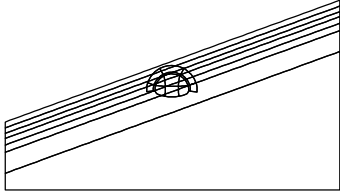
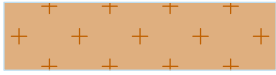
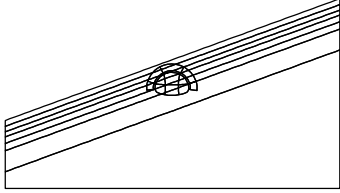
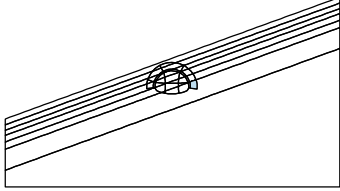
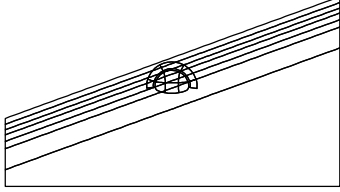
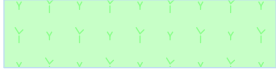
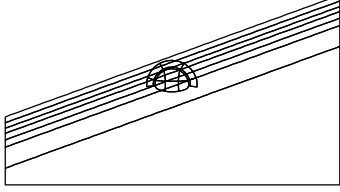
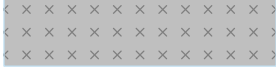
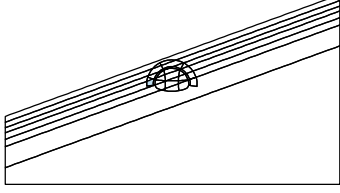
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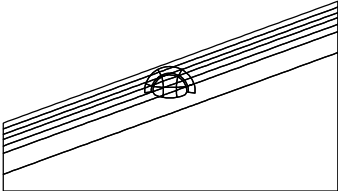
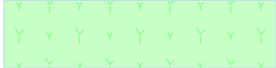
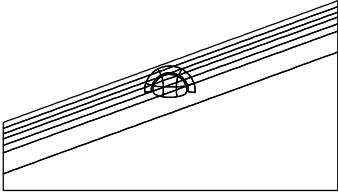
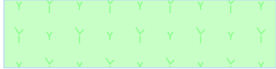
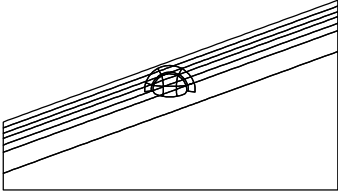
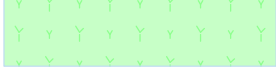
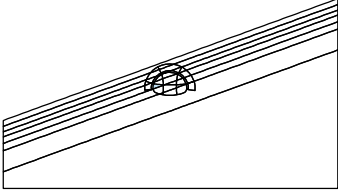
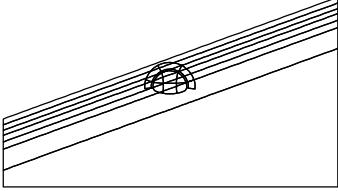
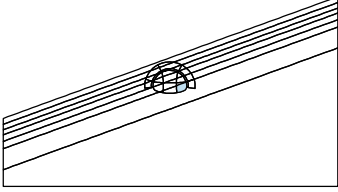
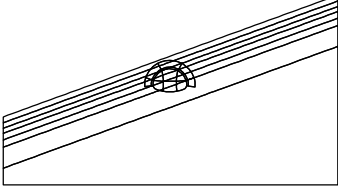
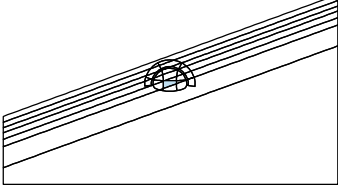
No.	Region	Active / inactive	Assigned soil
16		Active	□ □ □ □ 
17		Active	□ □ □ □ □ □ 
18		Active	□ □ □ □ □ □ □ 
19		Active	□ □ □ □ □ □ 
20		Active	□ □ □ □ 
21		Active	□ □ □ □ 
22		Active	□ □ □ □ 
23		Active	□ □ □ □ □ □ □ □ 



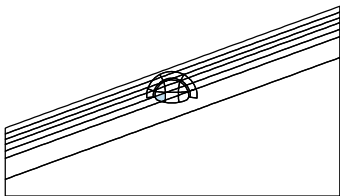
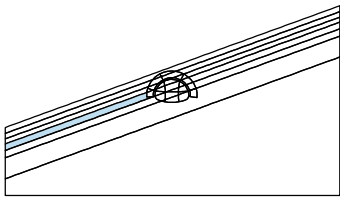
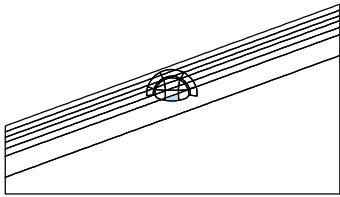
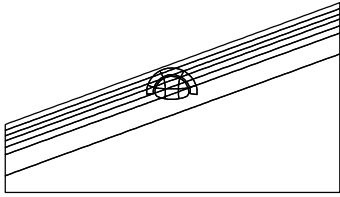
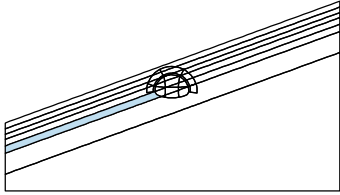
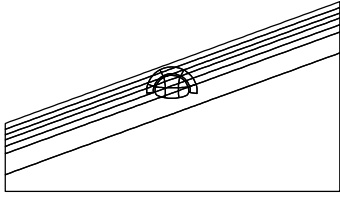
No.	Region	Active / inactive	Assigned soil
24		Active	□ □ □ □
25		Inactive	
26		Active	□ □ □ □ □ □ □ □
27		Active	□ □ □ □ □ □ □ □
28		Active	□ □ □ □ □
29		Active	□ □ □ □
30		Active	□ □ □ □ □ □ □ □
31		Inactive	

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No.	Region	Active / inactive	Assigned soil
32		Active	□ □ □ □ □ □ 
33		Active	□ □ □ □ □ □ □ □ 
34		Active	□ □ □ □ □ □ □ □ 
35		Active	□ □ □ □ □ □ 
36		Active	□ □ □ □ □ □ 
37		Active	□ □ □ □ 
38		Active	□ □ □ □ □ 
39		Active	□ □ □ □ □ □ □ □ 

No.	Region	Active / inactive	Assigned soil
40		Active	□ □ □ □
			
41		Active	□ □ □ □
			
42		Active	□ □ □ □
			
43		Excavation	Excavation No. 1 (□ □ 6 - 1)
			Soil remaining activity: 60.0 %
44		Active	□ □ □ □ □ □ □ □
			
45		Active	□ □ □ □ □ □
			
46		Active	□ □ □ □ □ □ □ □
			
47		Active	□ □ □ □ □ □ □ □
			

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No.	Region	Active / inactive	Assigned soil
48		Excavation	Excavation No. 1 (□ □ 6 - 1) Soil remaining activity: 60.0 %
49		Active	□ □ □ □ □ □ □ □ 
50		Active	□ □ □ □ □ □ 
51		Active	□ □ □ □ □ □ □ □ 
52		Active	□ □ □ □ □ □ □ □ 
53		Excavation	Excavation No. 1 (□ □ 6 - 1) Soil remaining activity: 60.0 %

Beams

No.	Beam		Location	Support [m]		Include self weight	cross-section / Degradation in current stage [%]	Material / Beam current activity [%]	Contacts	
	new	modified		Start pt.	End pt.				left	right
1	No	No	Free line No. 9	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
2	No	No	Free line No. 18	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)

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No.	Beam		Location	Support [m]		Include self weight	Cross-section / Degradation in current stage [%]	Material / Beam current activity [%]	Contacts	
	new	modified		Start pt.	End pt.				left	right
3	No	No	Free line No. 3	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)

No.	Cross-section		Material	
	I _y [m ⁴ /m]	A [m ² /m]	E [MPa]	G [MPa]
1	7.59E-03	4.50E-01	28000.00	11200.00
2	5.94E-05	7.69E-03	206000.00	79000.00
3	5.94E-05	7.69E-03	206000.00	79000.00

Line supports

No.	Line support		Location	Support	
	new	modified		Direction X	Direction Z
A1	Yes		Mesh line No. 20	fixed	free
A2	Yes		Mesh line No. 18	fixed	free
A3	Yes		Mesh line No. 15	fixed	free
A4	Yes		Mesh line No. 12	fixed	free
A5	Yes		Mesh line No. 9	fixed	free
A6	Yes		Mesh line No. 6	fixed	free
A7	Yes		Mesh line No. 3	fixed	free
A8	Yes		Mesh line No. 22	fixed	free
A9	Yes		Mesh line No. 17	fixed	free
A10	Yes		Mesh line No. 14	fixed	free
A11	Yes		Mesh line No. 11	fixed	free
A12	Yes		Mesh line No. 8	fixed	free
A13	Yes		Mesh line No. 5	fixed	free
A14	Yes		Mesh line No. 1	fixed	free
A15	Yes		Mesh line No. 21	fixed	fixed
A1 up to A15 - automatically generated line supports along model edges					

Water

Water type : No water

Analysis settings

Stress

Method :	Newton - Raphson
Stiffness matrix change :	after each iteration
Max. number of iterations for one calc. step :	100
Initial calculation step :	0.25
Displacement error :	0.0100
Imbalanced forces error :	0.0100
Energy error :	0.0100
Respect material interfaces :	no

Plasticity

Return mapping error :	0.00100
Max. number of iterations for one plast. step :	20

Newton - Raphson

Relaxation factor of calculation step : 2.00
Maximum number of relaxations of calculation step : 2
Min. number of iterations for one calc. step : 1

Line search

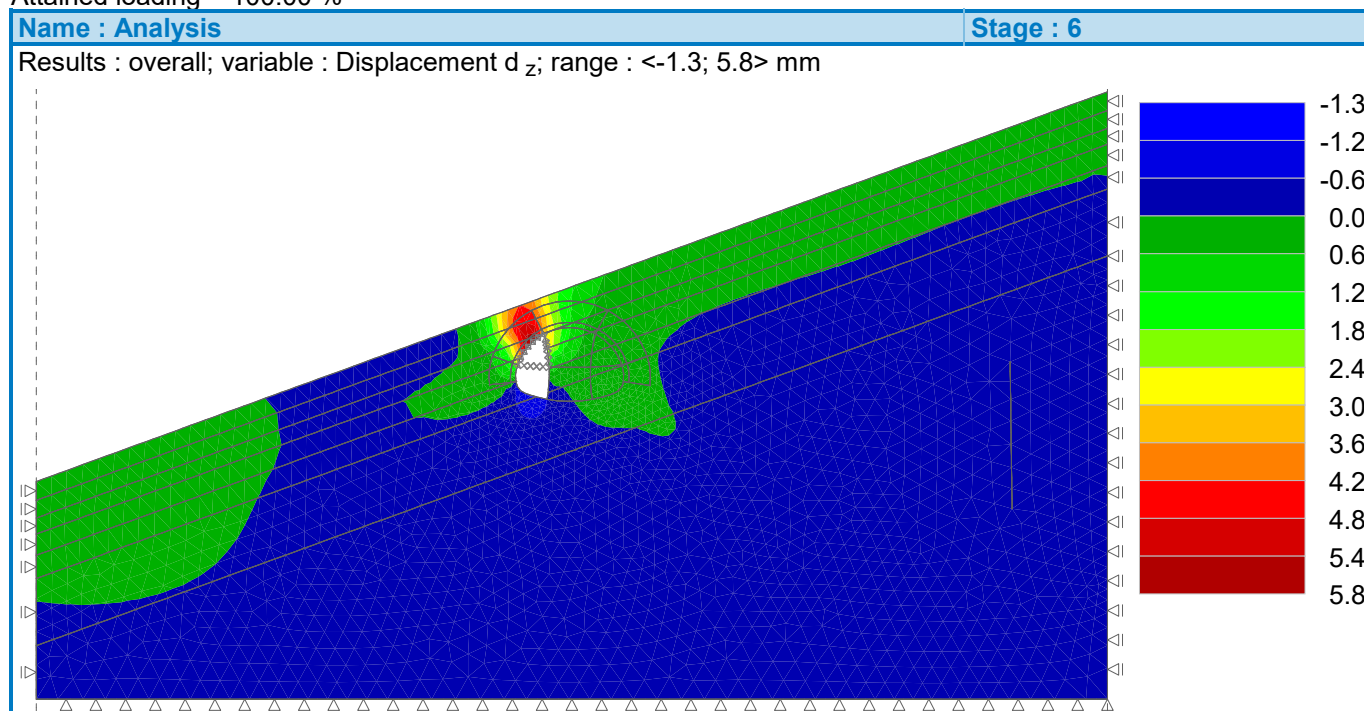
Solution method : iterate no
Line search limit - minimum : 0.100
Line search limit - maximum : 1.000

Results (Stage of construction 6)

Stress analysis was successfully completed.

Analysis settings : **user-defined**

Attained loading = 100.00 %



Extremes

Displacements (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Displacements x [mm]	0.00	0.00	-2.4	-4.25	3.59	1.7
Displacements z [mm]	-4.25	3.59	-1.3	-6.91	4.82	5.8

Stress (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Total stress $\sigma_{z, tot}$ [kPa]	-5.45	13.03	0.00	96.79	-62.19	2205.86
Effective stress $\sigma_{z, eff}$ [kPa]	-5.45	13.03	0.00	96.79	-62.19	2205.86
Total stress $\sigma_{x, tot}$ [kPa]	100.81	51.70	-9.46	90.93	-62.19	723.80
Effective stress $\sigma_{x, eff}$ [kPa]	100.81	51.70	-9.46	90.93	-62.19	723.80
Shear stress τ_{xz} [kPa]	-3.88	-0.08	-114.14	-0.13	-62.19	159.83

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	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Total mean stress $\sigma_{m, tot}$ [kPa]	100.81	51.70	5.39	90.93	-62.19	1220.24
Effective mean stress $\sigma_{m, eff}$ [kPa]	100.81	51.70	5.39	90.93	-62.19	1220.24
Equivalent deviatoric stress J [kPa]	-5.45	13.03	2.32	96.79	-62.19	853.72
Total principal stress $\sigma_{1, tot}$ [kPa]	100.81	51.70	-9.47	90.93	-62.19	723.30
Effective principal stress $\sigma_{1, eff}$ [kPa]	100.81	51.70	-9.47	90.93	-62.19	723.30
Total principal stress $\sigma_{2, tot}$ [kPa]	-5.45	13.03	10.26	96.79	-62.19	2205.99
Effective principal stress $\sigma_{2, eff}$ [kPa]	-5.45	13.03	10.26	96.79	-62.19	2205.99
Total principal stress $\sigma_{3, tot}$ [kPa]	100.81	51.70	4.28	90.93	-62.19	732.15
Effective principal stress $\sigma_{3, eff}$ [kPa]	100.81	51.70	4.28	90.93	-62.19	732.15

Strain (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Equivalent deviatoric strain E_d [%]	-6.57	-6.58	0.02	-13.40	4.55	0.43
Plastic equivalent deviatoric strain $E_{d, pl}$ [%]	-7.16	10.70	0.00	-10.08	-2.59	0.13
Strain ϵ_x [%]	100.81	48.18	-0.11	-100.00	-21.39	0.11
Strain ϵ_z [%]	-5.26	-5.75	0.01	-13.40	4.55	0.30
Shear strain γ_{xz} [%]	-3.88	-0.08	-0.12	-10.98	5.98	0.17
Plastic strain $\epsilon_{x, pl}$ [%]	-10.08	-2.59	-0.06	-7.16	10.70	0.00
Plastic strain $\epsilon_{z, pl}$ [%]	-7.16	10.70	0.00	-10.08	-2.59	0.06
Plastic shear strain $\gamma_{xz, pl}$ [%]	-3.89	0.08	-0.06	-3.95	-3.58	0.04
Volumetric strain ϵ_v [%]	100.81	51.70	0.02	-5.29	7.16	0.23
Plastic volumetric strain $\epsilon_{v, pl}$ [%]	-3.89	0.08	0.00	-7.16	10.70	0.00
Principal strain ϵ_1 [%]	-10.98	5.98	-0.11	-100.00	-24.91	0.05
Principal strain ϵ_2 [%]	-5.26	-5.75	0.02	-13.40	4.55	0.31
Principal strain ϵ_3 [%]			0.00			0.00

Pore pressures (extremes)

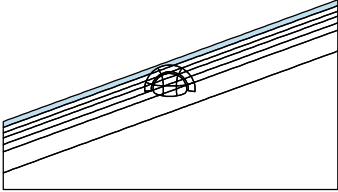
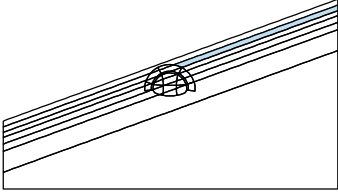
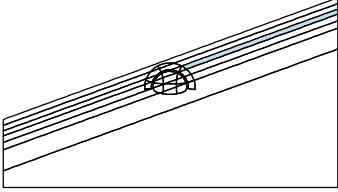
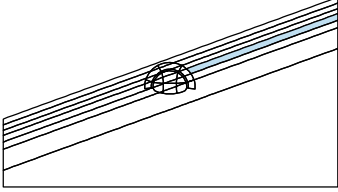
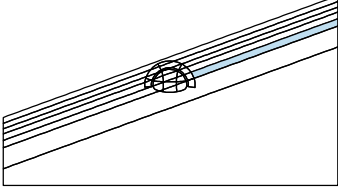
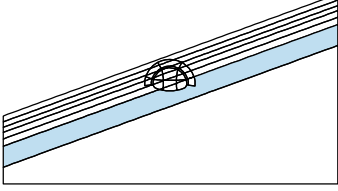
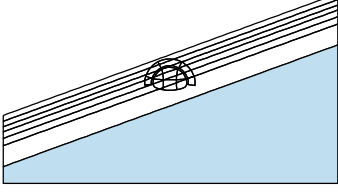
	Location		Max
	x [m]	z [m]	
Total pore pressure u_{tot} [kPa]			0.00

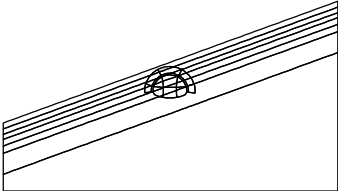
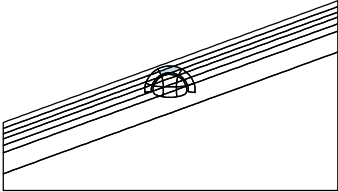
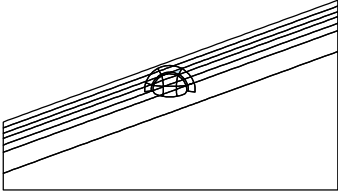
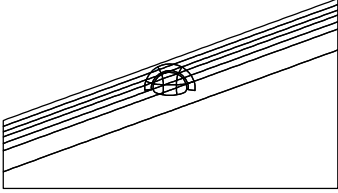
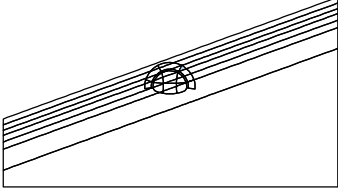
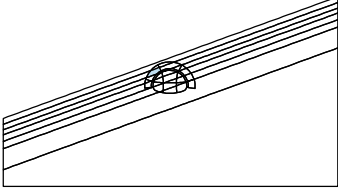
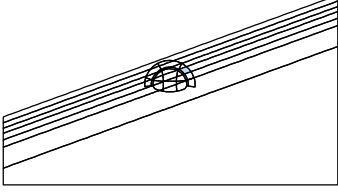
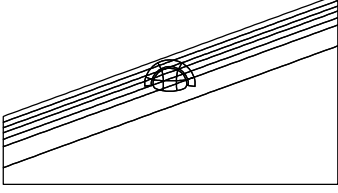
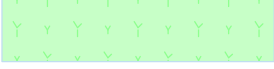
Distributions on beams (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
N [kN/m]	-4.50	4.94	-229.7	-8.58	0.37	-13.9
M [kNm/m]	-8.58	0.37	-10.9	-5.91	5.61	28.5
Q [kN/m]	-4.82	6.28	-58.9	-3.89	0.08	28.7

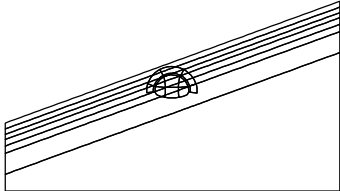
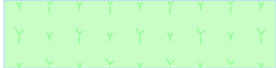
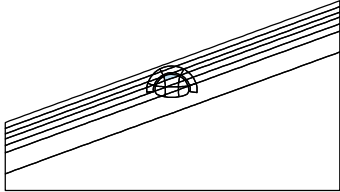
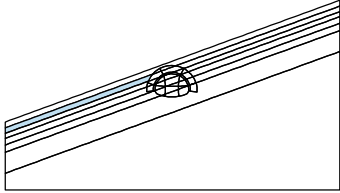
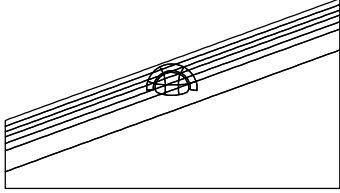
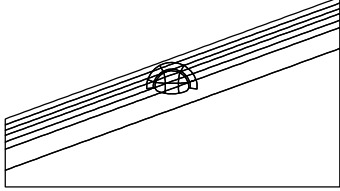
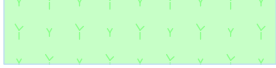
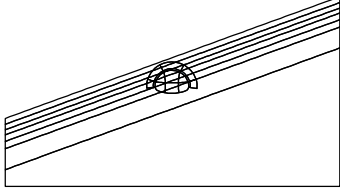
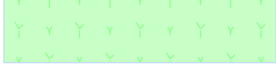
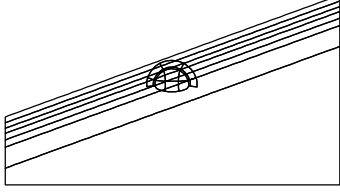
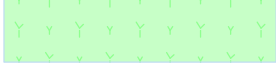
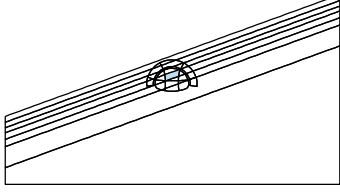
Input data (Stage of construction 7)

Assignment and activation

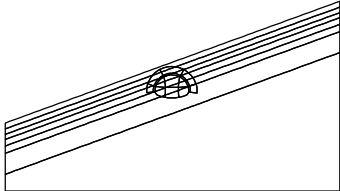
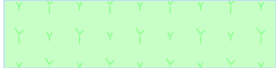
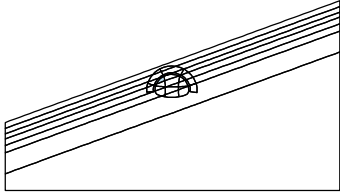
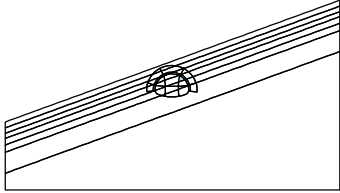
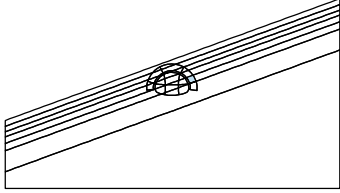
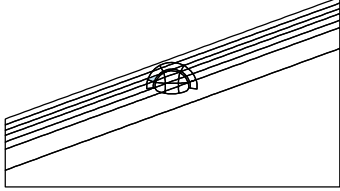
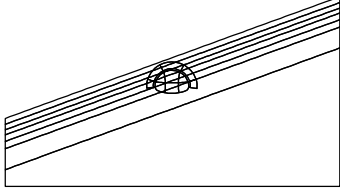
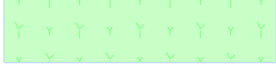
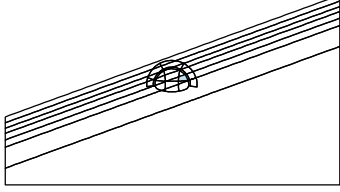
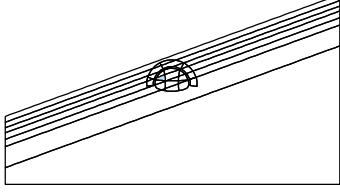
No.	Region	Active / inactive	Assigned soil
1		Active	□ □ □ □ □ □ □ 
2		Active	□ □ □ □ □ □ □ 
3		Active	□ □ □ □ □ □ □ 
4		Active	□ □ □ □ □ □ □ □ 
5		Active	□ □ □ □ □ □ □ □ 
6		Active	□ □ □ □ □ □ □ 
7		Active	□ □ □ □ □ □ □ 

No.	Region	Active / inactive	Assigned soil
8		Active	□ □ □ □ □ □ □
			
9		Active	□ □ □ □ □ □ □
			
10		Active	□ □ □ □ □ □
			
11		Active	□ □ □ □ □
			
12		Active	□ □ □ □ □ □
			
13		Active	□ □ □ □ □
			
14		Active	□ □ □ □ □ □ □ □
			
15		Active	□ □ □ □
			



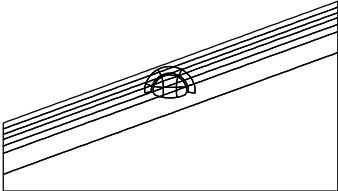
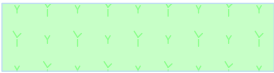
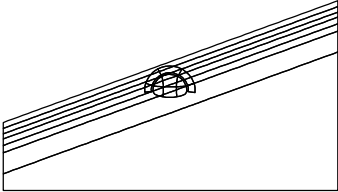
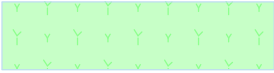
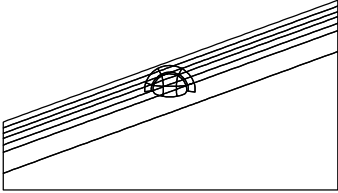
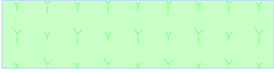
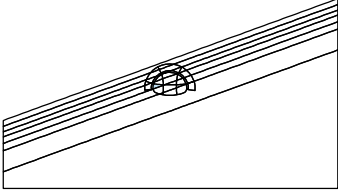
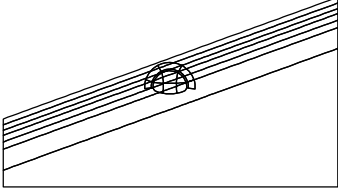
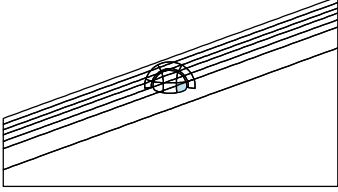
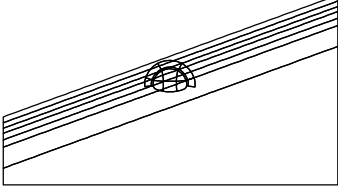
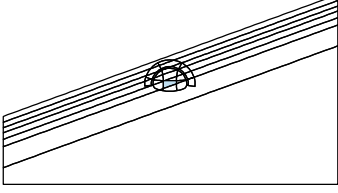
No.	Region	Active / inactive	Assigned soil
16		Active	□ □ □ □
			
17		Active	□ □ □ □ □ □
			
18		Active	□ □ □ □ □ □ □
			
19		Active	□ □ □ □ □ □
			
20		Active	□ □ □ □
			
21		Active	□ □ □ □
			
22		Active	□ □ □ □
			
23		Active	□ □ □ □ □ □ □ □
			

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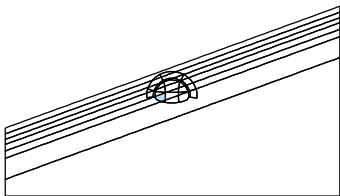
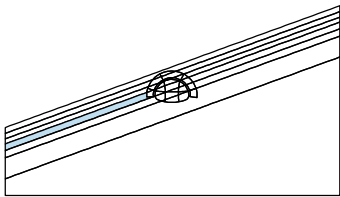
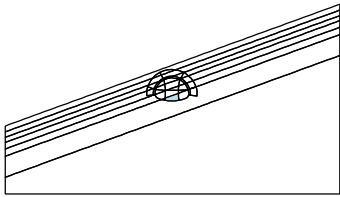
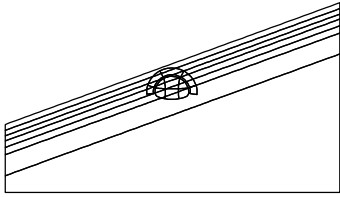
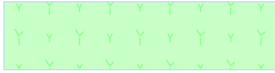
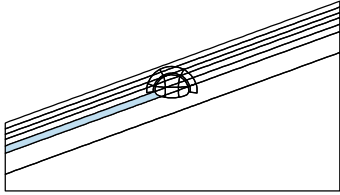
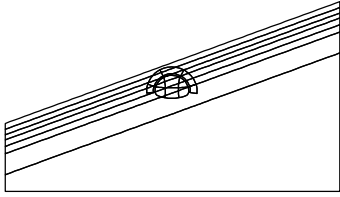
No.	Region	Active / inactive	Assigned soil
24		Active	□ □ □ □
			
25		Inactive	
26		Active	□ □ □ □ □ □ □ □
			
27		Active	□ □ □ □ □ □ □ □
			
28		Active	□ □ □ □ □
			
29		Active	□ □ □ □
			
30		Active	□ □ □ □ □ □ □ □
			
31		Inactive	



No.	Region	Active / inactive	Assigned soil
32		Active	□ □ □ □ □ □
33		Active	□ □ □ □ □ □ □ □
34		Active	□ □ □ □ □ □ □ □
35		Active	□ □ □ □ □
36		Active	□ □ □ □ □ □
37		Active	□ □ □ □
38		Active	□ □ □ □ □
39		Active	□ □ □ □ □

No.	Region	Active / inactive	Assigned soil
40		Active	□ □ □ □
			
41		Active	□ □ □ □
			
42		Active	□ □ □ □
			
43		Excavation	Excavation No. 1 (□ □ 6 - 1)
			Soil remaining activity: 30.0 %
44		Active	□ □ □ □ □ □ □ □
			
45		Active	□ □ □ □ □ □
			
46		Active	□ □ □ □ □ □ □ □
			
47		Active	□ □ □ □ □ □ □ □
			

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No.	Region	Active / inactive	Assigned soil
48		Excavation	Excavation No. 1 (□ □ 6 - 1) Soil remaining activity: 30.0 %
49		Active	□ □ □ □ □ □ □ □ 
50		Active	□ □ □ □ □ □ 
51		Active	□ □ □ □ 
52		Active	□ □ □ □ □ □ □ □ 
53		Excavation	Excavation No. 1 (□ □ 6 - 1) Soil remaining activity: 30.0 %

Beams

No.	Beam		Location	Support [m]		Include self weight	cross-section / Degradation in current stage [%]	Material / Beam current activity [%]	Contacts	
	new	modified		Start pt.	End pt.				left	right
1	No	No	Free line No. 9	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
2	No	No	Free line No. 18	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)

No.	Beam		Location	Support [m]		Include self weight	Cross-section /	Material /	Contacts	
	new	modified		Start pt.	End pt.		Degradation in current stage [%]	Beam current activity [%]	left	right
3	No	No	Free line No. 3	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
4	Yes		Free line No. 11	○—	└—	Yes	1.00 (b) x 0.45 (h) m	C25Ĥ³ÉÊĭ; E = 2800.00 MPa; G = 1120.00 MPa; α = 0.000010 1/K; γ = 25.00 kN/m³	(not input)	(not input)
5	Yes		Free line No. 2	└—	└—	Yes	1.00 (b) x 0.45 (h) m	C25Ĥ³ÉÊĭ; E = 2800.00 MPa; G = 1120.00 MPa; α = 0.000010 1/K; γ = 25.00 kN/m³	(not input)	(not input)
6	Yes		Free line No. 21	└—	○—	Yes	1.00 (b) x 0.45 (h) m	C25Ĥ³ÉÊĭ; E = 2800.00 MPa; G = 1120.00 MPa; α = 0.000010 1/K; γ = 25.00 kN/m³	(not input)	(not input)
7	Yes		Free line No. 17	○—	○—	Yes	1.00 (b) x 0.45 (h) m	Q345; E = 206000.00 MPa; G = 79000.00 MPa; α = 0.000012 1/K; γ = 78.50 kN/m³	(not input)	(not input)

No.	Cross-section		Material	
	I _y [m⁴/m]	A [m²/m]	E [MPa]	G [MPa]
1	7.59E-03	4.50E-01	28000.00	11200.00
2	5.94E-05	7.69E-03	206000.00	79000.00
3	5.94E-05	7.69E-03	206000.00	79000.00
4	7.59E-03	4.50E-01	2800.00	1120.00
5	7.59E-03	4.50E-01	2800.00	1120.00
6	7.59E-03	4.50E-01	2800.00	1120.00

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No.	Cross-section		Material	
	I_y [m ⁴ /m]	A [m ² /m]	E [MPa]	G [MPa]
7	5.94E-05	7.69E-03	206000.00	79000.00

Line supports

No.	Line support		Location	Support	
	new	modified		Direction X	Direction Z
A1	Yes		Mesh line No. 20	fixed	free
A2	Yes		Mesh line No. 18	fixed	free
A3	Yes		Mesh line No. 15	fixed	free
A4	Yes		Mesh line No. 12	fixed	free
A5	Yes		Mesh line No. 9	fixed	free
A6	Yes		Mesh line No. 6	fixed	free
A7	Yes		Mesh line No. 3	fixed	free
A8	Yes		Mesh line No. 22	fixed	free
A9	Yes		Mesh line No. 17	fixed	free
A10	Yes		Mesh line No. 14	fixed	free
A11	Yes		Mesh line No. 11	fixed	free
A12	Yes		Mesh line No. 8	fixed	free
A13	Yes		Mesh line No. 5	fixed	free
A14	Yes		Mesh line No. 1	fixed	free
A15	Yes		Mesh line No. 21	fixed	fixed
A1 up to A15 - automatically generated line supports along model edges					

Water

Water type : No water

Analysis settings

Stress

Method : Newton - Raphson
 Stiffness matrix change : after each iteration
 Max. number of iterations for one calc. step : 100
 Initial calculation step : 0.25
 Displacement error : 0.0100
 Imbalanced forces error : 0.0100
 Energy error : 0.0100
 Respect material interfaces : no

Plasticity

Return mapping error : 0.00100
 Max. number of iterations for one plast. step : 20

Newton - Raphson

Relaxation factor of calculation step : 2.00
 Maximum number of relaxations of calculation step : 2
 Min. number of iterations for one calc. step : 1

Line search

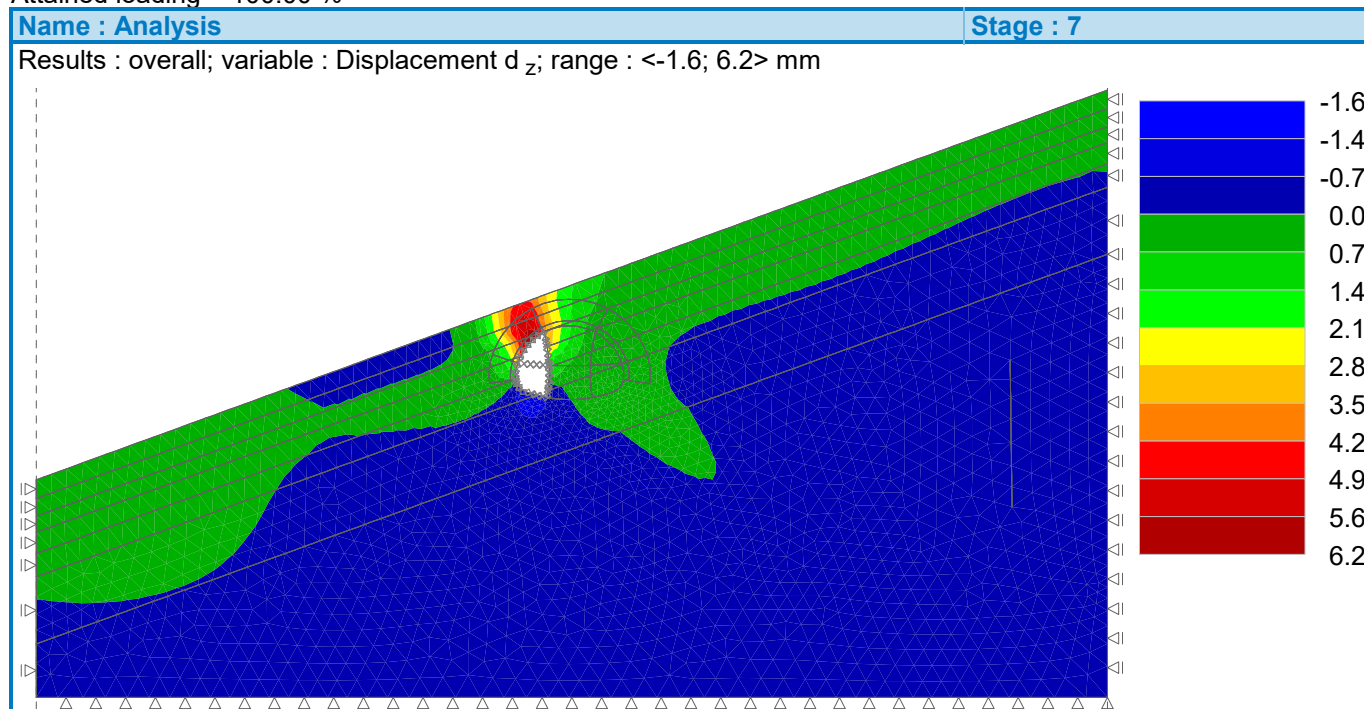
Solution method : iterate no
 Line search limit - minimum : 0.100
 Line search limit - maximum : 1.000

Results (Stage of construction 7)

Stress analysis was successfully completed.

Analysis settings : **user-defined**

Attained loading = 100.00 %



Extremes

Displacements (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Displacements x [mm]	0.00	0.00	-2.4	-4.25	3.59	1.9
Displacements z [mm]	-4.25	3.59	-1.6	-6.91	4.82	6.2

Stress (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Total stress $\sigma_{z, \text{tot}}$ [kPa]	-5.45	13.03	0.00	96.79	-62.19	2205.75
Effective stress $\sigma_{z, \text{eff}}$ [kPa]	-5.45	13.03	0.00	96.79	-62.19	2205.75
Total stress $\sigma_{x, \text{tot}}$ [kPa]	100.81	51.70	-9.47	90.93	-62.19	723.77
Effective stress $\sigma_{x, \text{eff}}$ [kPa]	100.81	51.70	-9.47	90.93	-62.19	723.77
Shear stress τ_{xz} [kPa]	-3.88	-0.08	-114.03	-0.13	-62.19	159.89
Total mean stress $\sigma_{m, \text{tot}}$ [kPa]	100.81	51.70	5.39	90.93	-62.19	1220.18
Effective mean stress $\sigma_{m, \text{eff}}$ [kPa]	100.81	51.70	5.39	90.93	-62.19	1220.18
Equivalent deviatoric stress J [kPa]	-5.45	13.03	2.29	96.79	-62.19	853.68
Total principal stress $\sigma_{1, \text{tot}}$ [kPa]	100.81	51.70	-9.47	90.93	-62.19	723.27
Effective principal stress $\sigma_{1, \text{eff}}$ [kPa]	100.81	51.70	-9.47	90.93	-62.19	723.27
Total principal stress $\sigma_{2, \text{tot}}$ [kPa]	-5.45	13.03	10.38	96.79	-62.19	2205.88
Effective principal stress $\sigma_{2, \text{eff}}$ [kPa]	-5.45	13.03	10.38	96.79	-62.19	2205.88
Total principal stress $\sigma_{3, \text{tot}}$ [kPa]	100.81	51.70	4.28	90.93	-62.19	732.11
Effective principal stress $\sigma_{3, \text{eff}}$ [kPa]	100.81	51.70	4.28	90.93	-62.19	732.11

Strain (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Equivalent deviatoric strain E_d [%]	-6.57	-6.58	0.01	-13.40	4.55	0.43
Plastic equivalent deviatoric strain $E_{d, pl}$ [%]	-7.16	10.70	0.00	-10.08	-2.59	0.13
Strain ε_x [%]	100.81	48.18	-0.11	-100.00	-21.39	0.11
Strain ε_z [%]	-5.26	-5.75	0.01	-13.40	4.55	0.30
Shear strain γ_{xz} [%]	-3.88	-0.08	-0.12	-10.98	5.98	0.17
Plastic strain $\varepsilon_{x, pl}$ [%]	-10.08	-2.59	-0.06	-7.16	10.70	0.00
Plastic strain $\varepsilon_{z, pl}$ [%]	-7.16	10.70	0.00	-10.08	-2.59	0.06
Plastic shear strain $\gamma_{xz, pl}$ [%]	-3.89	0.08	-0.06	-3.95	-3.58	0.06
Volumetric strain ε_v [%]	-6.28	-5.50	0.01	-5.29	7.16	0.23
Plastic volumetric strain $\varepsilon_{v, pl}$ [%]	-3.89	0.08	0.00	-7.16	10.70	0.00
Principal strain ε_1 [%]	-10.98	5.98	-0.11	-100.00	-24.91	0.05
Principal strain ε_2 [%]	-6.57	-6.58	0.01	-13.40	4.55	0.31
Principal strain ε_3 [%]			0.00			0.00

Pore pressures (extremes)

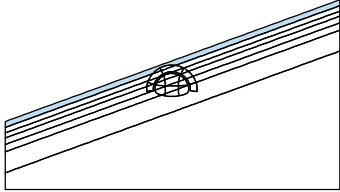
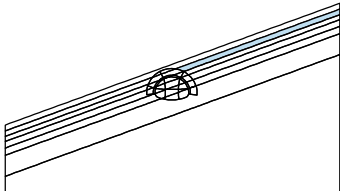
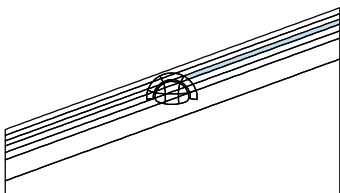
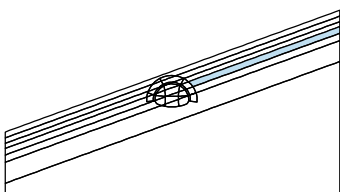
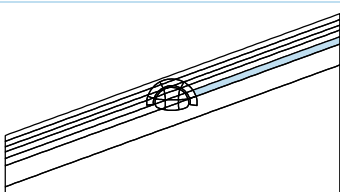
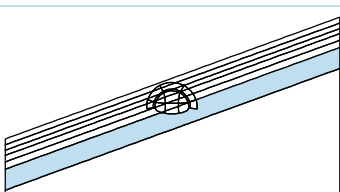
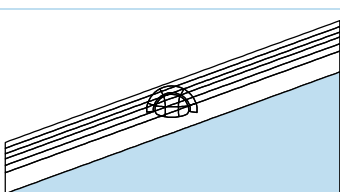
	Location		Max
	x [m]	z [m]	
Total pore pressure u_{tot} [kPa]			0.00

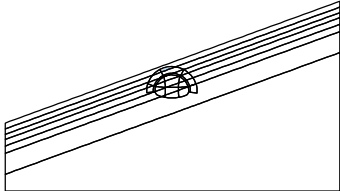
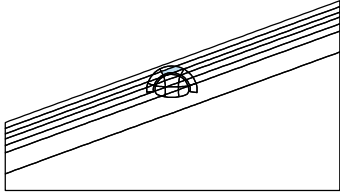
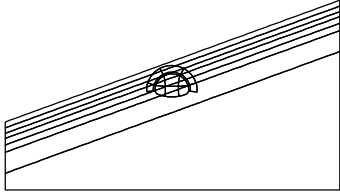
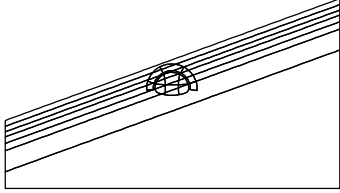
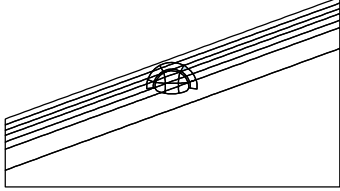
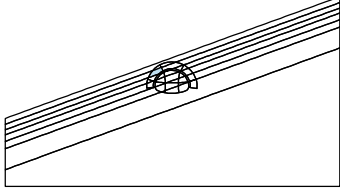
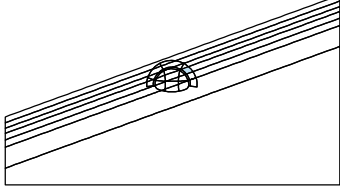
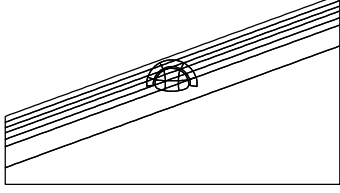
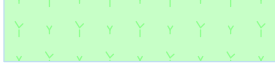
Distributions on beams (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
N [kN/m]	-4.50	4.94	-228.0	-5.26	-5.75	-7.3
M [kNm/m]	-5.26	-5.75	-4.1	-5.91	5.61	28.8
Q [kN/m]	-4.82	6.28	-60.4	-9.76	0.48	16.9

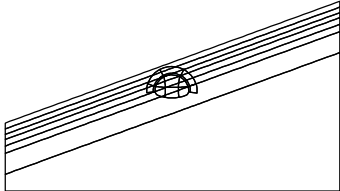
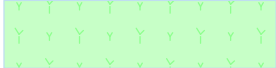
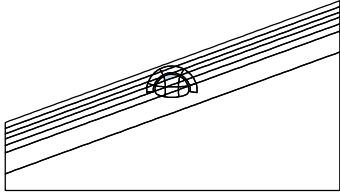
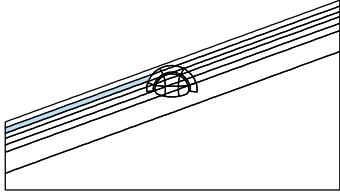
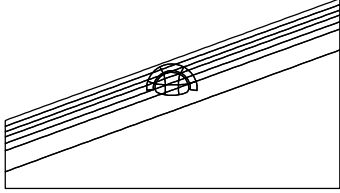
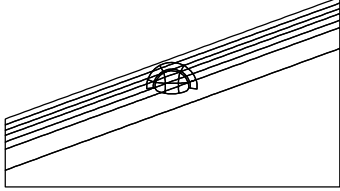
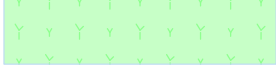
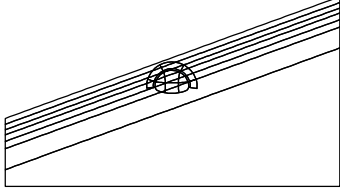
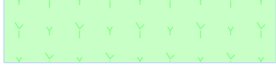
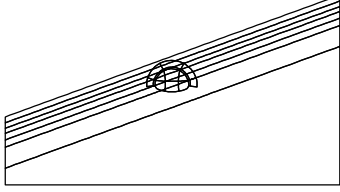
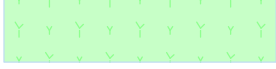
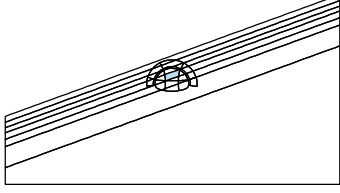
Input data (Stage of construction 8)

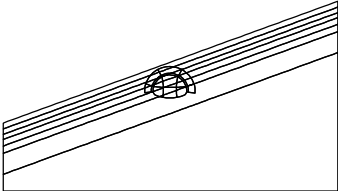
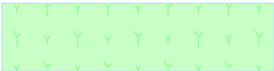
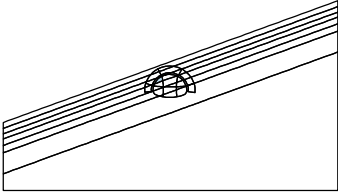
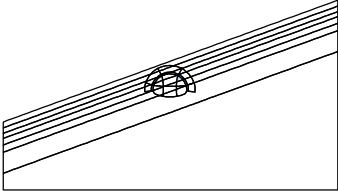
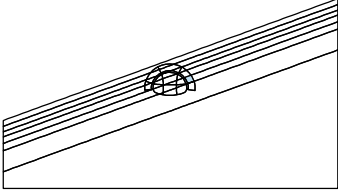
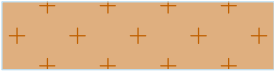
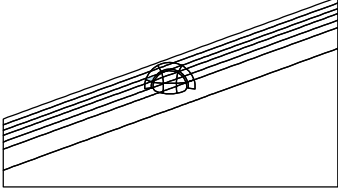
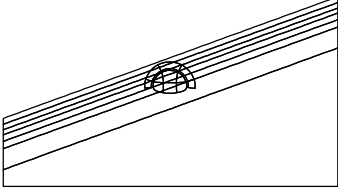
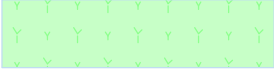
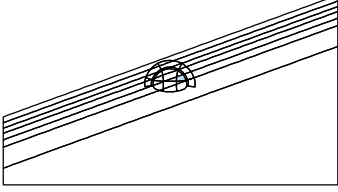
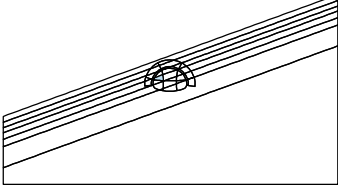
Assignment and activation

No.	Region	Active / inactive	Assigned soil
1		Active	□ □ □ □ □ □ □ 
2		Active	□ □ □ □ □ □ □ 
3		Active	□ □ □ □ □ □ □ 
4		Active	□ □ □ □ □ □ □ □ 
5		Active	□ □ □ □ □ □ □ □ 
6		Active	□ □ □ □ □ □ □ 
7		Active	□ □ □ □ □ □ □ 

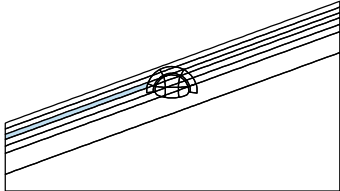
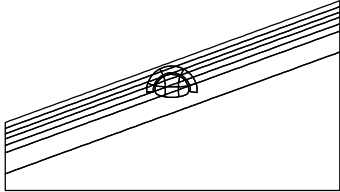
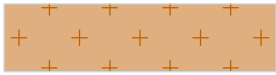
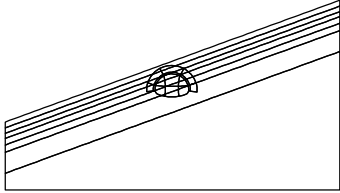
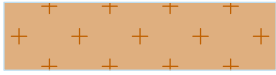
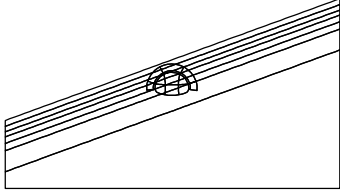
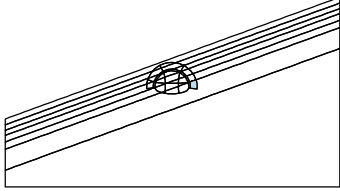
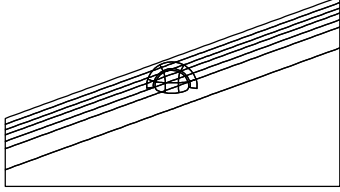
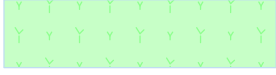
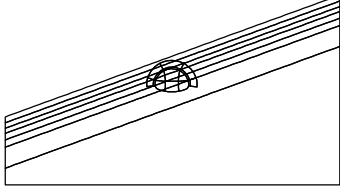
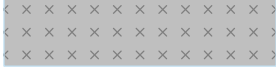
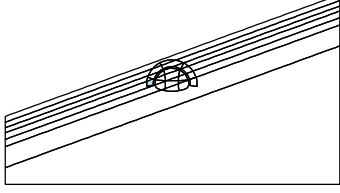
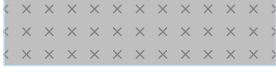
No.	Region	Active / inactive	Assigned soil
8		Active	□ □ □ □ □ □ □
			
9		Active	□ □ □ □ □ □ □
			
10		Active	□ □ □ □ □ □
			
11		Active	□ □ □ □ □
			
12		Active	□ □ □ □ □ □
			
13		Active	□ □ □ □ □
			
14		Active	□ □ □ □ □ □ □ □
			
15		Active	□ □ □ □
			

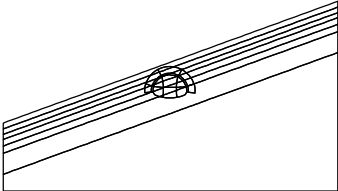
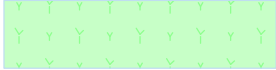
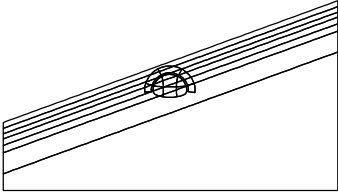
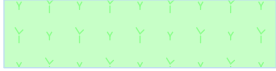
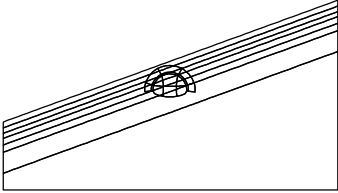
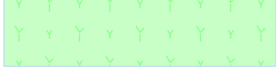
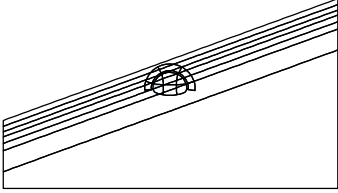
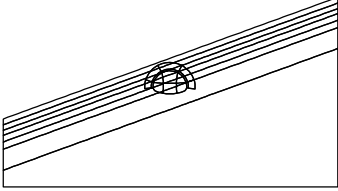
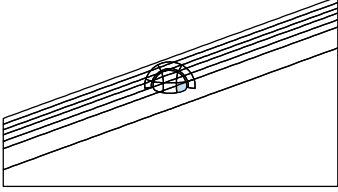
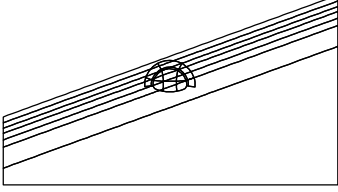
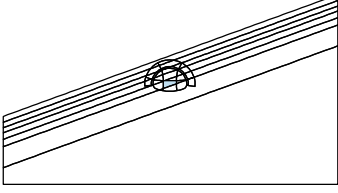
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No.	Region	Active / inactive	Assigned soil
16		Active	□ □ □ □ 
17		Active	□ □ □ □ □ □ 
18		Active	□ □ □ □ □ □ □ 
19		Active	□ □ □ □ □ □ 
20		Active	□ □ □ □ 
21		Active	□ □ □ □ 
22		Active	□ □ □ □ 
23		Active	□ □ □ □ □ □ □ □ 

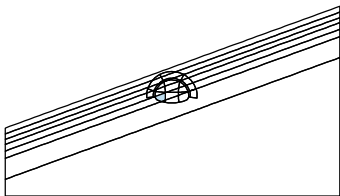
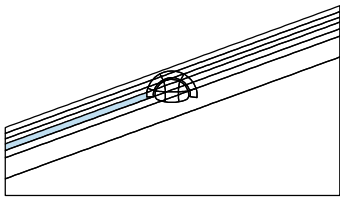
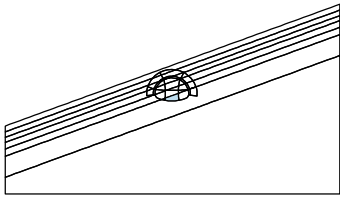
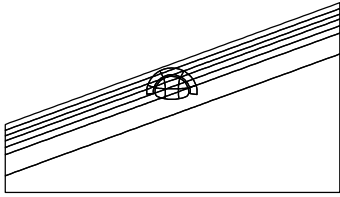
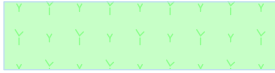
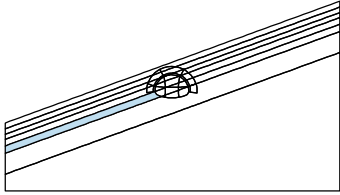
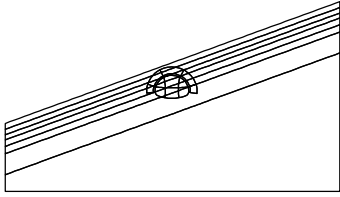
No.	Region	Active / inactive	Assigned soil
24		Active	□ □ □ □
			
25		Inactive	
26		Active	□ □ □ □ □ □ □ □
			
27		Active	□ □ □ □ □ □ □ □
			
28		Active	□ □ □ □ □
			
29		Active	□ □ □ □
			
30		Active	□ □ □ □ □ □ □ □
			
31		Inactive	



No.	Region	Active / inactive	Assigned soil
32		Active	□ □ □ □ □ □
			
33		Active	□ □ □ □ □ □ □ □
			
34		Active	□ □ □ □ □ □ □ □
			
35		Active	□ □ □ □ □
			
36		Active	□ □ □ □ □ □
			
37		Active	□ □ □ □
			
38		Active	□ □ □ □ □
			
39		Active	□ □ □ □ □
			

No.	Region	Active / inactive	Assigned soil
40		Active	□ □ □ □
			
41		Active	□ □ □ □
			
42		Active	□ □ □ □
			
43		Excavation	Excavation No. 1 (□ □ 6 - 1)
			Soil remaining activity: 0.0 %
44		Active	□ □ □ □ □ □ □ □
			
45		Active	□ □ □ □ □ □
			
46		Active	□ □ □ □ □ □ □ □
			
47		Active	□ □ □ □ □ □ □ □
			

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No.	Region	Active / inactive	Assigned soil
48		Excavation	Excavation No. 1 (□ □ 6 - 1) Soil remaining activity: 0.0 %
49		Active	□ □ □ □ □ □ □ □ 
50		Active	□ □ □ □ □ □ 
51		Active	□ □ □ □ 
52		Active	□ □ □ □ □ □ □ □ 
53		Excavation	Excavation No. 1 (□ □ 6 - 1) Soil remaining activity: 0.0 %

Beams

No.	Beam		Location	Support [m]		Include self weight	cross-section / Degradation in current stage [%]	Material / Beam current activity [%]	Contacts	
	new	modified		Start pt.	End pt.				left	right
1	No	No	Free line No. 9	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
2	No	No	Free line No. 18	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)

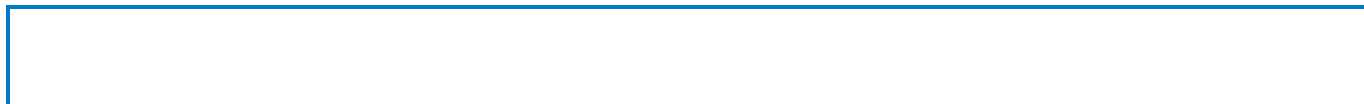
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No.	Beam		Location	Support [m]		Include self weight	Cross-section / Degradation in current stage [%]	Material / Beam current activity [%]	Contacts	
	new	modified		Start pt.	End pt.				left	right
3	No	No	Free line No. 3	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
4	No	Yes	Free line No. 11	○—	├—	Yes	↑ h = 0.45 m	↑ E = 28000.00 MPa; G = 11200.00 MPa	(not input)	(not input)
5	No	Yes	Free line No. 2	├—	├—	Yes	↑ h = 0.45 m	↑ E = 28000.00 MPa; G = 11200.00 MPa	(not input)	(not input)
6	No	Yes	Free line No. 21	├—	○—	Yes	↑ h = 0.45 m	↑ E = 28000.00 MPa; G = 11200.00 MPa	(not input)	(not input)
7	No	No	Free line No. 17	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)

No.	Cross-section		Material	
	I _y [m ⁴ /m]	A [m ² /m]	E [MPa]	G [MPa]
1	7.59E-03	4.50E-01	28000.00	11200.00
2	5.94E-05	7.69E-03	206000.00	79000.00
3	5.94E-05	7.69E-03	206000.00	79000.00
4	7.59E-03	4.50E-01	28000.00	11200.00
5	7.59E-03	4.50E-01	28000.00	11200.00
6	7.59E-03	4.50E-01	28000.00	11200.00
7	5.94E-05	7.69E-03	206000.00	79000.00

Line supports

No.	Line support		Location	Support	
	new	modified		Direction X	Direction Z
A1	Yes		Mesh line No. 20	fixed	free
A2	Yes		Mesh line No. 18	fixed	free
A3	Yes		Mesh line No. 15	fixed	free
A4	Yes		Mesh line No. 12	fixed	free
A5	Yes		Mesh line No. 9	fixed	free
A6	Yes		Mesh line No. 6	fixed	free
A7	Yes		Mesh line No. 3	fixed	free
A8	Yes		Mesh line No. 22	fixed	free
A9	Yes		Mesh line No. 17	fixed	free
A10	Yes		Mesh line No. 14	fixed	free
A11	Yes		Mesh line No. 11	fixed	free
A12	Yes		Mesh line No. 8	fixed	free
A1 up to A15 - automatically generated line supports along model edges					



No.	Line support		Location	Support	
	new	modified		Direction X	Direction Z
A13	Yes		Mesh line No. 5	fixed	free
A14	Yes		Mesh line No. 1	fixed	free
A15	Yes		Mesh line No. 21	fixed	fixed
A1 up to A15 - automatically generated line supports along model edges					

Water

Water type : No water

Analysis settings

Stress

Method :	Newton - Raphson
Stiffness matrix change :	after each iteration
Max. number of iterations for one calc. step :	100
Initial calculation step :	0.25
Displacement error :	0.0100
Imbalanced forces error :	0.0100
Energy error :	0.0100
Respect material interfaces :	no

Plasticity

Return mapping error :	0.00100
Max. number of iterations for one plast. step :	20

Newton - Raphson

Relaxation factor of calculation step :	2.00
Maximum number of relaxations of calculation step :	2
Min. number of iterations for one calc. step :	1

Line search

Solution method :	iterate no
Line search limit - minimum :	0.100
Line search limit - maximum :	1.000

Results (Stage of construction 8)

Stress analysis was successfully completed.

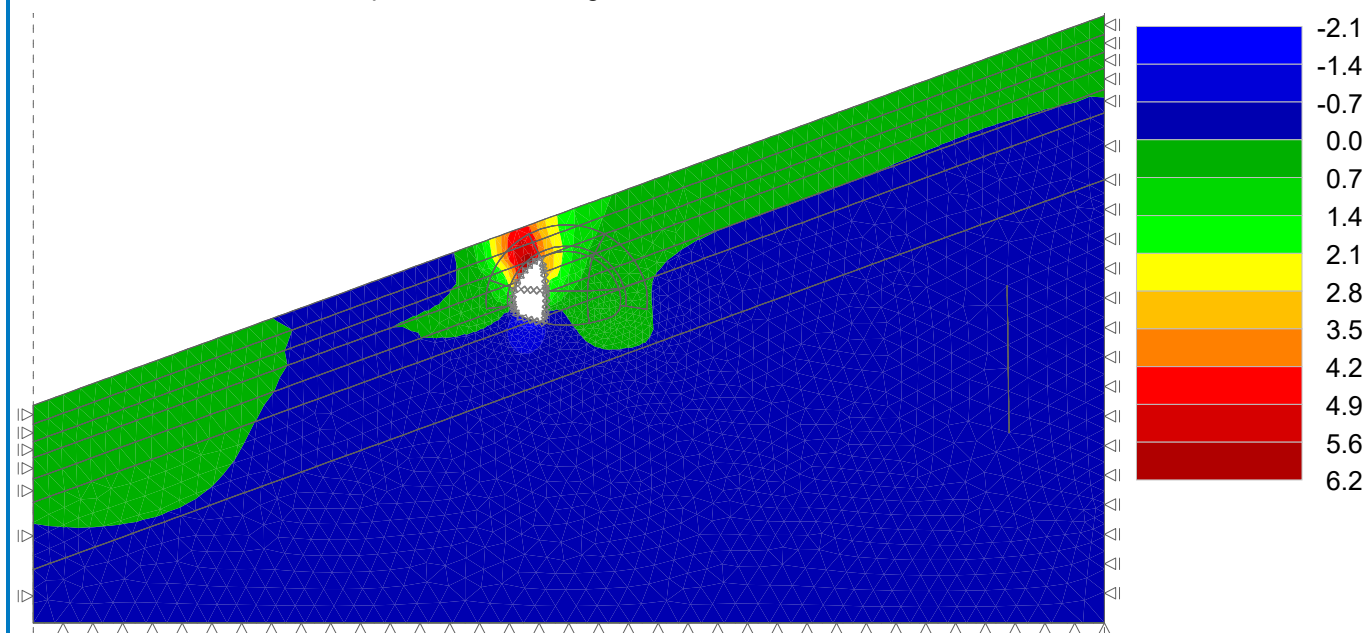
Analysis settings : **user-defined**

Attained loading = 100.00 %

Name : Analysis

Stage : 8

Results : overall; variable : Displacement d_z; range : <-2.1; 6.2> mm



Extremes

Displacements (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Displacements x [mm]	0.00	0.00	-2.3	-3.89	-2.47	2.2
Displacements z [mm]	-3.89	-2.47	-2.1	-6.91	4.82	6.2

Stress (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Total stress $\sigma_{z, tot}$ [kPa]	-5.45	13.03	0.00	96.79	-62.19	2205.66
Effective stress $\sigma_{z, eff}$ [kPa]	-5.45	13.03	0.00	96.79	-62.19	2205.66
Total stress $\sigma_{x, tot}$ [kPa]	100.81	51.70	-9.47	90.93	-62.19	723.73
Effective stress $\sigma_{x, eff}$ [kPa]	100.81	51.70	-9.47	90.93	-62.19	723.73
Shear stress τ_{xz} [kPa]	-3.88	-0.08	-108.24	-0.13	-62.19	160.28
Total mean stress $\sigma_{m, tot}$ [kPa]	100.81	51.70	5.39	90.93	-62.19	1220.13
Effective mean stress $\sigma_{m, eff}$ [kPa]	100.81	51.70	5.39	90.93	-62.19	1220.13
Equivalent deviatoric stress J [kPa]	-5.45	13.03	2.40	96.79	-62.19	853.65
Total principal stress $\sigma_{1, tot}$ [kPa]	-4.06	-4.69	-9.76	90.93	-62.19	723.23
Effective principal stress $\sigma_{1, eff}$ [kPa]	-4.06	-4.69	-9.76	90.93	-62.19	723.23
Total principal stress $\sigma_{2, tot}$ [kPa]	-5.45	13.03	10.91	96.79	-62.19	2205.79
Effective principal stress $\sigma_{2, eff}$ [kPa]	-5.45	13.03	10.91	96.79	-62.19	2205.79
Total principal stress $\sigma_{3, tot}$ [kPa]	100.81	51.70	4.28	90.93	-62.19	732.08
Effective principal stress $\sigma_{3, eff}$ [kPa]	100.81	51.70	4.28	90.93	-62.19	732.08

Strain (extremes)

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	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Equivalent deviatoric strain E_d [%]	-6.57	-6.58	0.01	-13.40	4.55	0.43
Plastic equivalent deviatoric strain $E_{d, pl}$ [%]	-7.16	10.70	0.00	-3.95	-3.58	0.19
Strain ε_x [%]	100.81	48.18	-0.11	-100.00	-21.39	0.11
Strain ε_z [%]	-5.26	-5.75	0.00	-13.40	4.55	0.30
Shear strain γ_{xz} [%]	-3.88	-0.08	-0.12	-10.98	5.98	0.17
Plastic strain $\varepsilon_{x, pl}$ [%]	-3.95	-3.58	-0.08	-5.42	-6.36	0.00
Plastic strain $\varepsilon_{z, pl}$ [%]	-5.42	-6.36	0.00	-3.95	-3.58	0.08
Plastic shear strain $\gamma_{xz, pl}$ [%]	-3.89	0.08	-0.06	-3.95	-3.58	0.09
Volumetric strain ε_v [%]	-6.28	-5.50	0.00	-5.29	7.16	0.23
Plastic volumetric strain $\varepsilon_{v, pl}$ [%]	-3.89	0.08	0.00	-7.16	10.70	0.00
Principal strain ε_1 [%]	-10.98	5.98	-0.11	-100.00	-24.91	0.05
Principal strain ε_2 [%]	-6.57	-6.58	0.00	-13.40	4.55	0.31
Principal strain ε_3 [%]			0.00			0.00

Pore pressures (extremes)

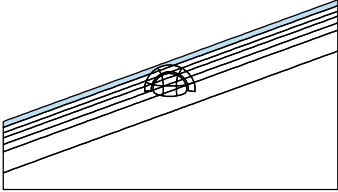
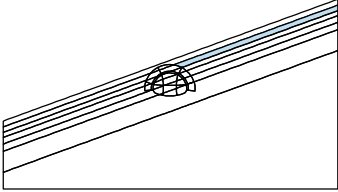
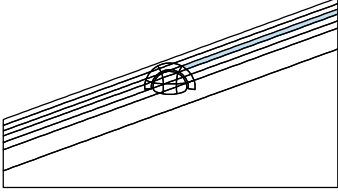
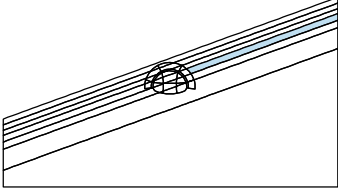
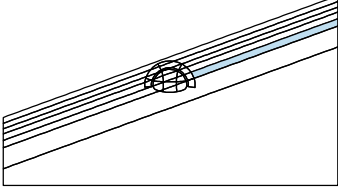
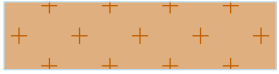
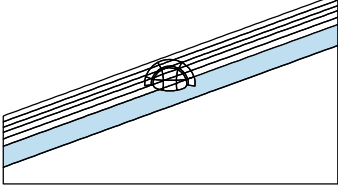
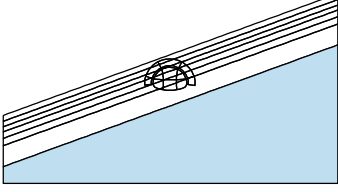
	Location		Max
	x [m]	z [m]	
Total pore pressure u_{tot} [kPa]			0.00

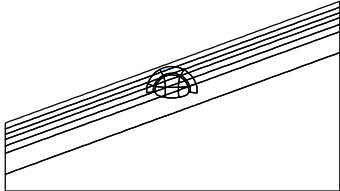
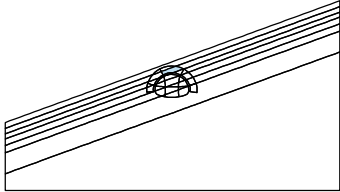
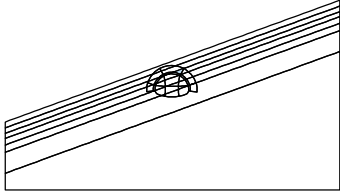
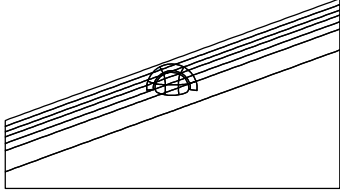
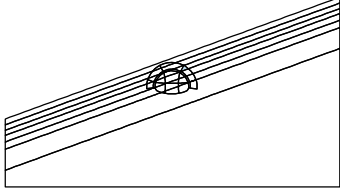
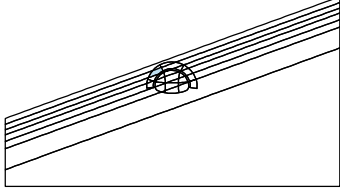
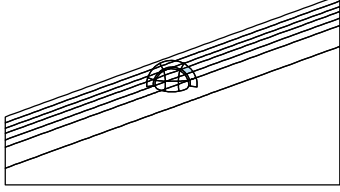
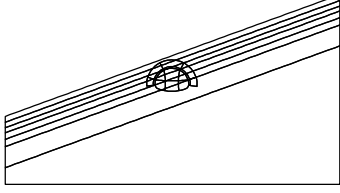
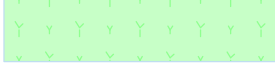
Distributions on beams (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
N [kN/m]	-4.06	-4.69	-339.9	-5.26	-5.75	-32.6
M [kNm/m]	-5.26	-5.75	-33.9	-10.07	-2.67	30.6
Q [kN/m]	-4.82	6.28	-54.5	-4.24	-5.96	76.0

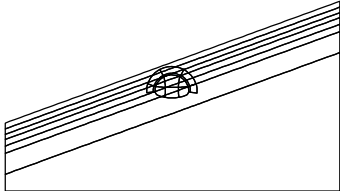
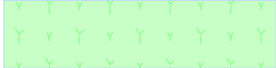
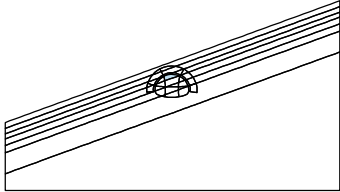
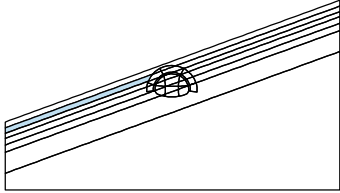
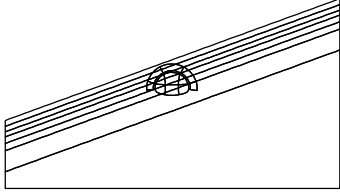
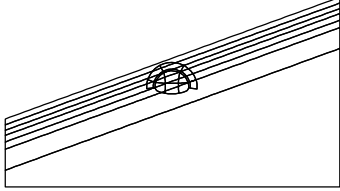
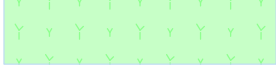
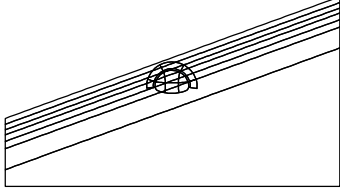
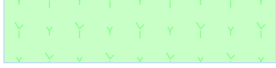
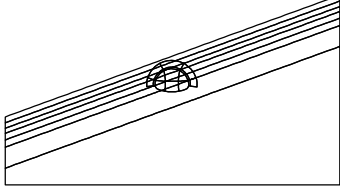
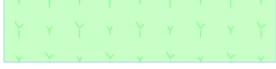
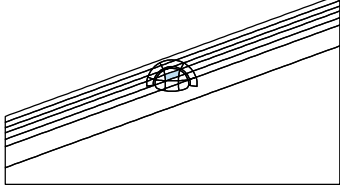
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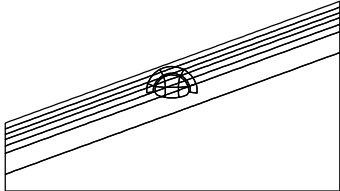
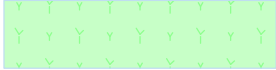
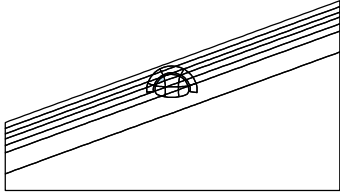
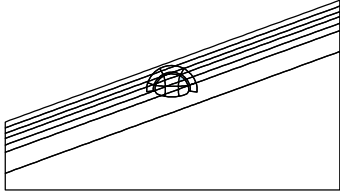
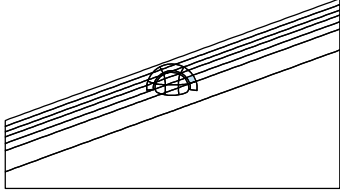
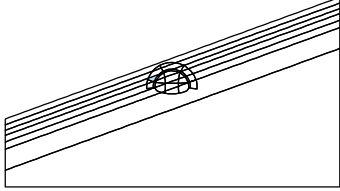
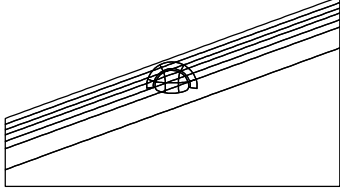
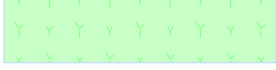
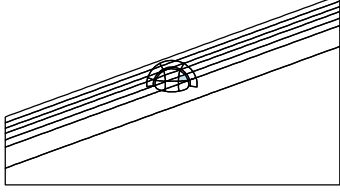
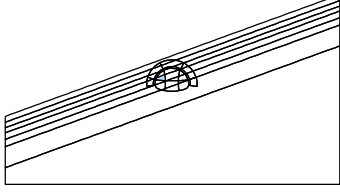
Assignment and activation

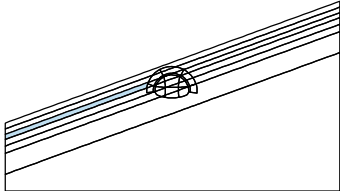
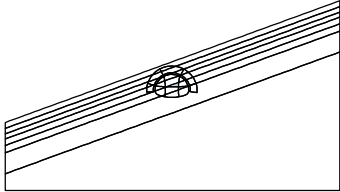
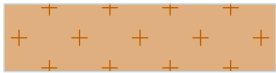
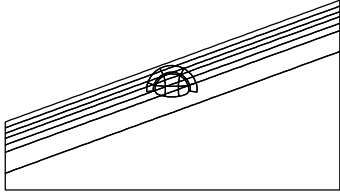
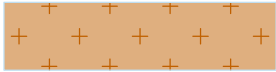
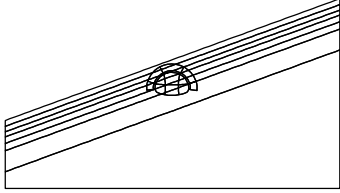
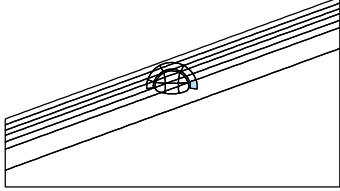
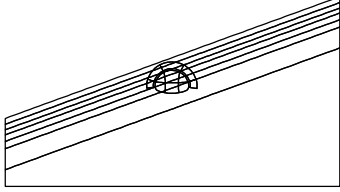
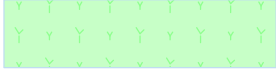
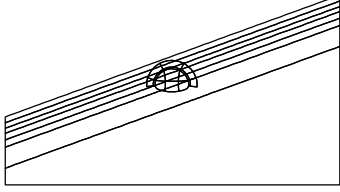
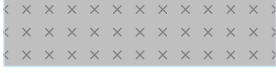
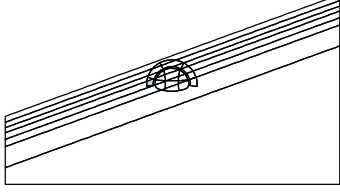
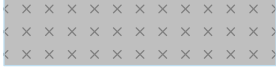
No.	Region	Active / inactive	Assigned soil
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2		Active	□ □ □ □ □ □ □ 
3		Active	□ □ □ □ □ □ □ 
4		Active	□ □ □ □ □ □ □ □ 
5		Active	□ □ □ □ □ □ □ □ 
6		Active	□ □ □ □ □ □ □ 
7		Active	□ □ □ □ □ □ □ 

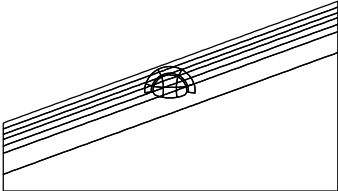
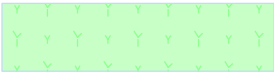
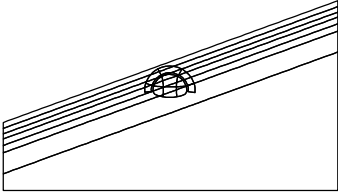
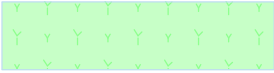
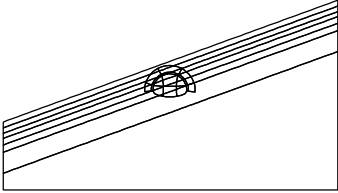
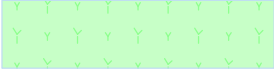
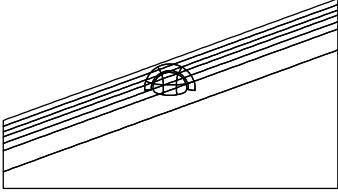
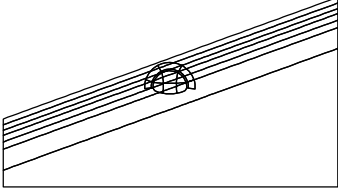
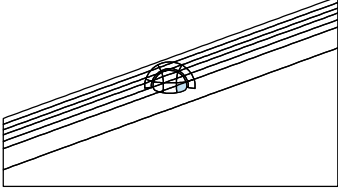
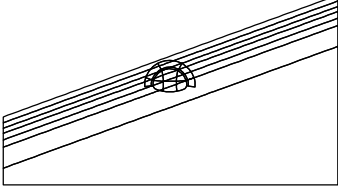
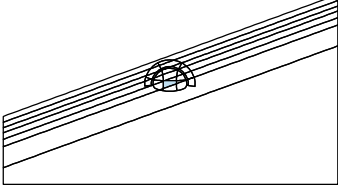
No.	Region	Active / inactive	Assigned soil
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9		Active	□ □ □ □ □ □ □
			
10		Active	□ □ □ □ □ □
			
11		Active	□ □ □ □ □
			
12		Active	□ □ □ □ □ □
			
13		Active	□ □ □ □ □
			
14		Active	□ □ □ □ □ □ □ □
			
15		Active	□ □ □ □
			

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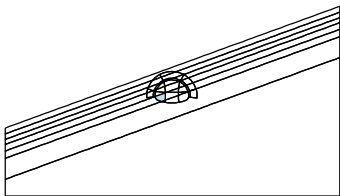
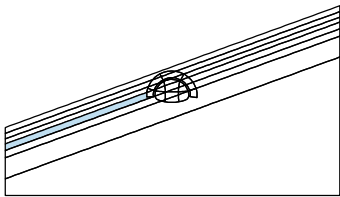
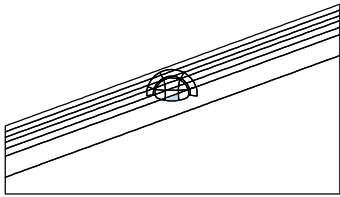
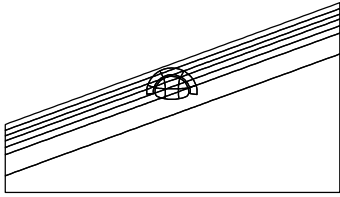
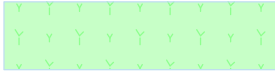
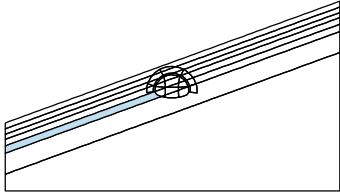
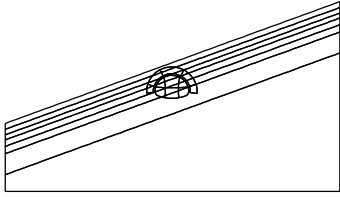
No.	Region	Active / inactive	Assigned soil
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17		Active	□ □ □ □ □ □ 
18		Active	□ □ □ □ □ □ □ 
19		Active	□ □ □ □ □ □ 
20		Active	□ □ □ □ 
21		Active	□ □ □ □ 
22		Active	□ □ □ □ 
23		Active	□ □ □ □ □ □ □ □ 

No.	Region	Active / inactive	Assigned soil
24		Active	□ □ □ □
			
25		Inactive	
26		Excavation	Excavation No. 1 (□ □ 9 - 1)
			Soil remaining activity: 60.0 %
27		Active	□ □ □ □ □ □ □ □
			
28		Active	□ □ □ □ □
			
29		Active	□ □ □ □
			
30		Excavation	Excavation No. 1 (□ □ 9 - 1)
			Soil remaining activity: 60.0 %
31		Inactive	

No.	Region	Active / inactive	Assigned soil
32		Active	□ □ □ □ □ □
			
33		Active	□ □ □ □ □ □ □ □
			
34		Active	□ □ □ □ □ □ □ □
			
35		Active	□ □ □ □ □
			
36		Active	□ □ □ □ □ □
			
37		Active	□ □ □ □
			
38		Active	□ □ □ □ □
			
39		Active	□ □ □ □ □
			

No.	Region	Active / inactive	Assigned soil
40		Active	□ □ □ □
			
41		Active	□ □ □ □
			
42		Active	□ □ □ □
			
43		Inactive	
44		Active	□ □ □ □ □ □ □ □
			
45		Active	□ □ □ □ □ □
			
46		Active	□ □ □ □ □ □ □ □
			
47		Active	□ □ □ □ □ □ □ □
			

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No.	Region	Active / inactive	Assigned soil
48		Inactive	
49		Active	□ □ □ □ □ □ □ □ 
50		Active	□ □ □ □ □ □ 
51		Active	□ □ □ □ 
52		Active	□ □ □ □ □ □ □ □ 
53		Inactive	

Beams

No.	Beam		Location	Support [m]		Include self weight	cross-section / Degradation in current stage [%]	Material / Beam current activity [%]	Contacts	
	new	modified		Start pt.	End pt.				left	right
1	No	No	Free line No. 9	○—	○—	Yes	without modification	without modification	(not input)	(not input)
2	No	No	Free line No. 18	○—	○—	Yes	without modification	without modification	(not input)	(not input)

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No.	Beam		Location	Support [m]		Include self weight	Cross-section / Degradation in current stage [%]	Material / Beam current activity [%]	Contacts	
	new	modified		Start pt.	End pt.				left	right
3	No	No	Free line No. 3	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
4	No	No	Free line No. 11	○—	├—	Yes	without modificatio	without modificatio	(not input)	(not input)
5	No	No	Free line No. 2	├—	├—	Yes	without modificatio	without modificatio	(not input)	(not input)
6	No	No	Free line No. 21	├—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
7	No	No	Free line No. 17	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)

No.	Cross-section		Material	
	I _y [m ⁴ /m]	A [m ² /m]	E [MPa]	G [MPa]
1	7.59E-03	4.50E-01	28000.00	11200.00
2	5.94E-05	7.69E-03	206000.00	79000.00
3	5.94E-05	7.69E-03	206000.00	79000.00
4	7.59E-03	4.50E-01	28000.00	11200.00
5	7.59E-03	4.50E-01	28000.00	11200.00
6	7.59E-03	4.50E-01	28000.00	11200.00
7	5.94E-05	7.69E-03	206000.00	79000.00

Line supports

No.	Line support		Location	Support	
	new	modified		Direction X	Direction Z
A1	Yes		Mesh line No. 20	fixed	free
A2	Yes		Mesh line No. 18	fixed	free
A3	Yes		Mesh line No. 15	fixed	free
A4	Yes		Mesh line No. 12	fixed	free
A5	Yes		Mesh line No. 9	fixed	free
A6	Yes		Mesh line No. 6	fixed	free
A7	Yes		Mesh line No. 3	fixed	free
A8	Yes		Mesh line No. 22	fixed	free
A9	Yes		Mesh line No. 17	fixed	free
A10	Yes		Mesh line No. 14	fixed	free
A11	Yes		Mesh line No. 11	fixed	free
A12	Yes		Mesh line No. 8	fixed	free
A13	Yes		Mesh line No. 5	fixed	free
A14	Yes		Mesh line No. 1	fixed	free
A15	Yes		Mesh line No. 21	fixed	fixed

A1 up to A15 - automatically generated line supports along model edges

Water

Water type : No water

Analysis settings

Stress

Method :	Newton - Raphson
Stiffness matrix change :	after each iteration
Max. number of iterations for one calc. step :	100
Initial calculation step :	0.25
Displacement error :	0.0100
Imbalanced forces error :	0.0100
Energy error :	0.0100
Respect material interfaces :	no

Plasticity

Return mapping error :	0.00100
Max. number of iterations for one plast. step :	20

Newton - Raphson

Relaxation factor of calculation step :	2.00
Maximum number of relaxations of calculation step :	2
Min. number of iterations for one calc. step :	1

Line search

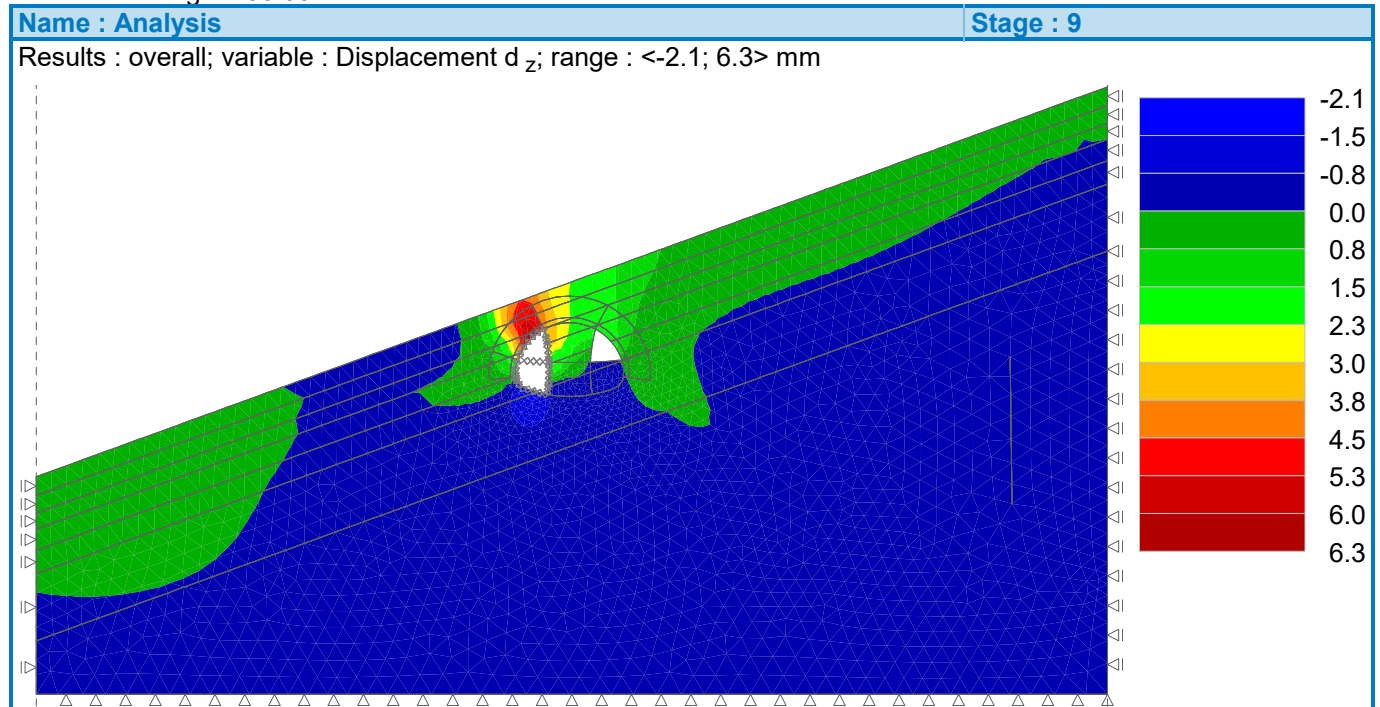
Solution method :	iterate no
Line search limit - minimum :	0.100
Line search limit - maximum :	1.000

Results (Stage of construction 9)

Stress analysis was successfully completed.

Analysis settings : **user-defined**

Attained loading = 100.00 %



Extremes

Displacements (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Displacements x [mm]	0.00	0.00	-2.3	-3.89	-2.47	2.5

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Displacements z [mm]	-3.89	-2.47	-2.1	-6.91	4.82	6.3

Stress (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Total stress $\sigma_{z, \text{tot}}$ [kPa]	-5.45	13.03	0.00	96.79	-62.19	2205.40
Effective stress $\sigma_{z, \text{eff}}$ [kPa]	-5.45	13.03	0.00	96.79	-62.19	2205.40
Total stress $\sigma_{x, \text{tot}}$ [kPa]	100.81	51.70	-9.47	90.93	-62.19	723.64
Effective stress $\sigma_{x, \text{eff}}$ [kPa]	100.81	51.70	-9.47	90.93	-62.19	723.64
Shear stress τ_{xz} [kPa]	-3.88	-0.08	-102.76	3.79	-62.19	160.40
Total mean stress $\sigma_{m, \text{tot}}$ [kPa]	100.81	51.70	5.39	90.93	-62.19	1219.98
Effective mean stress $\sigma_{m, \text{eff}}$ [kPa]	100.81	51.70	5.39	90.93	-62.19	1219.98
Equivalent deviatoric stress J [kPa]	-5.45	13.03	2.48	96.79	-62.19	853.55
Total principal stress $\sigma_{1, \text{tot}}$ [kPa]	-4.06	-4.69	-12.32	90.93	-62.19	723.14
Effective principal stress $\sigma_{1, \text{eff}}$ [kPa]	-4.06	-4.69	-12.32	90.93	-62.19	723.14
Total principal stress $\sigma_{2, \text{tot}}$ [kPa]	-5.45	13.03	11.04	96.79	-62.19	2205.53
Effective principal stress $\sigma_{2, \text{eff}}$ [kPa]	-5.45	13.03	11.04	96.79	-62.19	2205.53
Total principal stress $\sigma_{3, \text{tot}}$ [kPa]	100.81	51.70	4.28	90.93	-62.19	731.99
Effective principal stress $\sigma_{3, \text{eff}}$ [kPa]	100.81	51.70	4.28	90.93	-62.19	731.99

Strain (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Equivalent deviatoric strain E_d [%]	-6.57	-6.58	0.01	-13.40	4.55	0.43
Plastic equivalent deviatoric strain $E_{d, \text{pl}}$ [%]	-7.16	10.70	0.00	-3.95	-3.58	0.22
Strain ϵ_x [%]	100.81	48.18	-0.11	-100.00	-21.39	0.11
Strain ϵ_z [%]	-5.26	-5.75	0.00	-13.40	4.55	0.30
Shear strain γ_{xz} [%]	-3.88	-0.08	-0.12	-10.98	5.98	0.17
Plastic strain $\epsilon_{x, \text{pl}}$ [%]	-3.95	-3.58	-0.09	9.78	0.41	0.00
Plastic strain $\epsilon_{z, \text{pl}}$ [%]	9.78	0.41	0.00	-3.95	-3.58	0.09
Plastic shear strain $\gamma_{xz, \text{pl}}$ [%]	-3.89	0.08	-0.06	-3.95	-3.58	0.10
Volumetric strain ϵ_v [%]	-6.28	-5.50	0.00	-5.29	7.16	0.23
Plastic volumetric strain $\epsilon_{v, \text{pl}}$ [%]	-3.89	0.08	0.00	-7.16	10.70	0.00
Principal strain ϵ_1 [%]	-3.95	-3.58	-0.12	-100.00	-24.91	0.05
Principal strain ϵ_2 [%]	-6.57	-6.58	0.01	-13.40	4.55	0.31
Principal strain ϵ_3 [%]			0.00			0.00

Pore pressures (extremes)

	Location		Max
	x [m]	z [m]	
Total pore pressure u_{tot} [kPa]			0.00

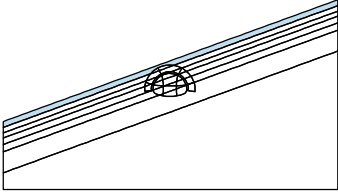
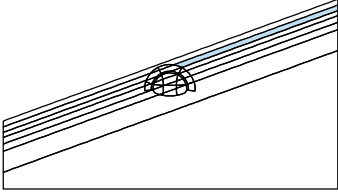
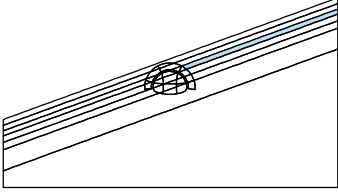
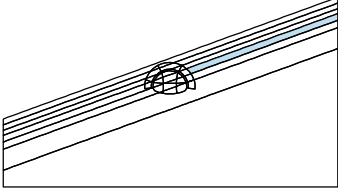
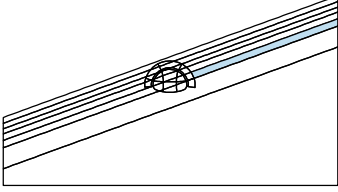
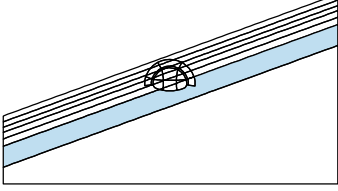
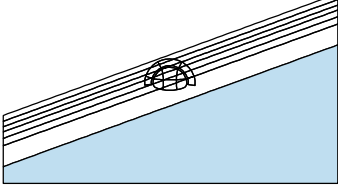
Distributions on beams (extremes)

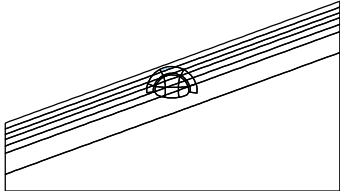
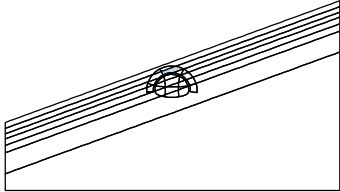
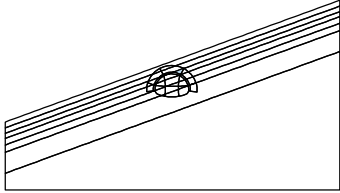
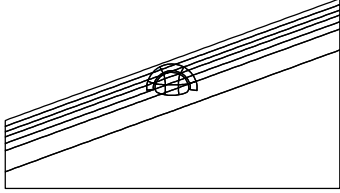
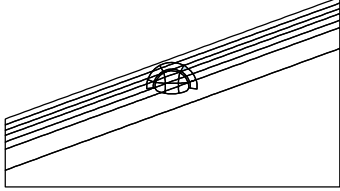
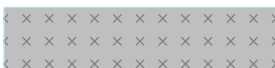
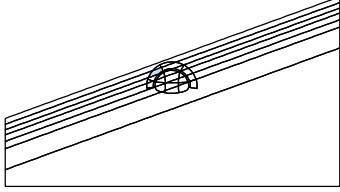
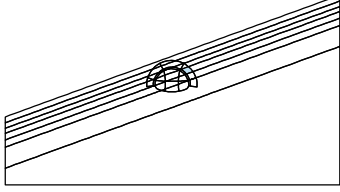
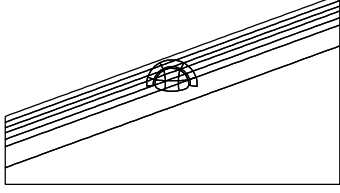
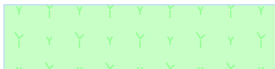
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	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
N [kN/m]	-4.06	-4.69	-411.5	-5.26	-5.75	-18.2
M [kNm/m]	-5.26	-5.75	-37.7	-10.07	-2.67	32.0
Q [kN/m]	-4.82	6.28	-53.7	-4.24	-5.96	85.0

Input data (Stage of construction 10)

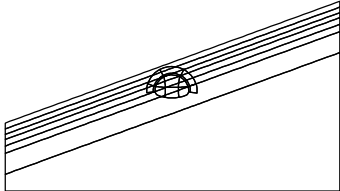
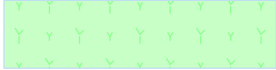
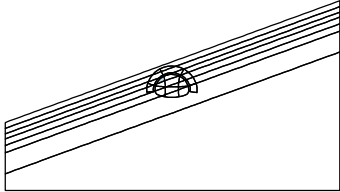
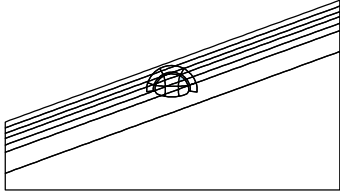
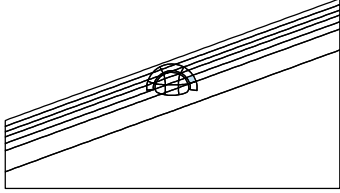
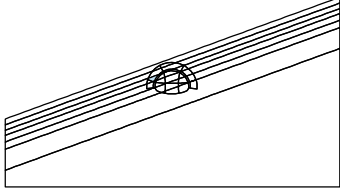
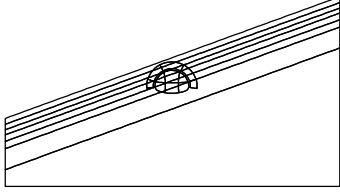
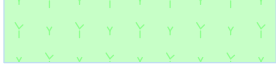
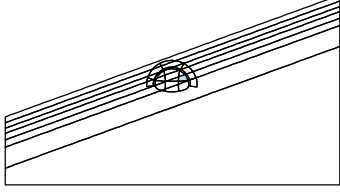
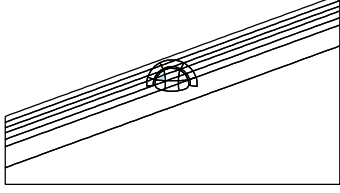
Assignment and activation

No.	Region	Active / inactive	Assigned soil
1		Active	□ □ □ □ □ □ □ 
2		Active	□ □ □ □ □ □ □ 
3		Active	□ □ □ □ □ □ □ 
4		Active	□ □ □ □ □ □ □ □ □ 
5		Active	□ □ □ □ □ □ □ □ □ 
6		Active	□ □ □ □ □ □ □ 
7		Active	□ □ □ □ □ □ □ 

No.	Region	Active / inactive	Assigned soil
8		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
9		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
10		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
11		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
12		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
13		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
14		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
15		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			



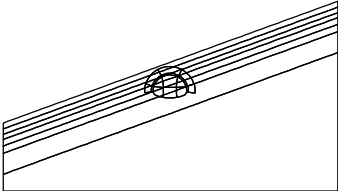
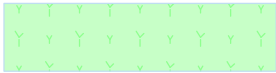
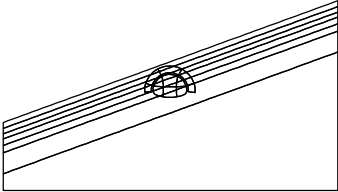
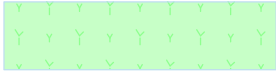
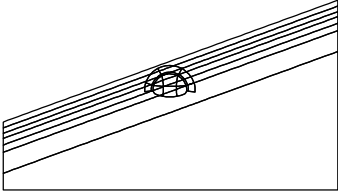
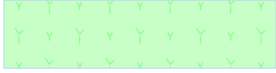
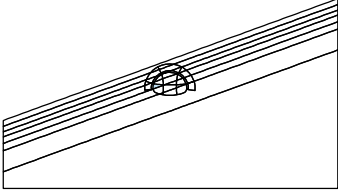
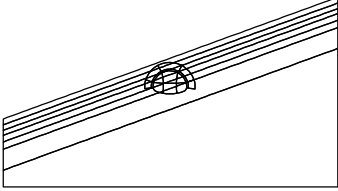
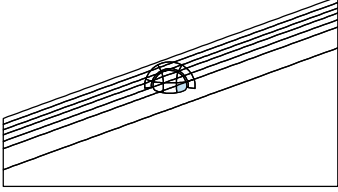
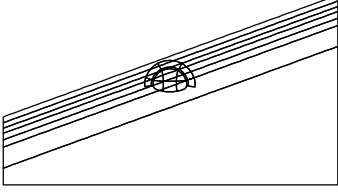
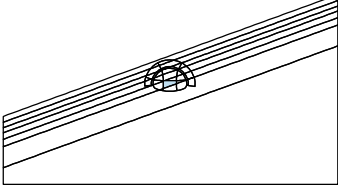
No.	Region	Active / inactive	Assigned soil
16		Active	
17		Active	
18		Active	
19		Active	
20		Active	
21		Active	
22		Active	
23		Active	

No.	Region	Active / inactive	Assigned soil
24		Active	□ □ □ □
			
25		Inactive	
26		Excavation	Excavation No. 1 (□ □ 9 - 1)
			Soil remaining activity: 30.0 %
27		Active	□ □ □ □ □
			
28		Active	□ □ □ □ □
			
29		Active	□ □ □ □
			
30		Excavation	Excavation No. 1 (□ □ 9 - 1)
			Soil remaining activity: 30.0 %
31		Inactive	

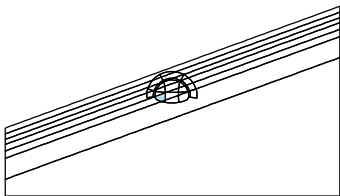
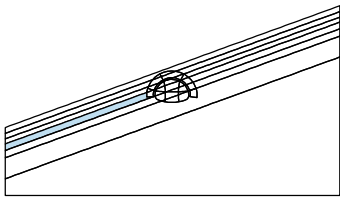
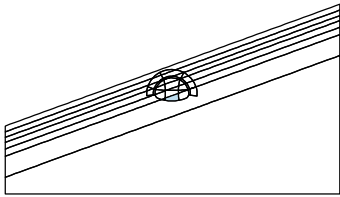
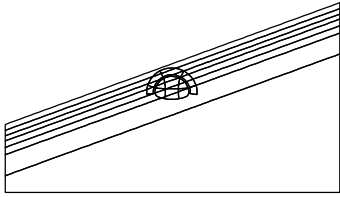
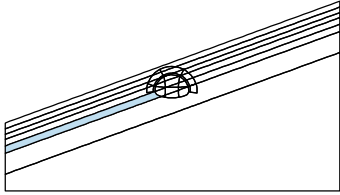
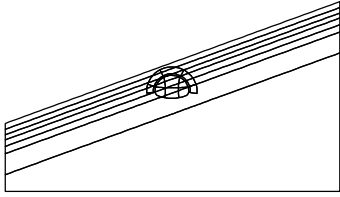


No.	Region	Active / inactive	Assigned soil
32		Active	□ □ □ □ □
33		Active	□ □ □ □ □ □ □ □
34		Active	□ □ □ □ □ □ □ □
35		Active	□ □ □ □ □
36		Active	□ □ □ □ □ □
37		Active	□ □ □ □
38		Active	□ □ □ □ □
39		Active	□ □ □ □ □

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No.	Region	Active / inactive	Assigned soil
40		Active	□ □ □ □
			
41		Active	□ □ □ □
			
42		Active	□ □ □ □
			
43		Inactive	
44		Active	□ □ □ □ □ □ □ □
			
45		Active	□ □ □ □ □ □
			
46		Active	□ □ □ □ □ □ □ □
			
47		Active	□ □ □ □ □ □ □ □
			

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No.	Region	Active / inactive	Assigned soil
48		Inactive	
49		Active	□ □ □ □ □ □ □ □ 
50		Active	□ □ □ □ □ □ 
51		Active	□ □ □ □ 
52		Active	□ □ □ □ □ □ □ □ 
53		Inactive	

Beams

No.	Beam		Location	Support [m]		Include self weight	cross-section / Degradation in current stage [%]	Material / Beam current activity [%]	Contacts	
	new	modified		Start pt.	End pt.				left	right
1	No	No	Free line No. 9	○—	○—	Yes	without modification	without modification	(not input)	(not input)
2	No	No	Free line No. 18	○—	○—	Yes	without modification	without modification	(not input)	(not input)

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No.	Beam		Location	Support [m]		Include self weight	Cross-section / Degradation in current stage [%]	Material / Beam current activity [%]	Contacts	
	new	modified		Start pt.	End pt.				left	right
3	No	No	Free line No. 3	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
4	No	No	Free line No. 11	○—	├—	Yes	without modificatio	without modificatio	(not input)	(not input)
5	No	No	Free line No. 2	├—	├—	Yes	without modificatio	without modificatio	(not input)	(not input)
6	No	No	Free line No. 21	├—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
7	No	No	Free line No. 17	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
8	Yes		Free line No. 7	○—	○—	Yes	1.00 (b) x 0.45 (h) m	C25 ¹ 3 ³ ÉÉİ; E = 2800.00 MPa; G = 1120.00 MPa; α = 0.000010 1/K; γ = 25.00 kN/m ³	(not input)	(not input)
9	Yes		Free line No. 19	○—	○—	Yes	1 ¹ 22b; d = 0.60 m; β = 0.00 °	Q345; E = 206000.00 MPa; G = 79000.00 MPa; α = 0.000012 1/K; γ = 78.50 kN/m ³	(not input)	(not input)
10	Yes		Free line No. 5	○—	○—	Yes	1 ¹ 22b; d = 0.60 m; β = 0.00 °	Q345; E = 206000.00 MPa; G = 79000.00 MPa; α = 0.000012 1/K; γ = 78.50 kN/m ³	(not input)	(not input)

No.	Cross-section		Material	
	I _y [m ⁴ /m]	A [m ² /m]	E [MPa]	G [MPa]
1	7.59E-03	4.50E-01	28000.00	11200.00
2	5.94E-05	7.69E-03	206000.00	79000.00
3	5.94E-05	7.69E-03	206000.00	79000.00
4	7.59E-03	4.50E-01	28000.00	11200.00
5	7.59E-03	4.50E-01	28000.00	11200.00
6	7.59E-03	4.50E-01	28000.00	11200.00
7	5.94E-05	7.69E-03	206000.00	79000.00
8	7.59E-03	4.50E-01	2800.00	1120.00

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No.	Cross-section		Material	
	I_y [m ⁴ /m]	A [m ² /m]	E [MPa]	G [MPa]
9	5.94E-05	7.69E-03	206000.00	79000.00
10	5.94E-05	7.69E-03	206000.00	79000.00

Line supports

No.	Line support		Location	Support	
	new	modified		Direction X	Direction Z
A1	Yes		Mesh line No. 20	fixed	free
A2	Yes		Mesh line No. 18	fixed	free
A3	Yes		Mesh line No. 15	fixed	free
A4	Yes		Mesh line No. 12	fixed	free
A5	Yes		Mesh line No. 9	fixed	free
A6	Yes		Mesh line No. 6	fixed	free
A7	Yes		Mesh line No. 3	fixed	free
A8	Yes		Mesh line No. 22	fixed	free
A9	Yes		Mesh line No. 17	fixed	free
A10	Yes		Mesh line No. 14	fixed	free
A11	Yes		Mesh line No. 11	fixed	free
A12	Yes		Mesh line No. 8	fixed	free
A13	Yes		Mesh line No. 5	fixed	free
A14	Yes		Mesh line No. 1	fixed	free
A15	Yes		Mesh line No. 21	fixed	fixed
A1 up to A15 - automatically generated line supports along model edges					

Water

Water type : No water

Analysis settings

Stress

Method : Newton - Raphson
 Stiffness matrix change : after each iteration
 Max. number of iterations for one calc. step : 100
 Initial calculation step : 0.25
 Displacement error : 0.0100
 Imbalanced forces error : 0.0100
 Energy error : 0.0100
 Respect material interfaces : no

Plasticity

Return mapping error : 0.00100
 Max. number of iterations for one plast. step : 20

Newton - Raphson

Relaxation factor of calculation step : 2.00
 Maximum number of relaxations of calculation step : 2
 Min. number of iterations for one calc. step : 1

Line search

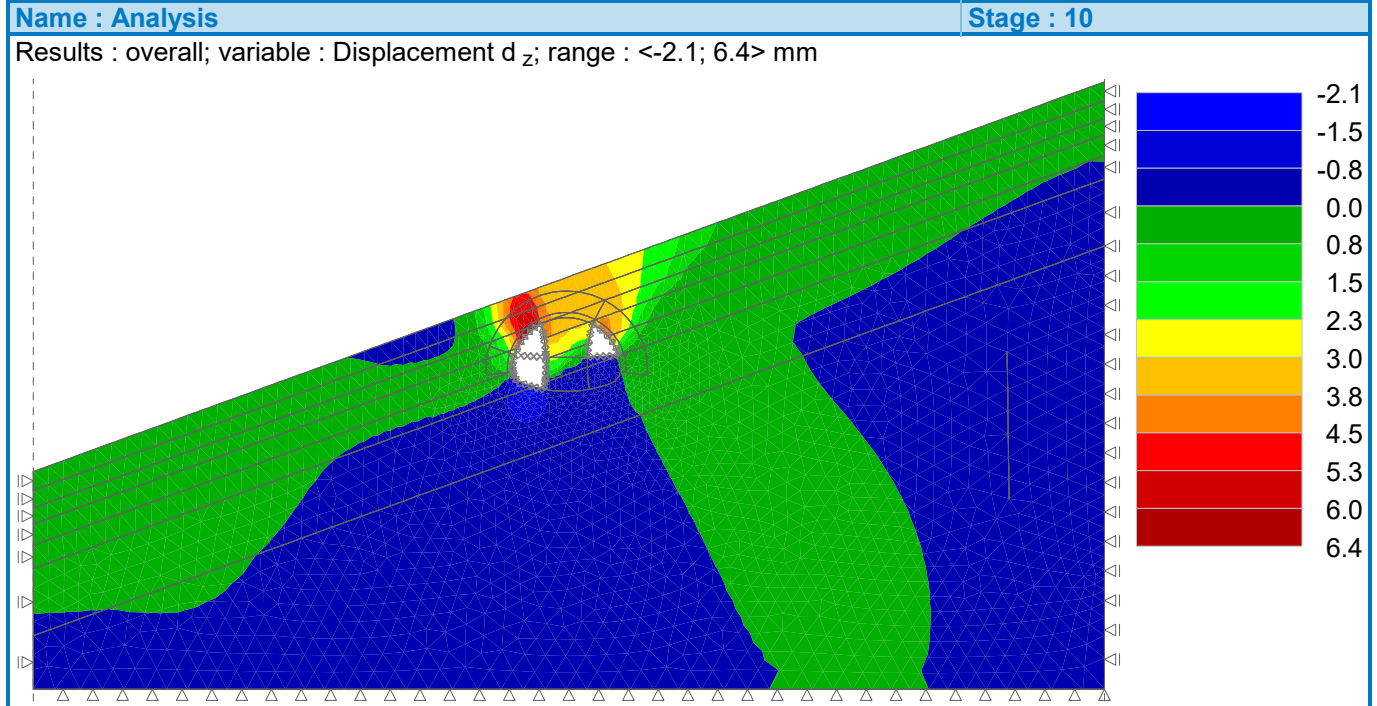
Solution method : iterate no
 Line search limit - minimum : 0.100
 Line search limit - maximum : 1.000

Results (Stage of construction 10)

Stress analysis was successfully completed.

Analysis settings : **user-defined**

Attained loading = 100.00 %



Extremes

Displacements (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Displacements x [mm]	0.00	0.00	-2.0	-3.89	-2.47	3.3
Displacements z [mm]	-3.89	-2.47	-2.1	-6.91	4.82	6.4

Stress (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Total stress $\sigma_{z, tot}$ [kPa]	-5.45	13.03	0.00	96.79	-62.19	2205.57
Effective stress $\sigma_{z, eff}$ [kPa]	-5.45	13.03	0.00	96.79	-62.19	2205.57
Total stress $\sigma_{x, tot}$ [kPa]	100.81	51.70	-9.47	90.93	-62.19	723.76
Effective stress $\sigma_{x, eff}$ [kPa]	100.81	51.70	-9.47	90.93	-62.19	723.76
Shear stress τ_{xz} [kPa]	-3.88	-0.08	-87.40	3.79	-62.19	160.74
Total mean stress $\sigma_{m, tot}$ [kPa]	100.81	51.70	5.39	90.93	-62.19	1220.12
Effective mean stress $\sigma_{m, eff}$ [kPa]	100.81	51.70	5.39	90.93	-62.19	1220.12
Equivalent deviatoric stress J [kPa]	-5.45	13.03	2.79	96.79	-62.19	853.59
Total principal stress $\sigma_{1, tot}$ [kPa]	-7.23	-5.84	-14.97	90.93	-62.19	723.27
Effective principal stress $\sigma_{1, eff}$ [kPa]	-7.23	-5.84	-14.97	90.93	-62.19	723.27
Total principal stress $\sigma_{2, tot}$ [kPa]	-5.45	13.03	11.87	96.79	-62.19	2205.70
Effective principal stress $\sigma_{2, eff}$ [kPa]	-5.45	13.03	11.87	96.79	-62.19	2205.70

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	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Total principal stress $\sigma_{3, \text{tot}}$ [kPa]	100.81	51.70	4.28	90.93	-62.19	732.07
Effective principal stress $\sigma_{3, \text{eff}}$ [kPa]	100.81	51.70	4.28	90.93	-62.19	732.07

Strain (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Equivalent deviatoric strain E_d [%]	-6.57	-6.58	0.01	-13.40	4.55	0.43
Plastic equivalent deviatoric strain $E_{d, pl}$ [%]	-7.16	10.70	0.00	-3.95	-3.58	0.26
Strain ε_x [%]	-2.98	-3.14	-0.13	-100.00	-21.39	0.11
Strain ε_z [%]	-5.26	-5.75	0.00	-13.40	4.55	0.30
Shear strain γ_{xz} [%]	-3.88	-0.08	-0.11	-10.98	5.98	0.17
Plastic strain $\varepsilon_{x, pl}$ [%]	-2.98	-3.14	-0.12	9.78	0.41	0.00
Plastic strain $\varepsilon_{z, pl}$ [%]	9.78	0.41	-0.01	-2.98	-3.14	0.12
Plastic shear strain $\gamma_{xz, pl}$ [%]	-3.89	0.08	-0.06	-3.95	-3.58	0.13
Volumetric strain ε_v [%]	-6.28	-5.50	0.00	-5.29	7.16	0.23
Plastic volumetric strain $\varepsilon_{v, pl}$ [%]	9.76	0.47	-0.02	-7.16	10.70	0.00
Principal strain ε_1 [%]	-3.95	-3.58	-0.14	-100.00	-24.91	0.05
Principal strain ε_2 [%]	-6.57	-6.58	0.00	-13.40	4.55	0.31
Principal strain ε_3 [%]			0.00			0.00

Pore pressures (extremes)

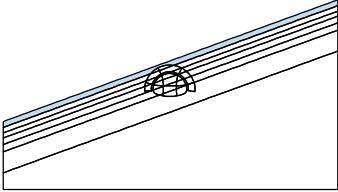
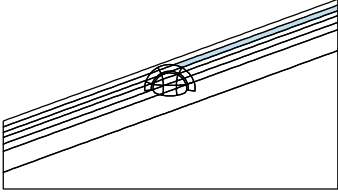
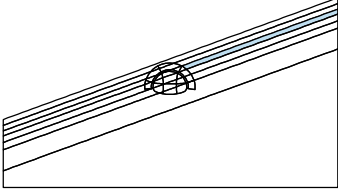
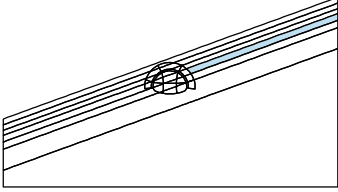
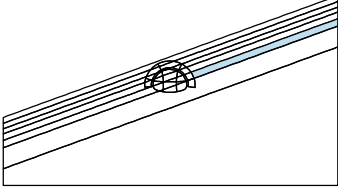
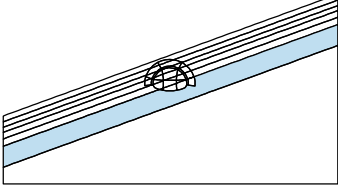
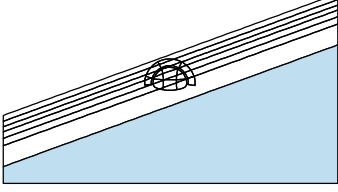
	Location		Max
	x [m]	z [m]	
Total pore pressure u_{tot} [kPa]			0.00

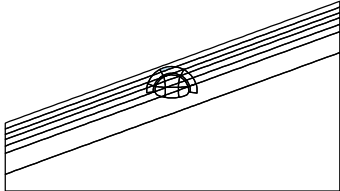
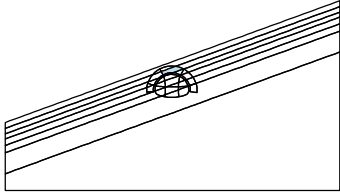
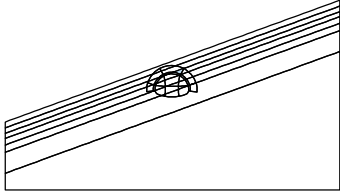
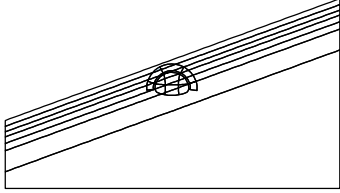
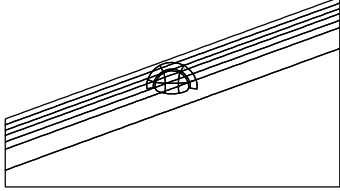
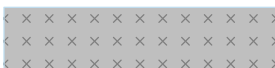
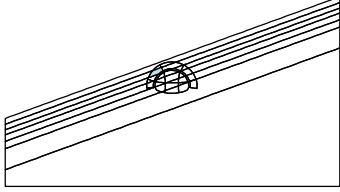
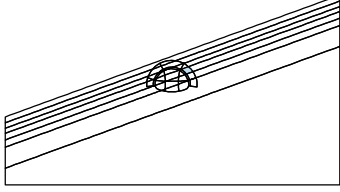
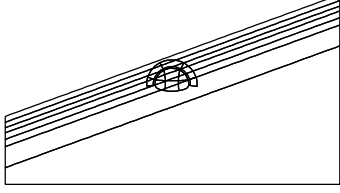
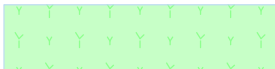
Distributions on beams (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
N [kN/m]	-4.06	-4.69	-527.7	6.24	0.19	47.8
M [kNm/m]	-5.26	-5.75	-48.0	-10.07	-2.67	33.5
Q [kN/m]	-4.82	6.28	-50.2	-4.24	-5.96	108.4

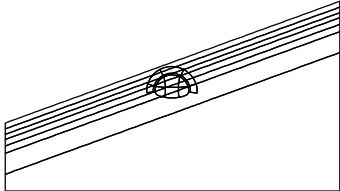
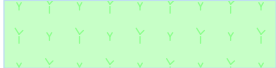
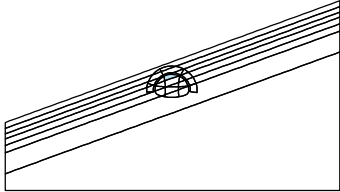
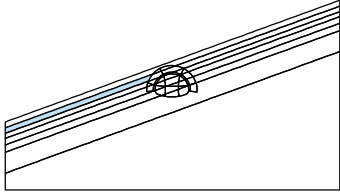
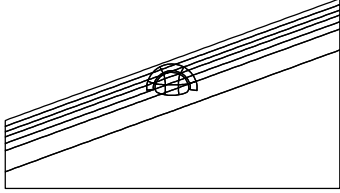
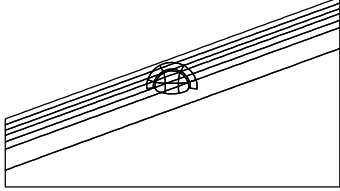
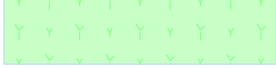
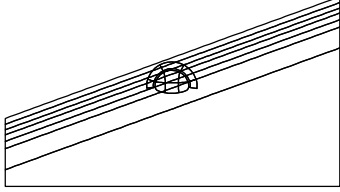
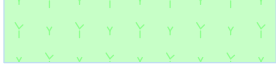
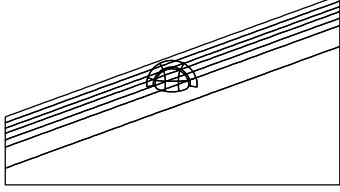
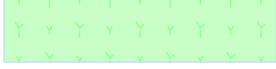
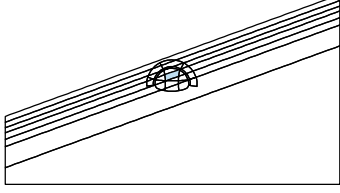
Input data (Stage of construction 11)

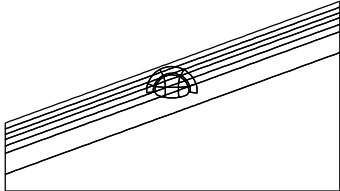
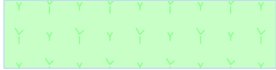
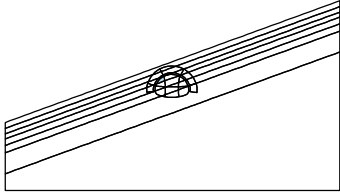
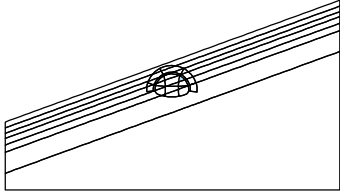
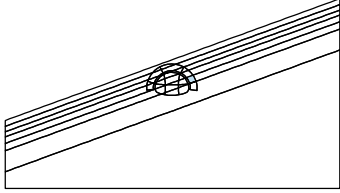
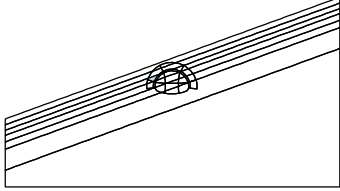
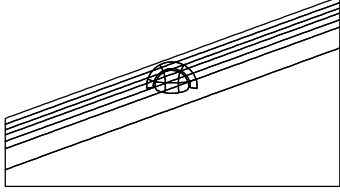
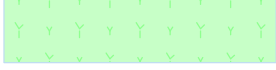
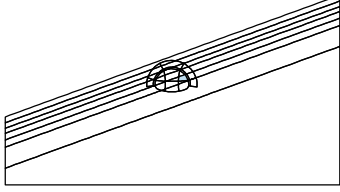
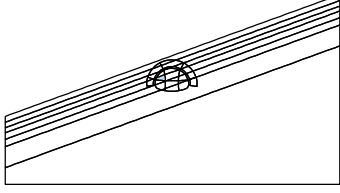
Assignment and activation

No.	Region	Active / inactive	Assigned soil
1		Active	□ □ □ □ □ □ □ 
2		Active	□ □ □ □ □ □ □ 
3		Active	□ □ □ □ □ □ □ 
4		Active	□ □ □ □ □ □ □ □ 
5		Active	□ □ □ □ □ □ □ □ 
6		Active	□ □ □ □ □ □ □ 
7		Active	□ □ □ □ □ □ □ 

No.	Region	Active / inactive	Assigned soil
8		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
9		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
10		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
11		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
12		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
13		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
14		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
15		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			

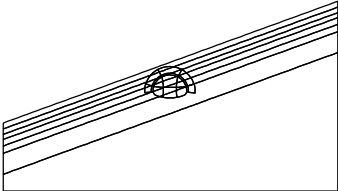
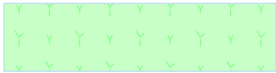
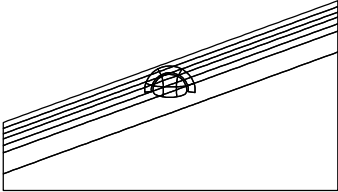
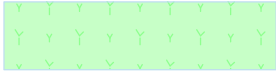
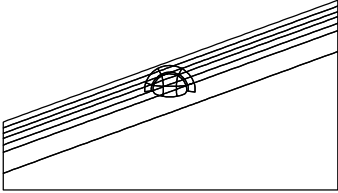
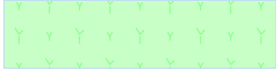
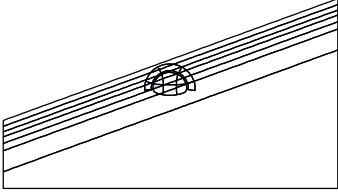
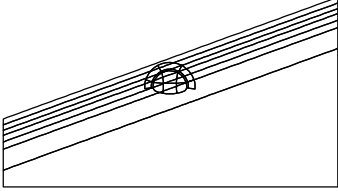
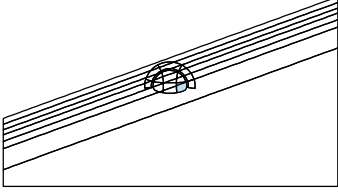
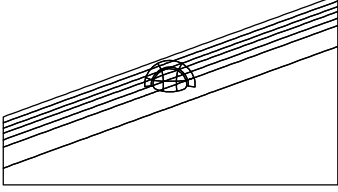
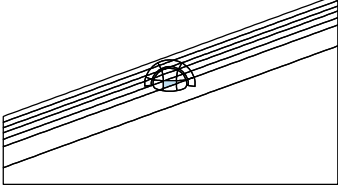
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No.	Region	Active / inactive	Assigned soil
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17		Active	□ □ □ □ □ □ 
18		Active	□ □ □ □ □ □ □ 
19		Active	□ □ □ □ □ □ 
20		Active	□ □ □ □ 
21		Active	□ □ □ □ 
22		Active	□ □ □ □ 
23		Active	□ □ □ □ □ □ □ □ 

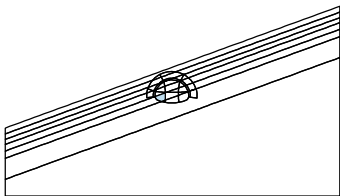
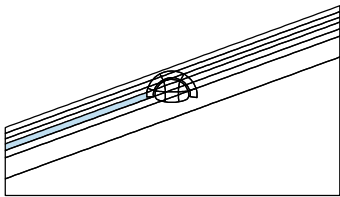
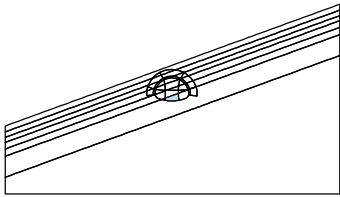
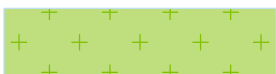
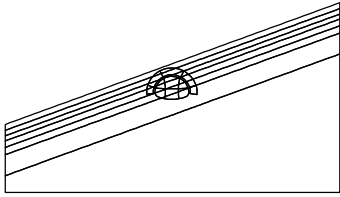
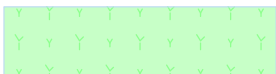
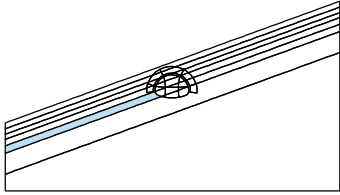
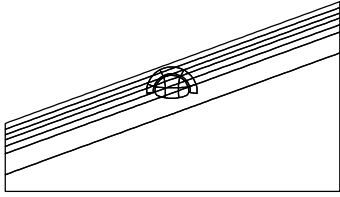
No.	Region	Active / inactive	Assigned soil
24		Active	□ □ □ □
			
25		Inactive	
26		Excavation	Excavation No. 1 (□ □ 9 - 1)
			Soil remaining activity: 0.0 %
27		Active	□ □ □ □ □
			
28		Active	□ □ □ □ □
			
29		Active	□ □ □ □
			
30		Excavation	Excavation No. 1 (□ □ 9 - 1)
			Soil remaining activity: 0.0 %
31		Inactive	



No.	Region	Active / inactive	Assigned soil
32		Active	□ □ □ □ □ □
33		Active	□ □ □ □ □ □ □ □
34		Active	□ □ □ □ □ □ □ □
35		Active	□ □ □ □ □
36		Active	□ □ □ □ □ □
37		Active	□ □ □ □
38		Active	□ □ □ □ □
39		Active	□ □ □ □ □

No.	Region	Active / inactive	Assigned soil
40		Active	□ □ □ □
			
41		Active	□ □ □ □
			
42		Active	□ □ □ □
			
43		Inactive	
44		Active	□ □ □ □ □ □ □ □
			
45		Active	□ □ □ □ □ □
			
46		Active	□ □ □ □ □ □ □ □
			
47		Active	□ □ □ □ □ □ □ □
			

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No.	Region	Active / inactive	Assigned soil
48		Inactive	
49		Active	□ □ □ □ □ □ □ □ 
50		Active	□ □ □ □ □ □ 
51		Active	□ □ □ □ 
52		Active	□ □ □ □ □ □ □ □ 
53		Inactive	

Beams

No.	Beam		Location	Support [m]		Include self weight	cross-section / Degradation in current stage [%]	Material / Beam current activity [%]	Contacts	
	new	modified		Start pt.	End pt.				left	right
1	No	No	Free line No. 9	○—	○—	Yes	without modification	without modification	(not input)	(not input)
2	No	No	Free line No. 18	○—	○—	Yes	without modification	without modification	(not input)	(not input)

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No.	Beam		Location	Support [m]		Include self weight	Cross-section /	Material /	Contacts	
	new	modified		Start pt.	End pt.		Degradation in current stage [%]	Beam current activity [%]	left	right
3	No	No	Free line No. 3	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
4	No	No	Free line No. 11	○—	├—	Yes	without modificatio	without modificatio	(not input)	(not input)
5	No	No	Free line No. 2	├—	├—	Yes	without modificatio	without modificatio	(not input)	(not input)
6	No	No	Free line No. 21	├—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
7	No	No	Free line No. 17	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
8	No	Yes	Free line No. 7	○—	○—	Yes	↑ h = 0.45 m	↑ E = 28000.00 MPa; G = 11200.00 MPa	(not input)	(not input)
9	No	No	Free line No. 19	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
10	No	No	Free line No. 5	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)

No.	Cross-section		Material	
	I _y [m ⁴ /m]	A [m ² /m]	E [MPa]	G [MPa]
1	7.59E-03	4.50E-01	28000.00	11200.00
2	5.94E-05	7.69E-03	206000.00	79000.00
3	5.94E-05	7.69E-03	206000.00	79000.00
4	7.59E-03	4.50E-01	28000.00	11200.00
5	7.59E-03	4.50E-01	28000.00	11200.00
6	7.59E-03	4.50E-01	28000.00	11200.00
7	5.94E-05	7.69E-03	206000.00	79000.00
8	7.59E-03	4.50E-01	28000.00	11200.00
9	5.94E-05	7.69E-03	206000.00	79000.00
10	5.94E-05	7.69E-03	206000.00	79000.00

Line supports

No.	Line support		Location	Support	
	new	modified		Direction X	Direction Z
A1	Yes		Mesh line No. 20	fixed	free
A2	Yes		Mesh line No. 18	fixed	free
A3	Yes		Mesh line No. 15	fixed	free
A4	Yes		Mesh line No. 12	fixed	free
A5	Yes		Mesh line No. 9	fixed	free
A6	Yes		Mesh line No. 6	fixed	free
A7	Yes		Mesh line No. 3	fixed	free
A8	Yes		Mesh line No. 22	fixed	free
A9	Yes		Mesh line No. 17	fixed	free
A1 up to A15 - automatically generated line supports along model edges					

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No.	Line support		Location	Support	
	new	modified		Direction X	Direction Z
A10	Yes		Mesh line No. 14	fixed	free
A11	Yes		Mesh line No. 11	fixed	free
A12	Yes		Mesh line No. 8	fixed	free
A13	Yes		Mesh line No. 5	fixed	free
A14	Yes		Mesh line No. 1	fixed	free
A15	Yes		Mesh line No. 21	fixed	fixed
A1 up to A15 - automatically generated line supports along model edges					

Water

Water type : No water

Analysis settings

Stress

Method : Newton - Raphson
 Stiffness matrix change : after each iteration
 Max. number of iterations for one calc. step : 100
 Initial calculation step : 0.25
 Displacement error : 0.0100
 Imbalanced forces error : 0.0100
 Energy error : 0.0100
 Respect material interfaces : no

Plasticity

Return mapping error : 0.00100
 Max. number of iterations for one plast. step : 20

Newton - Raphson

Relaxation factor of calculation step : 2.00
 Maximum number of relaxations of calculation step : 2
 Min. number of iterations for one calc. step : 1

Line search

Solution method : iterate no
 Line search limit - minimum : 0.100
 Line search limit - maximum : 1.000

Results (Stage of construction 11)

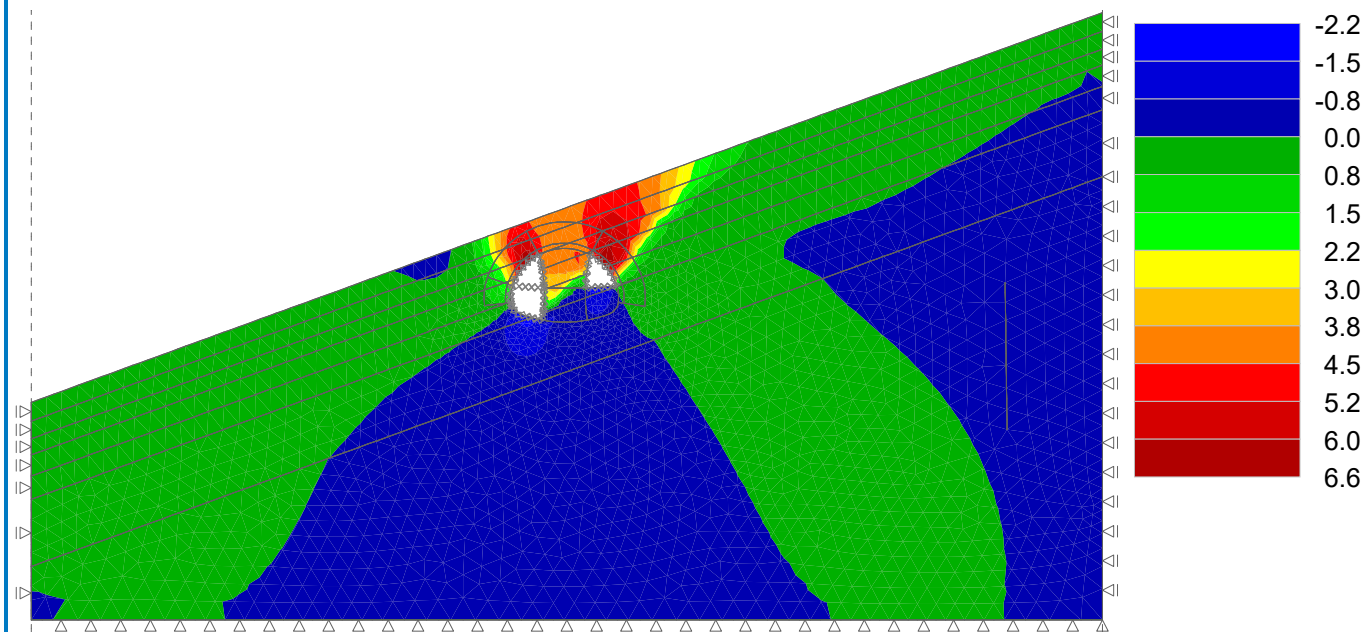
Stress analysis was successfully completed.

Analysis settings : **user-defined**

Attained loading = 100.00 %

Name : Analysis

Stage : 11

Results : overall; variable : Displacement d_z; range : <-2.2; 6.6> mm

Extremes

Displacements (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Displacements x [mm]	0.00	0.00	-1.9	8.73	4.35	5.0
Displacements z [mm]	8.73	4.35	-2.2	-6.91	4.82	6.6

Stress (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Total stress $\sigma_{z, tot}$ [kPa]	7.41	0.27	-12.28	96.79	-62.19	2205.93
Effective stress $\sigma_{z, eff}$ [kPa]	7.41	0.27	-12.28	96.79	-62.19	2205.93
Total stress $\sigma_{x, tot}$ [kPa]	7.41	0.27	-13.79	90.93	-62.19	723.86
Effective stress $\sigma_{x, eff}$ [kPa]	7.41	0.27	-13.79	90.93	-62.19	723.86
Shear stress τ_{xz} [kPa]	7.73	3.98	-94.50	3.79	-62.19	160.80
Total mean stress $\sigma_{m, tot}$ [kPa]	7.41	0.27	-11.64	90.93	-62.19	1220.31
Effective mean stress $\sigma_{m, eff}$ [kPa]	7.41	0.27	-11.64	90.93	-62.19	1220.31
Equivalent deviatoric stress J [kPa]	-5.45	13.03	3.20	96.79	-62.19	853.73
Total principal stress $\sigma_{1, tot}$ [kPa]	7.41	0.27	-22.21	90.93	-62.19	723.37
Effective principal stress $\sigma_{1, eff}$ [kPa]	7.41	0.27	-22.21	90.93	-62.19	723.37
Total principal stress $\sigma_{2, tot}$ [kPa]	7.41	0.27	-3.85	96.79	-62.19	2206.06
Effective principal stress $\sigma_{2, eff}$ [kPa]	7.41	0.27	-3.85	96.79	-62.19	2206.06
Total principal stress $\sigma_{3, tot}$ [kPa]	7.41	0.27	-8.86	90.93	-62.19	732.19
Effective principal stress $\sigma_{3, eff}$ [kPa]	7.41	0.27	-8.86	90.93	-62.19	732.19

Strain (extremes)

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	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Equivalent deviatoric strain E_d [%]	-6.57	-6.58	0.00	-13.40	4.55	0.43
Plastic equivalent deviatoric strain $E_{d, pl}$ [%]	-7.16	10.70	0.00	-3.95	-3.58	0.32
Strain ε_x [%]	-2.98	-3.14	-0.15	-100.00	-21.39	0.11
Strain ε_z [%]	7.41	0.27	0.00	-13.40	4.55	0.30
Shear strain γ_{xz} [%]	-3.88	-0.08	-0.09	-3.95	-3.58	0.22
Plastic strain $\varepsilon_{x, pl}$ [%]	-2.98	-3.14	-0.14	-7.16	10.70	0.00
Plastic strain $\varepsilon_{z, pl}$ [%]	9.78	0.41	-0.04	-2.98	-3.14	0.14
Plastic shear strain $\gamma_{xz, pl}$ [%]	-3.89	0.08	-0.05	-3.95	-3.58	0.19
Volumetric strain ε_v [%]	7.41	0.27	0.00	-5.29	7.16	0.23
Plastic volumetric strain $\varepsilon_{v, pl}$ [%]	9.76	0.47	-0.11	-7.16	10.70	0.00
Principal strain ε_1 [%]	-3.95	-3.58	-0.17	-100.00	-24.91	0.05
Principal strain ε_2 [%]	7.41	0.27	0.00	-13.40	4.55	0.31
Principal strain ε_3 [%]			0.00			0.00

Pore pressures (extremes)

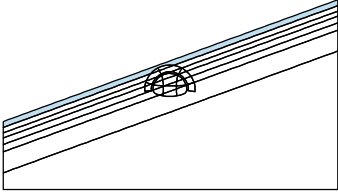
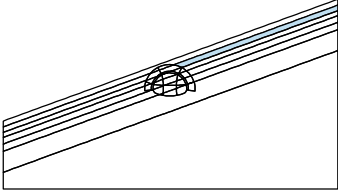
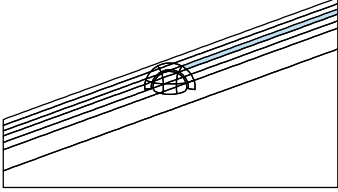
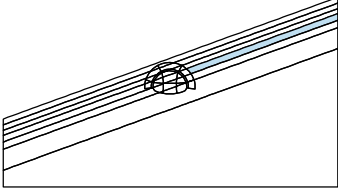
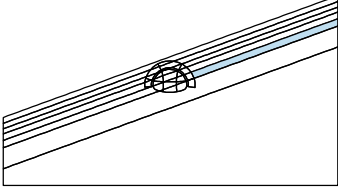
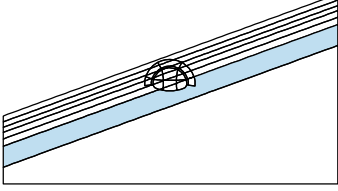
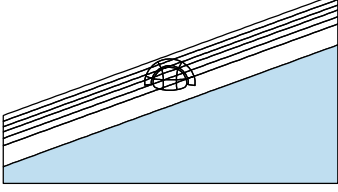
	Location		Max
	x [m]	z [m]	
Total pore pressure u_{tot} [kPa]			0.00

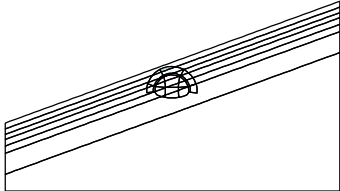
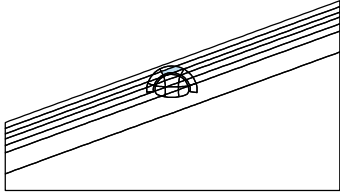
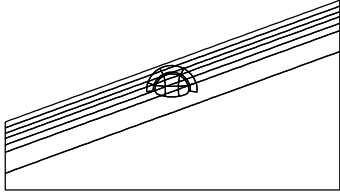
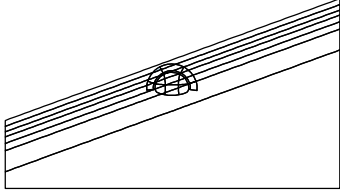
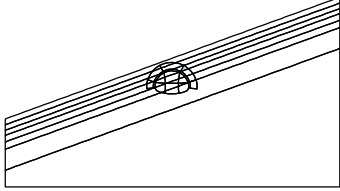
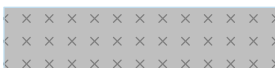
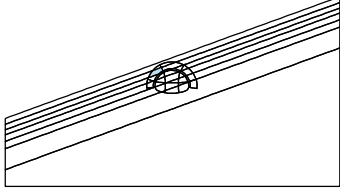
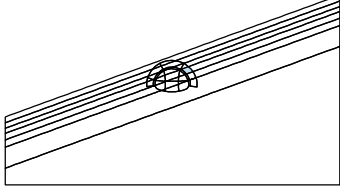
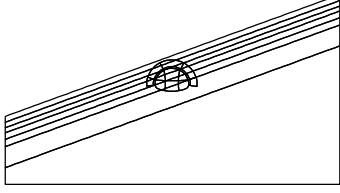
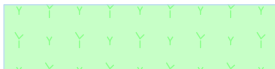
Distributions on beams (extremes)

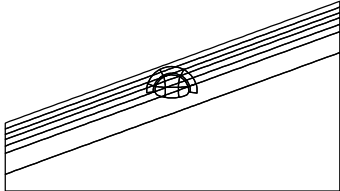
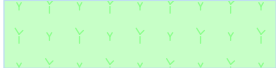
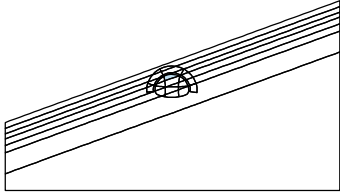
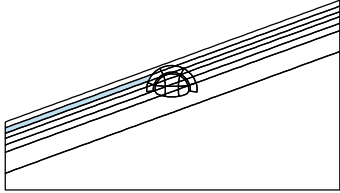
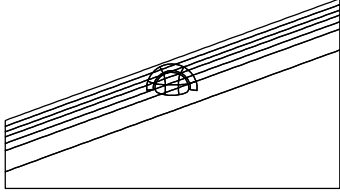
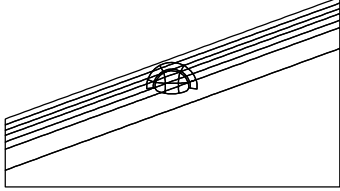
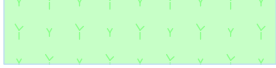
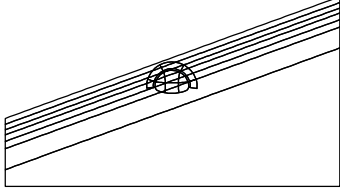
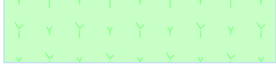
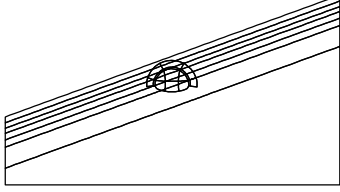
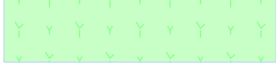
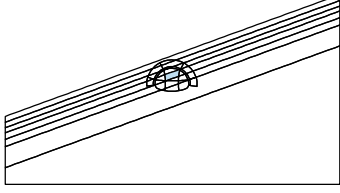
	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
N [kN/m]	-4.06	-4.69	-659.7	3.89	0.07	102.9
M [kNm/m]	-5.26	-5.75	-64.1	8.56	2.91	108.0
Q [kN/m]	9.76	0.47	-76.8	-4.24	-5.96	144.1

Input data (Stage of construction 12)

Assignment and activation

No.	Region	Active / inactive	Assigned soil
1		Active	□ □ □ □ □ □ □ 
2		Active	□ □ □ □ □ □ □ 
3		Active	□ □ □ □ □ □ □ 
4		Active	□ □ □ □ □ □ □ □ □ 
5		Active	□ □ □ □ □ □ □ □ □ 
6		Active	□ □ □ □ □ □ □ 
7		Active	□ □ □ □ □ □ □ 

No.	Region	Active / inactive	Assigned soil
8		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
9		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
10		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
11		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
12		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
13		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
14		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
15		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			

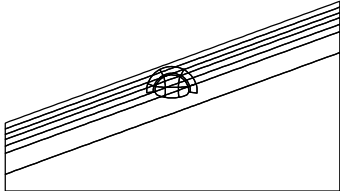
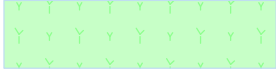
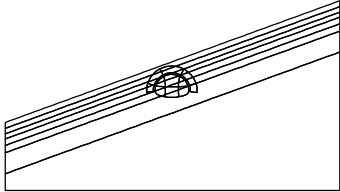
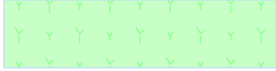
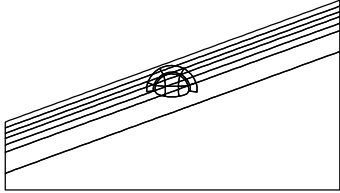
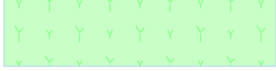
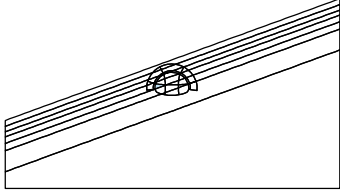
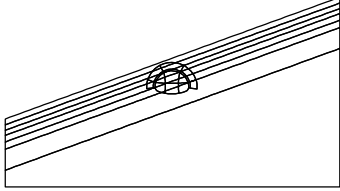
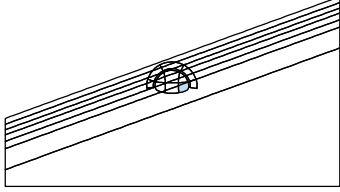
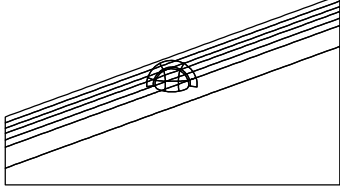
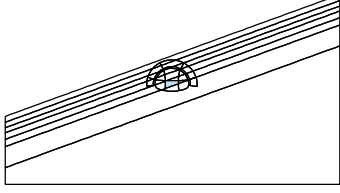
No.	Region	Active / inactive	Assigned soil
16		Active	□ □ □ □
			
17		Active	□ □ □ □ □ □
			
18		Active	□ □ □ □ □ □ □
			
19		Active	□ □ □ □ □ □
			
20		Active	□ □ □ □
			
21		Active	□ □ □ □
			
22		Active	□ □ □ □
			
23		Active	□ □ □ □ □ □ □ □
			



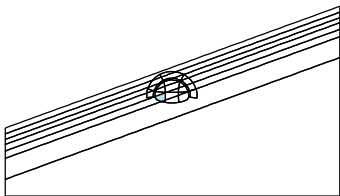
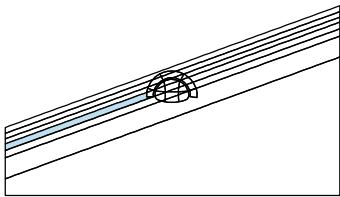
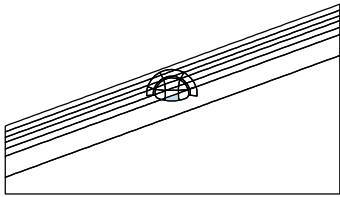
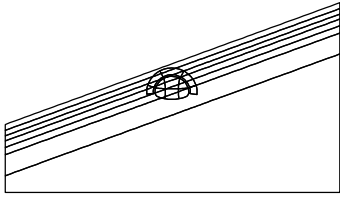
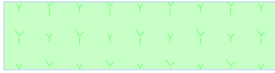
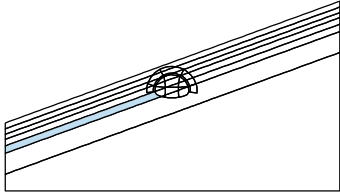
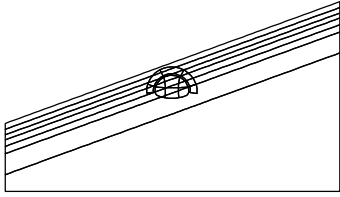
No.	Region	Active / inactive	Assigned soil
24		Active	
25		Inactive	
26		Inactive	
27		Active	
28		Active	
29		Active	
30		Inactive	
31		Inactive	



No.	Region	Active / inactive	Assigned soil
32		Active	□ □ □ □ □ □
33		Active	□ □ □ □ □ □ □ □
34		Active	□ □ □ □ □ □ □ □
35		Active	□ □ □ □ □
36		Active	□ □ □ □ □ □
37		Active	□ □ □ □
38		Active	□ □ □ □ □
39		Active	□ □ □ □ □

No.	Region	Active / inactive	Assigned soil
40		Active	□ □ □ □
			
41		Active	□ □ □ □
			
42		Active	□ □ □ □
			
43		Inactive	
44		Excavation	Excavation No. 1 (□ □ 12 - 1)
			Soil remaining activity: 60.0 %
45		Excavation	Excavation No. 1 (□ □ 12 - 1)
			Soil remaining activity: 60.0 %
46		Active	□ □ □ □ □ □ □ □
			
47		Active	□ □ □ □ □ □ □ □
			

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No.	Region	Active / inactive	Assigned soil
48		Inactive	
49		Active	□ □ □ □ □ □ □ □ 
50		Active	□ □ □ □ □ □ 
51		Active	□ □ □ □ 
52		Active	□ □ □ □ □ □ □ □ 
53		Inactive	

Beams

No.	Beam		Location	Support [m]		Include self weight	cross-section / Degradation in current stage [%]	Material / Beam current activity [%]	Contacts	
	new	modified		Start pt.	End pt.				left	right
1	No	No	Free line No. 9	○—	○—	Yes	without modification	without modification	(not input)	(not input)
2	No	No	Free line No. 18	○—	○—	Yes	without modification	without modification	(not input)	(not input)

No.	Beam		Location	Support [m]		Include self weight	Cross-section /	Material /	Contacts	
	new	modified		Start pt.	End pt.		Degradation in current stage [%]	Beam current activity [%]	left	right
3	No	No	Free line No. 3	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
4	No	No	Free line No. 11	○—	├—	Yes	without modificatio	without modificatio	(not input)	(not input)
5	No	No	Free line No. 2	├—	├—	Yes	without modificatio	without modificatio	(not input)	(not input)
6	No	No	Free line No. 21	├—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
7	No	No	Free line No. 17	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
8	No	No	Free line No. 7	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
9	No	No	Free line No. 19	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
10	No	No	Free line No. 5	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)

No.	Cross-section		Material	
	I _y [m ⁴ /m]	A [m ² /m]	E [MPa]	G [MPa]
1	7.59E-03	4.50E-01	28000.00	11200.00
2	5.94E-05	7.69E-03	206000.00	79000.00
3	5.94E-05	7.69E-03	206000.00	79000.00
4	7.59E-03	4.50E-01	28000.00	11200.00
5	7.59E-03	4.50E-01	28000.00	11200.00
6	7.59E-03	4.50E-01	28000.00	11200.00
7	5.94E-05	7.69E-03	206000.00	79000.00
8	7.59E-03	4.50E-01	28000.00	11200.00
9	5.94E-05	7.69E-03	206000.00	79000.00
10	5.94E-05	7.69E-03	206000.00	79000.00

Line supports

No.	Line support		Location	Support	
	new	modified		Direction X	Direction Z
A1	Yes		Mesh line No. 20	fixed	free
A2	Yes		Mesh line No. 18	fixed	free
A3	Yes		Mesh line No. 15	fixed	free
A4	Yes		Mesh line No. 12	fixed	free
A5	Yes		Mesh line No. 9	fixed	free
A6	Yes		Mesh line No. 6	fixed	free
A7	Yes		Mesh line No. 3	fixed	free
A8	Yes		Mesh line No. 22	fixed	free
A9	Yes		Mesh line No. 17	fixed	free
A10	Yes		Mesh line No. 14	fixed	free
A11	Yes		Mesh line No. 11	fixed	free
A1 up to A15 - automatically generated line supports along model edges					

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No.	Line support		Location	Support	
	new	modified		Direction X	Direction Z
A12	Yes		Mesh line No. 8	fixed	free
A13	Yes		Mesh line No. 5	fixed	free
A14	Yes		Mesh line No. 1	fixed	free
A15	Yes		Mesh line No. 21	fixed	fixed
A1 up to A15 - automatically generated line supports along model edges					

Water

Water type : No water

Analysis settings

Stress

Method :	Newton - Raphson
Stiffness matrix change :	after each iteration
Max. number of iterations for one calc. step :	100
Initial calculation step :	0.25
Displacement error :	0.0100
Imbalanced forces error :	0.0100
Energy error :	0.0100
Respect material interfaces :	no

Plasticity

Return mapping error :	0.00100
Max. number of iterations for one plast. step :	20

Newton - Raphson

Relaxation factor of calculation step :	2.00
Maximum number of relaxations of calculation step :	2
Min. number of iterations for one calc. step :	1

Line search

Solution method :	iterate no
Line search limit - minimum :	0.100
Line search limit - maximum :	1.000

Results (Stage of construction 12)

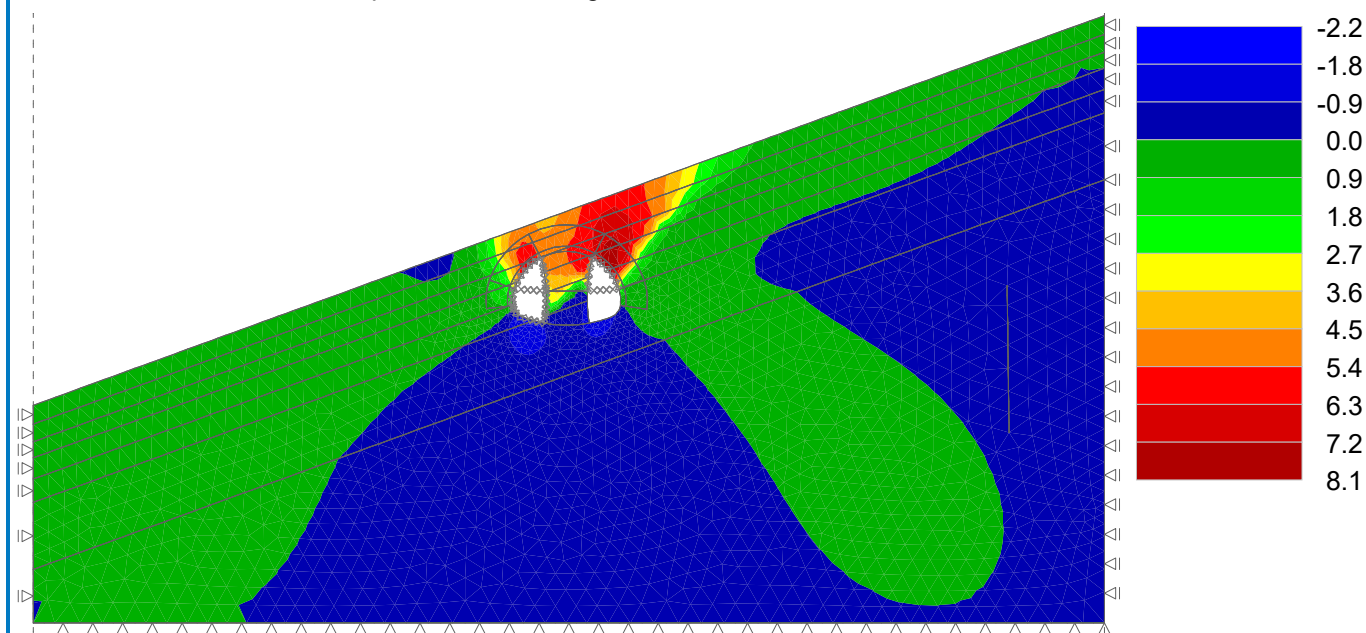
Stress analysis was successfully completed.

Analysis settings : **user-defined**

Attained loading = 100.00 %

Name : Analysis

Stage : 12

Results : overall; variable : Displacement d_z; range : <-2.2; 8.1> mm

Extremes

Displacements (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Displacements x [mm]	0.00	0.00	-2.5	8.73	4.35	5.7
Displacements z [mm]	8.73	4.35	-2.2	7.73	3.98	8.1

Stress (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Total stress $\sigma_{z, \text{tot}}$ [kPa]	-5.45	13.03	0.00	96.79	-62.19	2205.86
Effective stress $\sigma_{z, \text{eff}}$ [kPa]	-5.45	13.03	0.00	96.79	-62.19	2205.86
Total stress $\sigma_{x, \text{tot}}$ [kPa]	100.81	51.70	-9.47	90.93	-62.19	723.81
Effective stress $\sigma_{x, \text{eff}}$ [kPa]	100.81	51.70	-9.47	90.93	-62.19	723.81
Shear stress τ_{xz} [kPa]	9.78	0.41	-225.26	9.17	-4.33	178.53
Total mean stress $\sigma_{m, \text{tot}}$ [kPa]	100.81	51.70	5.39	90.93	-62.19	1220.26
Effective mean stress $\sigma_{m, \text{eff}}$ [kPa]	100.81	51.70	5.39	90.93	-62.19	1220.26
Equivalent deviatoric stress J [kPa]	-5.45	13.03	3.54	96.79	-62.19	853.72
Total principal stress $\sigma_{1, \text{tot}}$ [kPa]	-7.23	-5.84	-21.77	90.93	-62.19	723.31
Effective principal stress $\sigma_{1, \text{eff}}$ [kPa]	-7.23	-5.84	-21.77	90.93	-62.19	723.31
Total principal stress $\sigma_{2, \text{tot}}$ [kPa]	-5.45	13.03	13.53	96.79	-62.19	2205.99
Effective principal stress $\sigma_{2, \text{eff}}$ [kPa]	-5.45	13.03	13.53	96.79	-62.19	2205.99
Total principal stress $\sigma_{3, \text{tot}}$ [kPa]	100.81	51.70	4.28	90.93	-62.19	732.15
Effective principal stress $\sigma_{3, \text{eff}}$ [kPa]	100.81	51.70	4.28	90.93	-62.19	732.15

Strain (extremes)

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	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Equivalent deviatoric strain E_d [%]	-6.57	-6.58	0.00	-13.40	4.55	0.42
Plastic equivalent deviatoric strain $E_{d, pl}$ [%]	-7.16	10.70	0.00	-3.95	-3.58	0.35
Strain ε_x [%]	2.80	2.19	-0.18	-100.00	-21.39	0.11
Strain ε_z [%]	-6.28	-5.50	0.00	-13.40	4.55	0.30
Shear strain γ_{xz} [%]	9.80	0.35	-0.12	-3.95	-3.58	0.25
Plastic strain $\varepsilon_{x, pl}$ [%]	2.80	2.19	-0.17	2.64	7.13	0.00
Plastic strain $\varepsilon_{z, pl}$ [%]	9.78	0.41	0.00	2.80	2.19	0.17
Plastic shear strain $\gamma_{xz, pl}$ [%]	12.65	5.77	-0.05	-3.95	-3.58	0.22
Volumetric strain ε_v [%]	-6.28	-5.50	0.00	-5.29	7.16	0.23
Plastic volumetric strain $\varepsilon_{v, pl}$ [%]	4.82	6.28	-0.01	-7.16	10.70	0.00
Principal strain ε_1 [%]	-3.95	-3.58	-0.19	-100.00	-24.91	0.05
Principal strain ε_2 [%]	-6.57	-6.58	0.00	-13.40	4.55	0.31
Principal strain ε_3 [%]			0.00			0.00

Pore pressures (extremes)

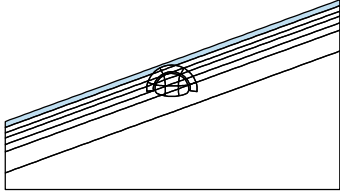
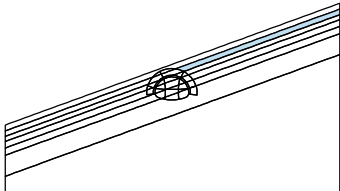
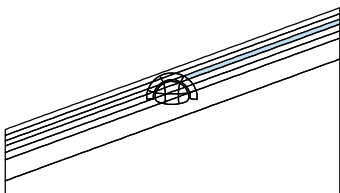
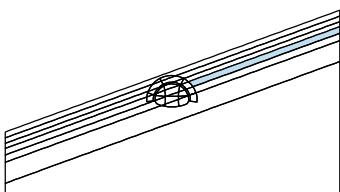
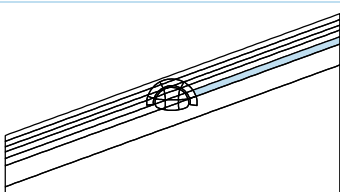
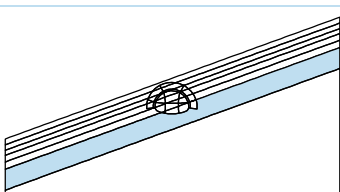
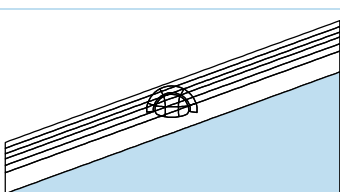
	Location		Max
	x [m]	z [m]	
Total pore pressure u_{tot} [kPa]			0.00

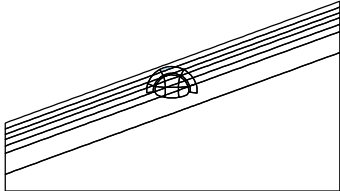
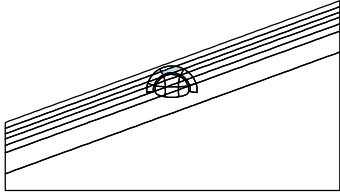
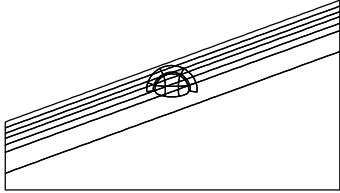
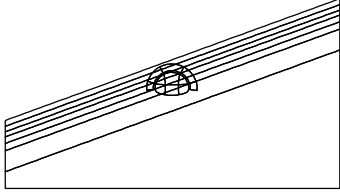
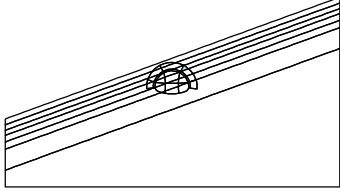
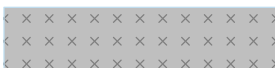
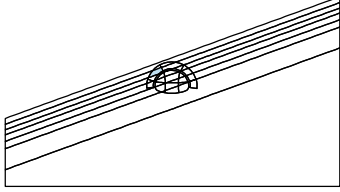
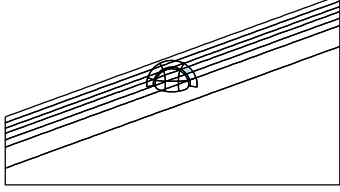
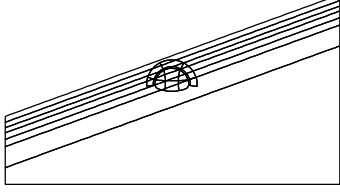
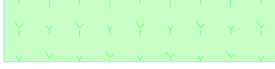
Distributions on beams (extremes)

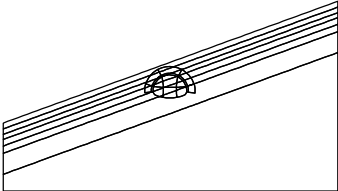
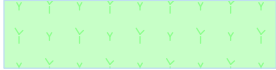
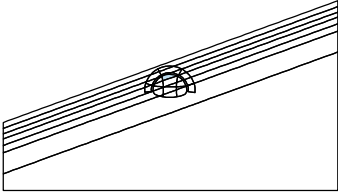
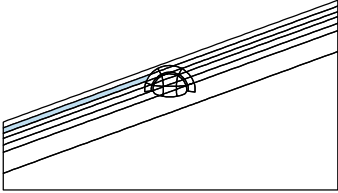
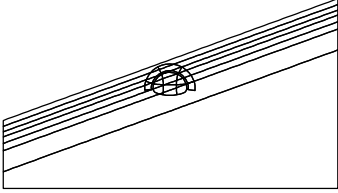
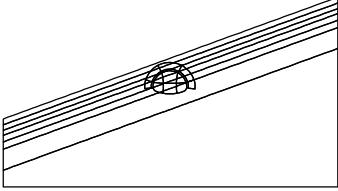
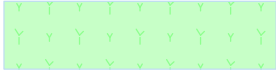
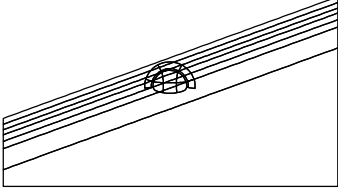
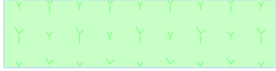
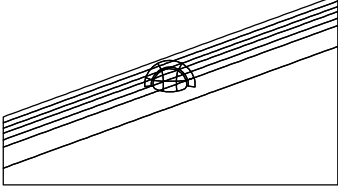
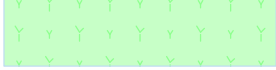
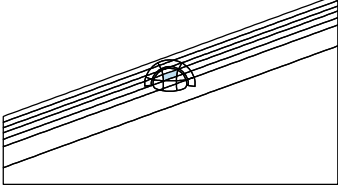
	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
N [kN/m]	-4.06	-4.69	-731.4	-5.26	-5.75	14.4
M [kNm/m]	-5.26	-5.75	-75.9	8.56	2.91	121.1
Q [kN/m]	9.76	0.47	-87.2	-4.24	-5.96	169.2

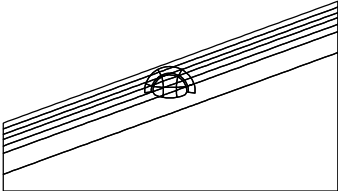
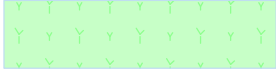
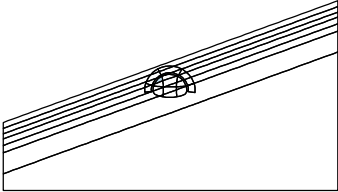
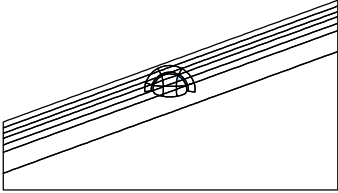
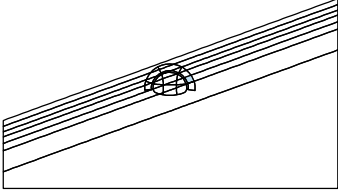
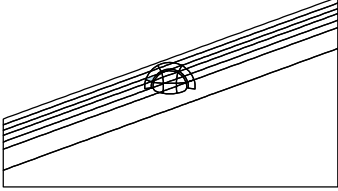
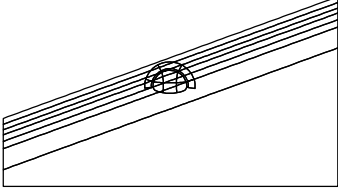
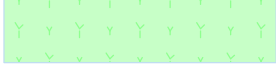
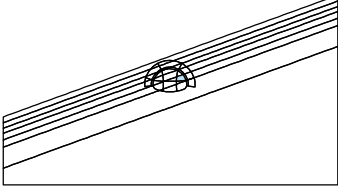
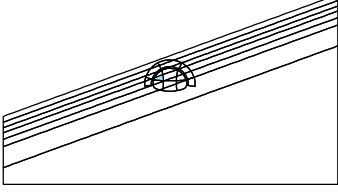
Input data (Stage of construction 13)

Assignment and activation

No.	Region	Active / inactive	Assigned soil
1		Active	□ □ □ □ □ □ □ 
2		Active	□ □ □ □ □ □ □ 
3		Active	□ □ □ □ □ □ □ 
4		Active	□ □ □ □ □ □ □ □ 
5		Active	□ □ □ □ □ □ □ □ 
6		Active	□ □ □ □ □ □ □ 
7		Active	□ □ □ □ □ □ □ 

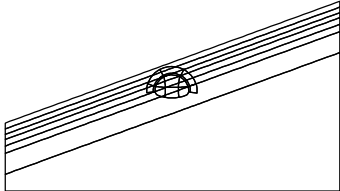
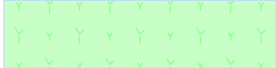
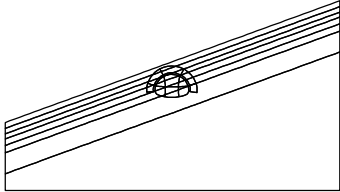
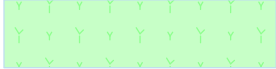
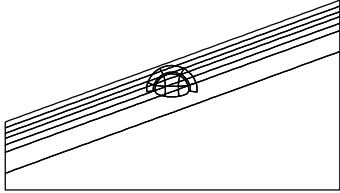
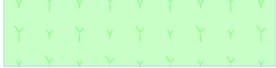
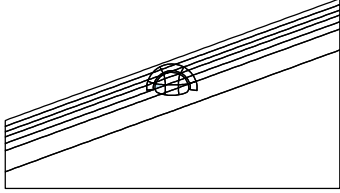
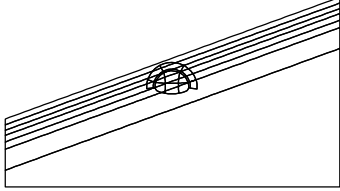
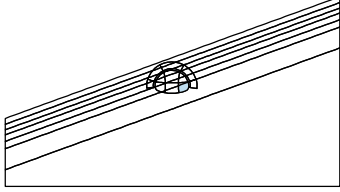
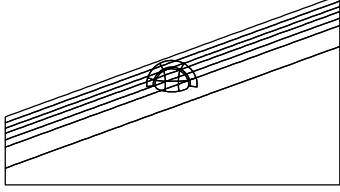
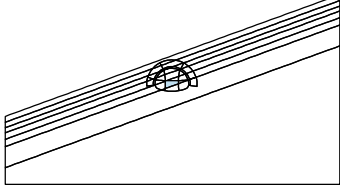
No.	Region	Active / inactive	Assigned soil
8		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
9		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
10		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
11		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
12		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
13		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
14		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
15		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			

No.	Region	Active / inactive	Assigned soil
16		Active	□ □ □ □
			
17		Active	□ □ □ □ □ □
			
18		Active	□ □ □ □ □ □ □
			
19		Active	□ □ □ □ □ □
			
20		Active	□ □ □ □
			
21		Active	□ □ □ □
			
22		Active	□ □ □ □
			
23		Active	□ □ □ □ □ □ □ □
			

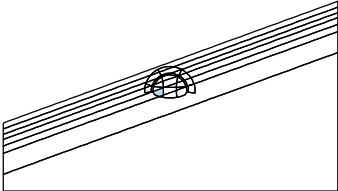
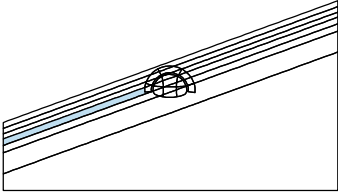
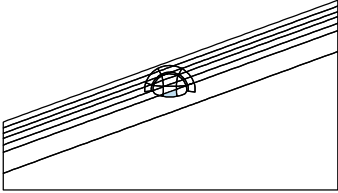
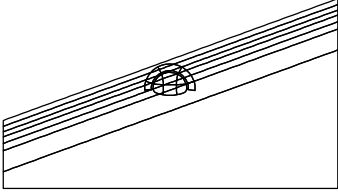
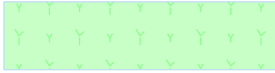
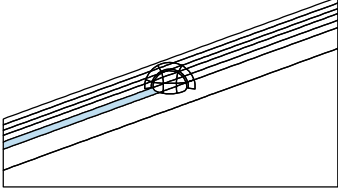
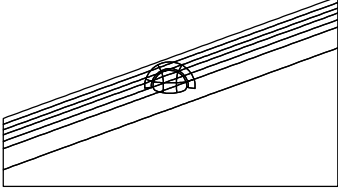
No.	Region	Active / inactive	Assigned soil
24		Active	□ □ □ □
			
25		Inactive	
26		Inactive	
27		Active	□ □ □ □ □
			
28		Active	□ □ □ □ □
			
29		Active	□ □ □ □
			
30		Inactive	
31		Inactive	



No.	Region	Active / inactive	Assigned soil
32		Active	□ □ □ □ □
33		Active	□ □ □ □ □ □ □ □
34		Active	□ □ □ □ □
35		Active	□ □ □ □ □
36		Active	□ □ □ □ □
37		Active	□ □ □ □
38		Active	□ □ □ □ □
39		Active	□ □ □ □ □

No.	Region	Active / inactive	Assigned soil
40		Active	□ □ □ □
			
41		Active	□ □ □ □
			
42		Active	□ □ □ □
			
43		Inactive	
44		Excavation	Excavation No. 1 (□ □ 12 - 1)
			Soil remaining activity: 30.0 %
45		Excavation	Excavation No. 1 (□ □ 12 - 1)
			Soil remaining activity: 30.0 %
46		Active	□ □ □ □ □ □ □ □
			
47		Active	□ □ □ □ □ □ □ □
			

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No.	Region	Active / inactive	Assigned soil
48		Inactive	
49		Active	□ □ □ □ □ □ □ □ 
50		Active	□ □ □ □ □ □ 
51		Active	□ □ □ □ 
52		Active	□ □ □ □ □ □ □ □ 
53		Inactive	

Beams

No.	Beam		Location	Support [m]		Include self weight	cross-section / Degradation in current stage [%]	Material / Beam current activity [%]	Contacts	
	new	modified		Start pt.	End pt.				left	right
1	No	No	Free line No. 9	○—	○—	Yes	without modification	without modification	(not input)	(not input)
2	No	No	Free line No. 18	○—	○—	Yes	without modification	without modification	(not input)	(not input)

No.	Beam		Location	Support [m]		Include self weight	Cross-section / Degradation in current stage [%]	Material / Beam current activity [%]	Contacts	
	new	modified		Start pt.	End pt.				left	right
3	No	No	Free line No. 3	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
4	No	No	Free line No. 11	○—	├—	Yes	without modificatio	without modificatio	(not input)	(not input)
5	No	No	Free line No. 2	├—	├—	Yes	without modificatio	without modificatio	(not input)	(not input)
6	No	No	Free line No. 21	├—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
7	No	No	Free line No. 17	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
8	No	No	Free line No. 7	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
9	No	No	Free line No. 19	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
10	No	No	Free line No. 5	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
11	Yes		Free line No. 20	○—	○—	Yes	1.00 (b) x 0.45 (h) m	Q345; E = 206000.00 MPa; G = 79000.00 MPa; $\alpha = 0.000012$ 1/K; $\gamma = 78.50$ kN/m ³	(not input)	(not input)
12	Yes		Free line No. 10	├—	○—	Yes	1.00 (b) x 0.45 (h) m	C25; E = 2800.00 MPa; G = 1120.00 MPa; $\alpha = 0.000010$ 1/K; $\gamma = 25.00$ kN/m ³	(not input)	(not input)
13	Yes		Free line No. 1	├—	├—	Yes	1.00 (b) x 0.45 (h) m	C25; E = 2800.00 MPa; G = 1120.00 MPa; $\alpha = 0.000010$ 1/K; $\gamma = 25.00$ kN/m ³	(not input)	(not input)

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No.	Beam		Location	Support [m]		Include self weight	Cross-section / Degradation in current stage [%]	Material / Beam current activity [%]	Contacts	
	new	modified		Start pt.	End pt.				left	right
14	Yes		Free line No. 23	○	├	Yes	1.00 (b) x 0.45 (h) m	C25 ¹ ÊÊi; E = 2800.00 MPa; G = 1120.00 MPa; α = 0.000010 1/K; γ = 25.00 kN/m ³	(not input)	(not input)

No.	Cross-section		Material	
	I _y [m ⁴ /m]	A [m ² /m]	E [MPa]	G [MPa]
1	7.59E-03	4.50E-01	28000.00	11200.00
2	5.94E-05	7.69E-03	206000.00	79000.00
3	5.94E-05	7.69E-03	206000.00	79000.00
4	7.59E-03	4.50E-01	28000.00	11200.00
5	7.59E-03	4.50E-01	28000.00	11200.00
6	7.59E-03	4.50E-01	28000.00	11200.00
7	5.94E-05	7.69E-03	206000.00	79000.00
8	7.59E-03	4.50E-01	28000.00	11200.00
9	5.94E-05	7.69E-03	206000.00	79000.00
10	5.94E-05	7.69E-03	206000.00	79000.00
11	5.94E-05	7.69E-03	206000.00	79000.00
12	7.59E-03	4.50E-01	2800.00	1120.00
13	7.59E-03	4.50E-01	2800.00	1120.00
14	7.59E-03	4.50E-01	2800.00	1120.00

Line supports

No.	Line support		Location	Support	
	new	modified		Direction X	Direction Z
A1	Yes		Mesh line No. 20	fixed	free
A2	Yes		Mesh line No. 18	fixed	free
A3	Yes		Mesh line No. 15	fixed	free
A4	Yes		Mesh line No. 12	fixed	free
A5	Yes		Mesh line No. 9	fixed	free
A6	Yes		Mesh line No. 6	fixed	free
A7	Yes		Mesh line No. 3	fixed	free
A8	Yes		Mesh line No. 22	fixed	free
A9	Yes		Mesh line No. 17	fixed	free
A10	Yes		Mesh line No. 14	fixed	free
A11	Yes		Mesh line No. 11	fixed	free
A12	Yes		Mesh line No. 8	fixed	free
A13	Yes		Mesh line No. 5	fixed	free
A1 up to A15 - automatically generated line supports along model edges					

No.	Line support		Location	Support	
	new	modified		Direction X	Direction Z
A14	Yes		Mesh line No. 1	fixed	free
A15	Yes		Mesh line No. 21	fixed	fixed
A1 up to A15 - automatically generated line supports along model edges					

Water

Water type : No water

Analysis settings

Stress

Method : Newton - Raphson
 Stiffness matrix change : after each iteration
 Max. number of iterations for one calc. step : 100
 Initial calculation step : 0.25
 Displacement error : 0.0100
 Imbalanced forces error : 0.0100
 Energy error : 0.0100
 Respect material interfaces : no

Plasticity

Return mapping error : 0.00100
 Max. number of iterations for one plast. step : 20

Newton - Raphson

Relaxation factor of calculation step : 2.00
 Maximum number of relaxations of calculation step : 2
 Min. number of iterations for one calc. step : 1

Line search

Solution method : iterate no
 Line search limit - minimum : 0.100
 Line search limit - maximum : 1.000

Results (Stage of construction 13)

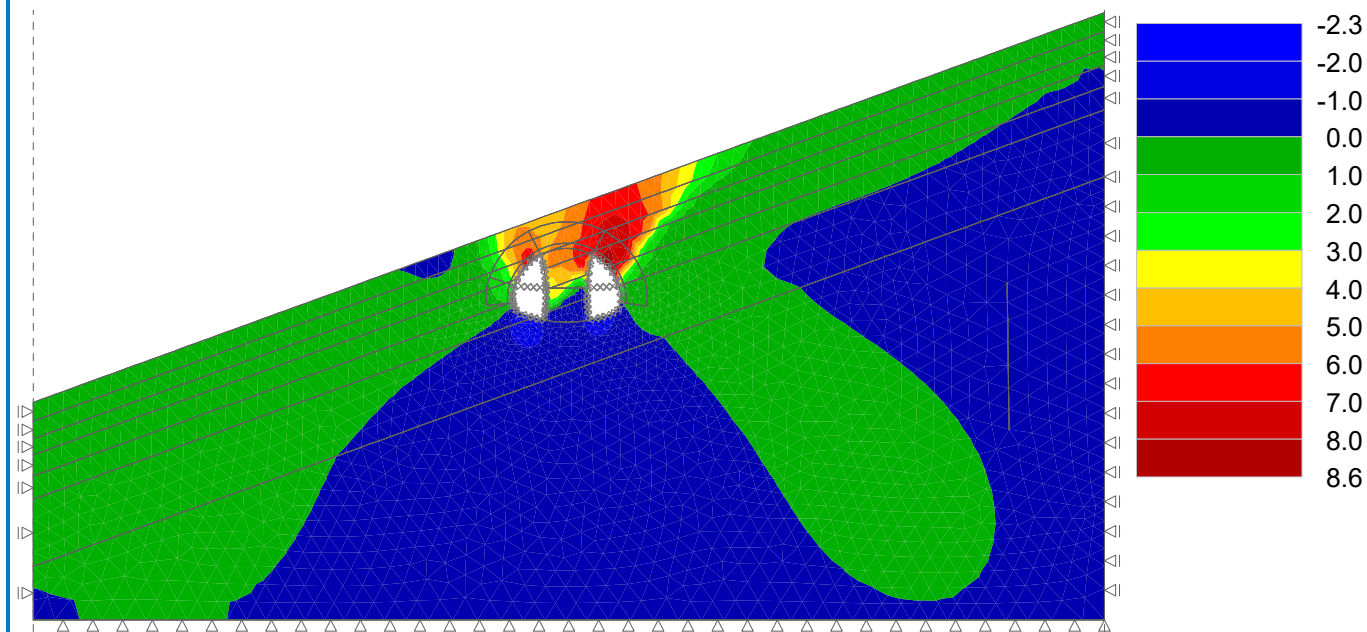
Stress analysis was successfully completed.

Analysis settings : **user-defined**

Attained loading = 100.00 %

Name : Analysis

Stage : 13

Results : overall; variable : Displacement d_z; range : <-2.3; 8.6> mm

Extremes

Displacements (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Displacements x [mm]	0.00	0.00	-2.6	8.73	4.35	6.0
Displacements z [mm]	8.73	4.35	-2.3	7.73	3.98	8.6

Stress (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Total stress $\sigma_{z, \text{tot}}$ [kPa]	-5.45	13.03	0.00	96.79	-62.19	2205.81
Effective stress $\sigma_{z, \text{eff}}$ [kPa]	-5.45	13.03	0.00	96.79	-62.19	2205.81
Total stress $\sigma_{x, \text{tot}}$ [kPa]	100.81	51.70	-9.47	90.93	-62.19	723.79
Effective stress $\sigma_{x, \text{eff}}$ [kPa]	100.81	51.70	-9.47	90.93	-62.19	723.79
Shear stress τ_{xz} [kPa]	9.78	0.41	-260.12	9.17	-4.33	208.12
Total mean stress $\sigma_{m, \text{tot}}$ [kPa]	100.81	51.70	5.39	90.93	-62.19	1220.23
Effective mean stress $\sigma_{m, \text{eff}}$ [kPa]	100.81	51.70	5.39	90.93	-62.19	1220.23
Equivalent deviatoric stress J [kPa]	-5.45	13.03	3.67	96.79	-62.19	853.70
Total principal stress $\sigma_{1, \text{tot}}$ [kPa]	-7.23	-5.84	-23.03	90.93	-62.19	723.30
Effective principal stress $\sigma_{1, \text{eff}}$ [kPa]	-7.23	-5.84	-23.03	90.93	-62.19	723.30
Total principal stress $\sigma_{2, \text{tot}}$ [kPa]	-5.45	13.03	13.83	96.79	-62.19	2205.94
Effective principal stress $\sigma_{2, \text{eff}}$ [kPa]	-5.45	13.03	13.83	96.79	-62.19	2205.94
Total principal stress $\sigma_{3, \text{tot}}$ [kPa]	100.81	51.70	4.28	90.93	-62.19	732.14
Effective principal stress $\sigma_{3, \text{eff}}$ [kPa]	100.81	51.70	4.28	90.93	-62.19	732.14

Strain (extremes)

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	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Equivalent deviatoric strain E_d [%]	-6.57	-6.58	0.00	-13.40	4.55	0.42
Plastic equivalent deviatoric strain $E_{d, pl}$ [%]	-7.16	10.70	0.00	-3.95	-3.58	0.37
Strain ε_x [%]	2.80	2.19	-0.18	-100.00	-21.39	0.11
Strain ε_z [%]	-6.28	-5.50	0.00	-13.40	4.55	0.30
Shear strain γ_{xz} [%]	9.80	0.35	-0.14	-3.95	-3.58	0.26
Plastic strain $\varepsilon_{x, pl}$ [%]	2.80	2.19	-0.17	2.64	7.13	0.00
Plastic strain $\varepsilon_{z, pl}$ [%]	-4.82	6.28	0.00	2.80	2.19	0.17
Plastic shear strain $\gamma_{xz, pl}$ [%]	12.65	5.77	-0.06	-3.95	-3.58	0.23
Volumetric strain ε_v [%]	-6.28	-5.50	0.00	-5.29	7.16	0.23
Plastic volumetric strain $\varepsilon_{v, pl}$ [%]	4.82	6.28	-0.01	-7.16	10.70	0.00
Principal strain ε_1 [%]	-3.95	-3.58	-0.19	-100.00	-24.91	0.05
Principal strain ε_2 [%]	-6.57	-6.58	0.00	-13.40	4.55	0.31
Principal strain ε_3 [%]			0.00			0.00

Pore pressures (extremes)

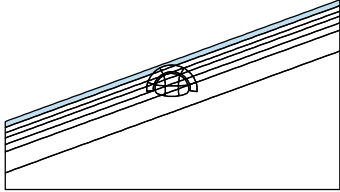
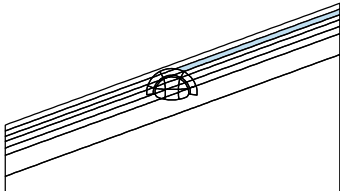
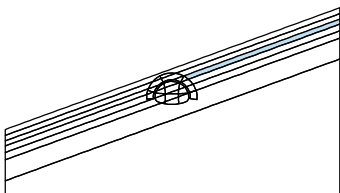
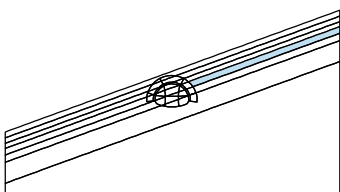
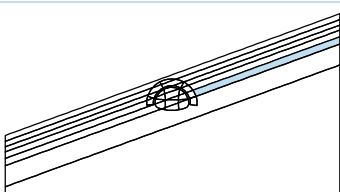
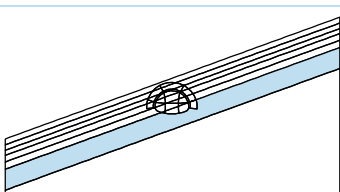
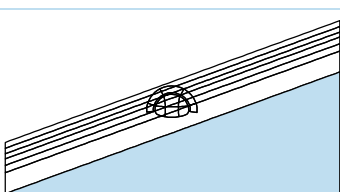
	Location		Max
	x [m]	z [m]	
Total pore pressure u_{tot} [kPa]			0.00

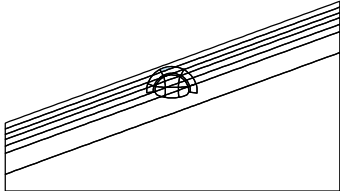
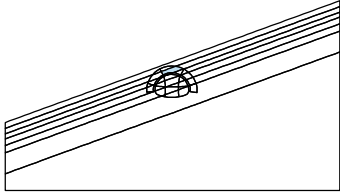
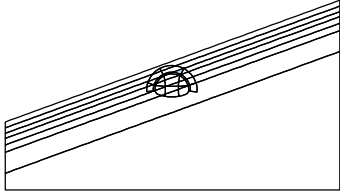
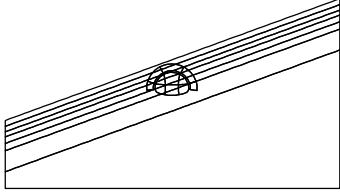
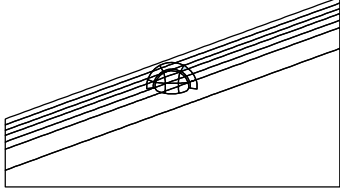
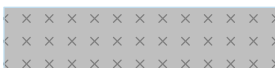
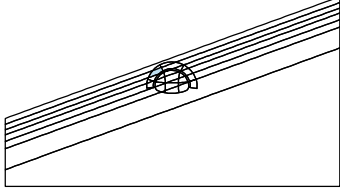
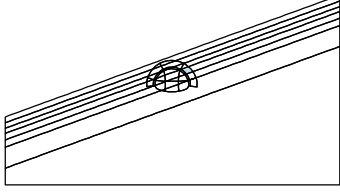
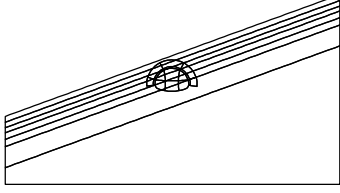
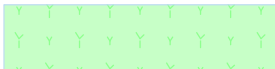
Distributions on beams (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
N [kN/m]	-4.06	-4.69	-754.5	-5.26	-5.75	16.3
M [kNm/m]	-5.26	-5.75	-80.3	8.56	2.91	125.8
Q [kN/m]	9.76	0.47	-92.6	-4.24	-5.96	178.4

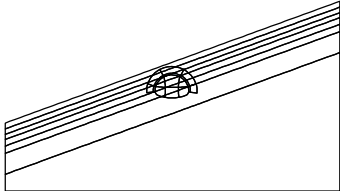
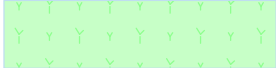
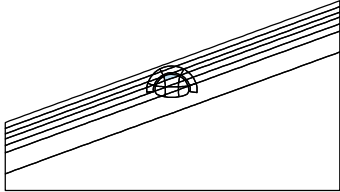
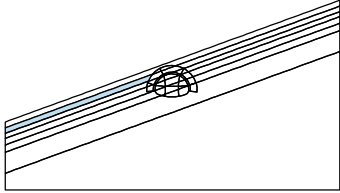
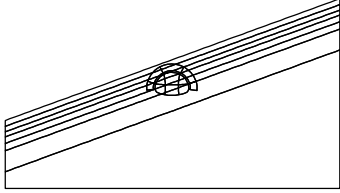
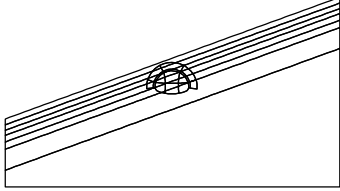
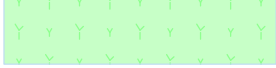
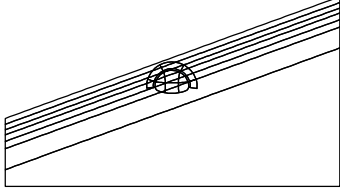
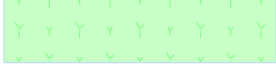
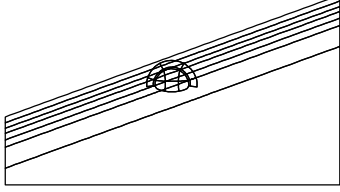
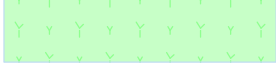
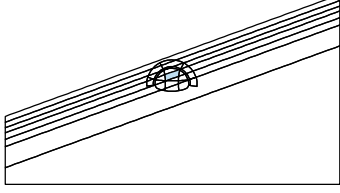
Input data (Stage of construction 14)

Assignment and activation

No.	Region	Active / inactive	Assigned soil
1		Active	□ □ □ □ □ □ □ 
2		Active	□ □ □ □ □ □ □ 
3		Active	□ □ □ □ □ □ □ 
4		Active	□ □ □ □ □ □ □ □ 
5		Active	□ □ □ □ □ □ □ □ 
6		Active	□ □ □ □ □ □ □ 
7		Active	□ □ □ □ □ □ □ 

No.	Region	Active / inactive	Assigned soil
8		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
9		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
10		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
11		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
12		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
13		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
14		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
15		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			

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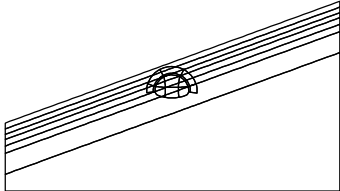
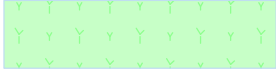
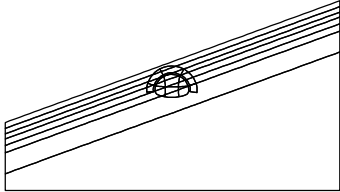
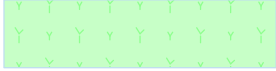
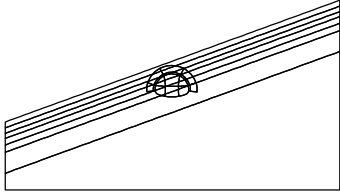
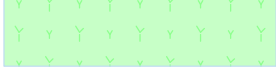
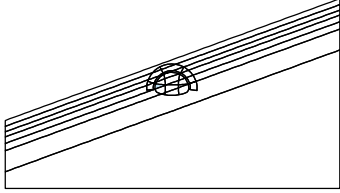
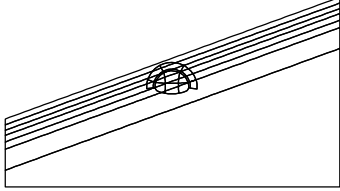
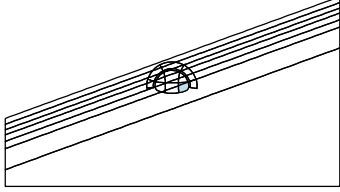
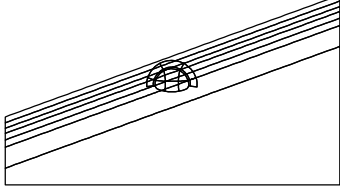
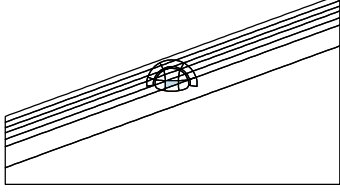
No.	Region	Active / inactive	Assigned soil
16		Active	□ □ □ □ 
17		Active	□ □ □ □ □ □ 
18		Active	□ □ □ □ □ □ □ 
19		Active	□ □ □ □ □ □ 
20		Active	□ □ □ □ 
21		Active	□ □ □ □ 
22		Active	□ □ □ □ 
23		Active	□ □ □ □ □ □ □ □ 



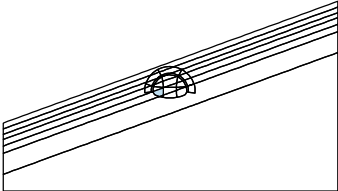
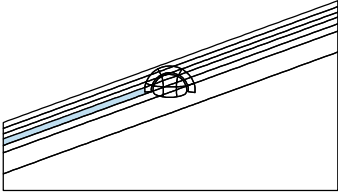
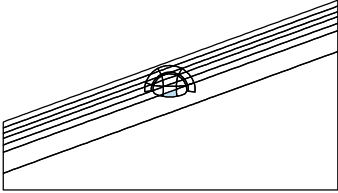
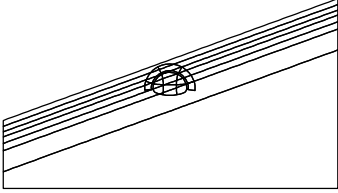
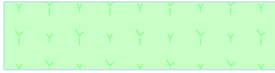
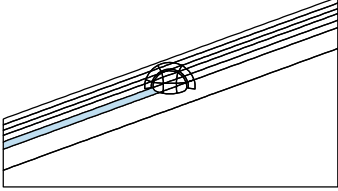
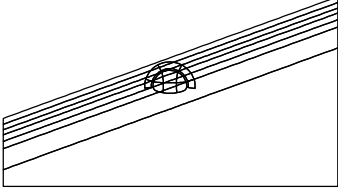
No.	Region	Active / inactive	Assigned soil
24		Active	
25		Inactive	
26		Inactive	
27		Active	
28		Active	
29		Active	
30		Inactive	
31		Inactive	



No.	Region	Active / inactive	Assigned soil
32		Active	□ □ □ □ □
33		Active	□ □ □ □ □ □ □ □
34		Active	□ □ □ □ □
35		Active	□ □ □ □ □
36		Active	□ □ □ □ □
37		Active	□ □ □ □
38		Active	□ □ □ □ □
39		Active	□ □ □ □ □

No.	Region	Active / inactive	Assigned soil
40		Active	□ □ □ □
			
41		Active	□ □ □ □
			
42		Active	□ □ □ □
			
43		Inactive	
44		Excavation	Excavation No. 1 (□ □ 12 - 1)
			Soil remaining activity: 0.0 %
45		Excavation	Excavation No. 1 (□ □ 12 - 1)
			Soil remaining activity: 0.0 %
46		Active	□ □ □ □ □ □ □ □
			
47		Active	□ □ □ □ □ □ □ □
			

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No.	Region	Active / inactive	Assigned soil
48		Inactive	
49		Active	□ □ □ □ □ □ □ □ 
50		Active	□ □ □ □ □ □ 
51		Active	□ □ □ □ 
52		Active	□ □ □ □ □ □ □ □ 
53		Inactive	

Beams

No.	Beam		Location	Support [m]		Include self weight	cross-section / Degradation in current stage [%]	Material / Beam current activity [%]	Contacts	
	new	modified		Start pt.	End pt.				left	right
1	No	No	Free line No. 9	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
2	No	No	Free line No. 18	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)

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No.	Beam		Location	Support [m]		Include self weight	Cross-section /	Material /	Contacts	
	new	modified		Start pt.	End pt.		Degradation in current stage [%]	Beam current activity [%]	left	right
3	No	No	Free line No. 3	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
4	No	No	Free line No. 11	○—	├—	Yes	without modificatio	without modificatio	(not input)	(not input)
5	No	No	Free line No. 2	├—	├—	Yes	without modificatio	without modificatio	(not input)	(not input)
6	No	No	Free line No. 21	├—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
7	No	No	Free line No. 17	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
8	No	No	Free line No. 7	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
9	No	No	Free line No. 19	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
10	No	No	Free line No. 5	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
11	No	No	Free line No. 20	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
12	No	Yes	Free line No. 10	├—	○—	Yes	↑ h = 0.45 m	↑ E = 28000.00 MPa; G = 11200.00 MPa	(not input)	(not input)
13	No	Yes	Free line No. 1	├—	├—	Yes	↑ h = 0.45 m	↑ E = 28000.00 MPa; G = 11200.00 MPa	(not input)	(not input)
14	No	Yes	Free line No. 23	○—	├—	Yes	↑ h = 0.45 m	↑ E = 28000.00 MPa; G = 11200.00 MPa	(not input)	(not input)

No.	Cross-section		Material	
	I _y [m ⁴ /m]	A [m ² /m]	E [MPa]	G [MPa]
1	7.59E-03	4.50E-01	28000.00	11200.00
2	5.94E-05	7.69E-03	206000.00	79000.00
3	5.94E-05	7.69E-03	206000.00	79000.00
4	7.59E-03	4.50E-01	28000.00	11200.00
5	7.59E-03	4.50E-01	28000.00	11200.00
6	7.59E-03	4.50E-01	28000.00	11200.00
7	5.94E-05	7.69E-03	206000.00	79000.00
8	7.59E-03	4.50E-01	28000.00	11200.00
9	5.94E-05	7.69E-03	206000.00	79000.00
10	5.94E-05	7.69E-03	206000.00	79000.00
11	5.94E-05	7.69E-03	206000.00	79000.00
12	7.59E-03	4.50E-01	28000.00	11200.00

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No.	Cross-section		Material	
	I_y [m ⁴ /m]	A [m ² /m]	E [MPa]	G [MPa]
13	7.59E-03	4.50E-01	28000.00	11200.00
14	7.59E-03	4.50E-01	28000.00	11200.00

Line supports

No.	Line support		Location	Support	
	new	modified		Direction X	Direction Z
A1	Yes		Mesh line No. 20	fixed	free
A2	Yes		Mesh line No. 18	fixed	free
A3	Yes		Mesh line No. 15	fixed	free
A4	Yes		Mesh line No. 12	fixed	free
A5	Yes		Mesh line No. 9	fixed	free
A6	Yes		Mesh line No. 6	fixed	free
A7	Yes		Mesh line No. 3	fixed	free
A8	Yes		Mesh line No. 22	fixed	free
A9	Yes		Mesh line No. 17	fixed	free
A10	Yes		Mesh line No. 14	fixed	free
A11	Yes		Mesh line No. 11	fixed	free
A12	Yes		Mesh line No. 8	fixed	free
A13	Yes		Mesh line No. 5	fixed	free
A14	Yes		Mesh line No. 1	fixed	free
A15	Yes		Mesh line No. 21	fixed	fixed
A1 up to A15 - automatically generated line supports along model edges					

Water

Water type : No water

Analysis settings

Stress

Method : Newton - Raphson
 Stiffness matrix change : after each iteration
 Max. number of iterations for one calc. step : 100
 Initial calculation step : 0.25
 Displacement error : 0.0100
 Imbalanced forces error : 0.0100
 Energy error : 0.0100
 Respect material interfaces : no

Plasticity

Return mapping error : 0.00100
 Max. number of iterations for one plast. step : 20

Newton - Raphson

Relaxation factor of calculation step : 2.00
 Maximum number of relaxations of calculation step : 2
 Min. number of iterations for one calc. step : 1

Line search

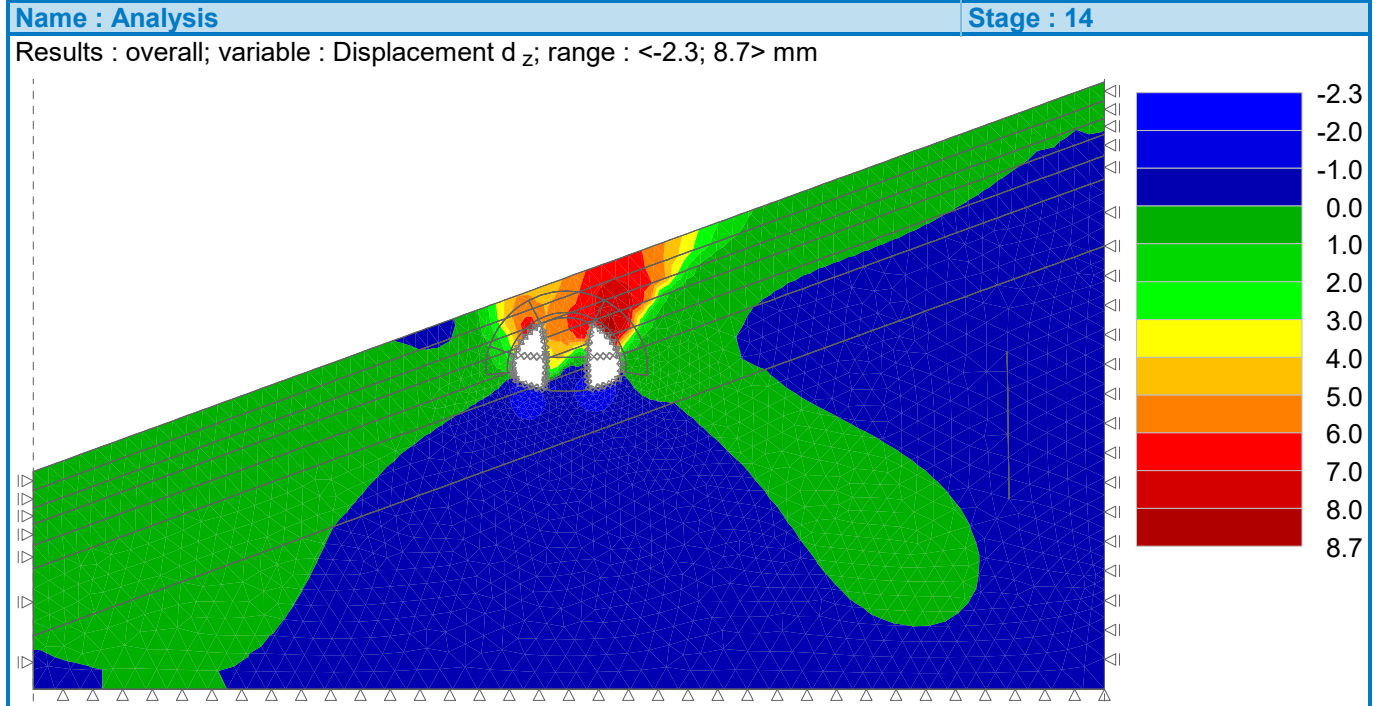
Solution method : iterate no
 Line search limit - minimum : 0.100
 Line search limit - maximum : 1.000

Results (Stage of construction 14)

Stress analysis was successfully completed.

Analysis settings : **user-defined**

Attained loading = 100.00 %



Extremes

Displacements (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Displacements x [mm]	0.00	0.00	-2.7	8.73	4.35	6.1
Displacements z [mm]	8.73	4.35	-2.3	7.73	3.98	8.7

Stress (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Total stress $\sigma_{z, \text{tot}}$ [kPa]	-5.45	13.03	0.00	96.79	-62.19	2205.69
Effective stress $\sigma_{z, \text{eff}}$ [kPa]	-5.45	13.03	0.00	96.79	-62.19	2205.69
Total stress $\sigma_{x, \text{tot}}$ [kPa]	100.81	51.70	-9.47	90.93	-62.19	723.71
Effective stress $\sigma_{x, \text{eff}}$ [kPa]	100.81	51.70	-9.47	90.93	-62.19	723.71
Shear stress τ_{xz} [kPa]	9.78	0.41	-263.37	9.17	-4.33	200.88
Total mean stress $\sigma_{m, \text{tot}}$ [kPa]	100.81	51.70	5.39	90.93	-62.19	1220.14
Effective mean stress $\sigma_{m, \text{eff}}$ [kPa]	100.81	51.70	5.39	90.93	-62.19	1220.14
Equivalent deviatoric stress J [kPa]	-5.45	13.03	3.91	96.79	-62.19	853.67
Total principal stress $\sigma_{1, \text{tot}}$ [kPa]	-7.23	-5.84	-23.69	90.93	-62.19	723.21
Effective principal stress $\sigma_{1, \text{eff}}$ [kPa]	-7.23	-5.84	-23.69	90.93	-62.19	723.21
Total principal stress $\sigma_{2, \text{tot}}$ [kPa]	-5.45	13.03	14.36	96.79	-62.19	2205.82
Effective principal stress $\sigma_{2, \text{eff}}$ [kPa]	-5.45	13.03	14.36	96.79	-62.19	2205.82

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	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Total principal stress $\sigma_{3, \text{tot}}$ [kPa]	100.81	51.70	4.28	90.93	-62.19	732.08
Effective principal stress $\sigma_{3, \text{eff}}$ [kPa]	100.81	51.70	4.28	90.93	-62.19	732.08

Strain (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Equivalent deviatoric strain E_d [%]	-6.57	-6.58	0.00	-13.40	4.55	0.42
Plastic equivalent deviatoric strain $E_{d, pl}$ [%]	-7.16	10.70	0.00	-3.95	-3.58	0.38
Strain ε_x [%]	2.80	2.19	-0.18	-100.00	-21.39	0.11
Strain ε_z [%]	-6.28	-5.50	0.00	-13.40	4.55	0.30
Shear strain γ_{xz} [%]	9.80	0.35	-0.14	-3.95	-3.58	0.28
Plastic strain $\varepsilon_{x, pl}$ [%]	2.80	2.19	-0.17	2.64	7.13	0.00
Plastic strain $\varepsilon_{z, pl}$ [%]	-4.82	6.28	0.00	2.80	2.19	0.17
Plastic shear strain $\gamma_{xz, pl}$ [%]	12.65	5.77	-0.07	-3.95	-3.58	0.24
Volumetric strain ε_v [%]	-6.28	-5.50	0.00	-5.29	7.16	0.23
Plastic volumetric strain $\varepsilon_{v, pl}$ [%]	4.82	6.28	-0.01	-7.16	10.70	0.00
Principal strain ε_1 [%]	-3.95	-3.58	-0.20	-100.00	-24.91	0.05
Principal strain ε_2 [%]	-6.57	-6.58	0.00	-13.40	4.55	0.31
Principal strain ε_3 [%]			0.00			0.00

Pore pressures (extremes)

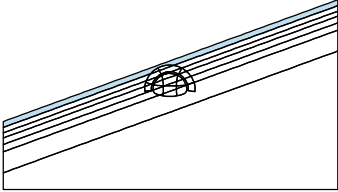
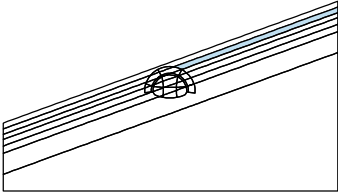
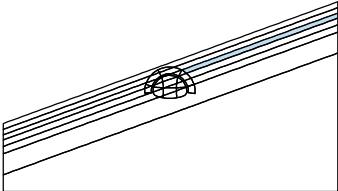
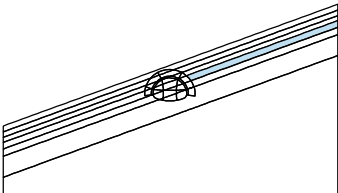
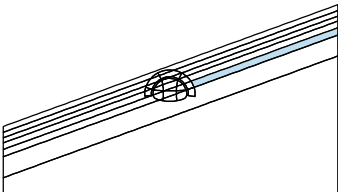
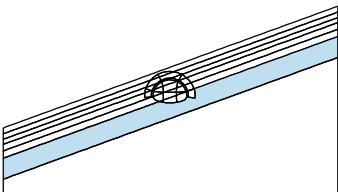
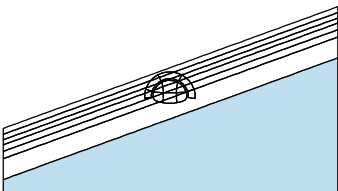
	Location		Max
	x [m]	z [m]	
Total pore pressure u_{tot} [kPa]			0.00

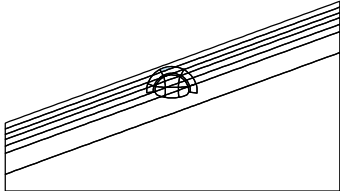
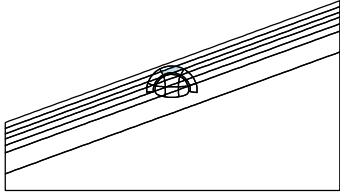
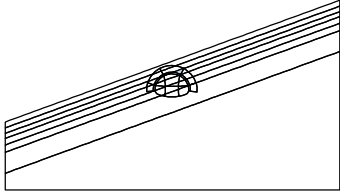
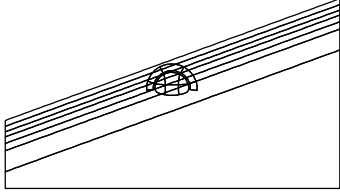
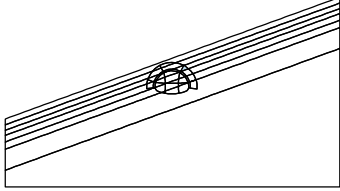
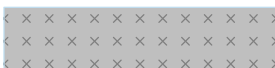
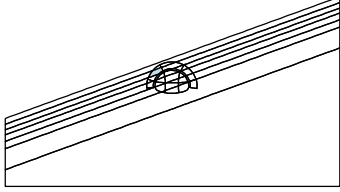
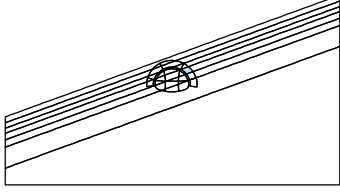
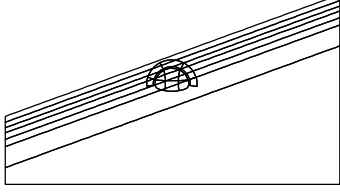
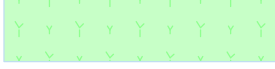
Distributions on beams (extremes)

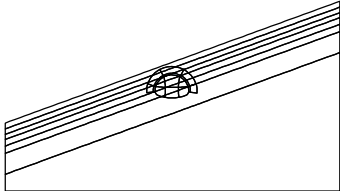
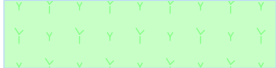
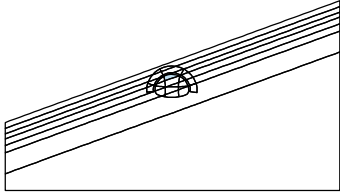
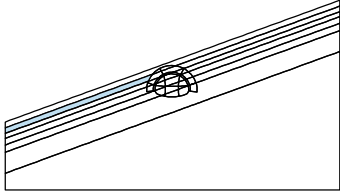
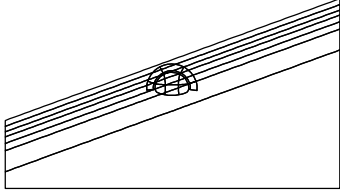
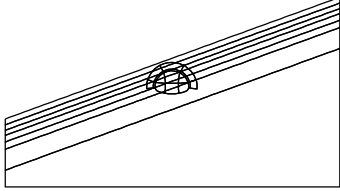
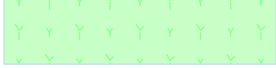
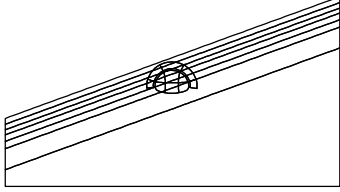
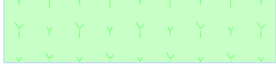
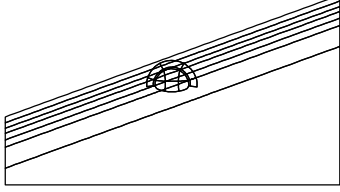
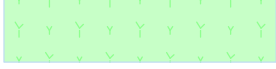
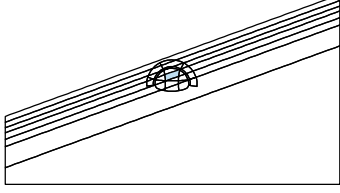
	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
N [kN/m]	-4.06	-4.69	-779.4	-5.26	-5.75	16.4
M [kNm/m]	-5.26	-5.75	-85.5	8.56	2.91	122.9
Q [kN/m]	9.76	0.47	-91.1	-4.24	-5.96	189.0

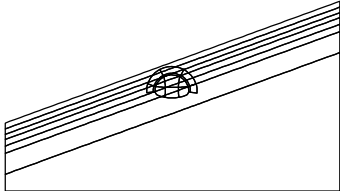
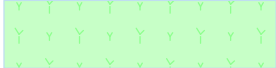
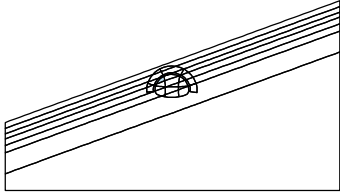
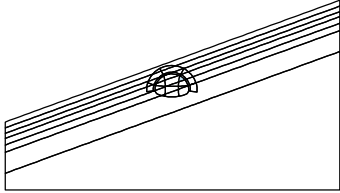
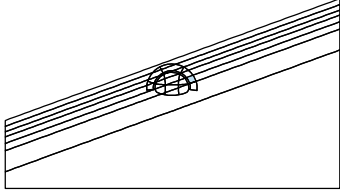
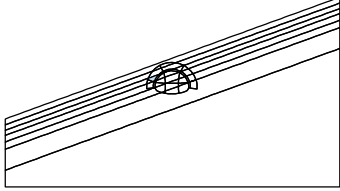
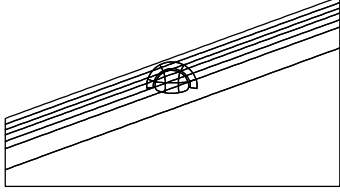
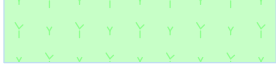
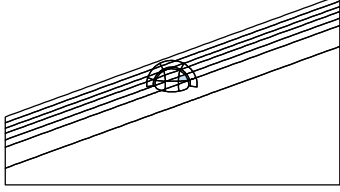
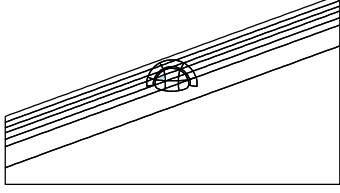
Input data (Stage of construction 15)

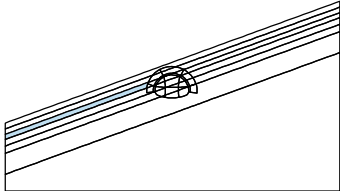
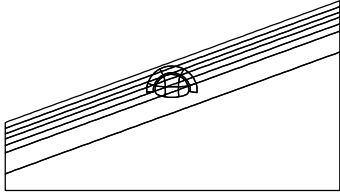
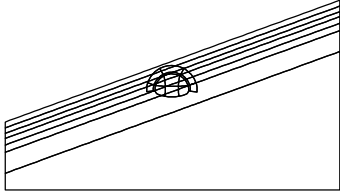
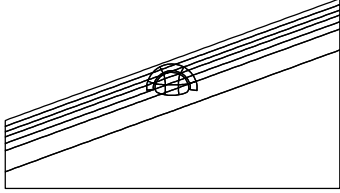
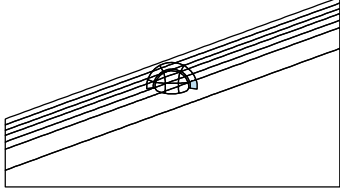
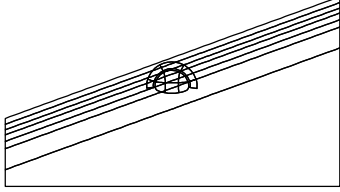
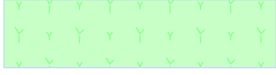
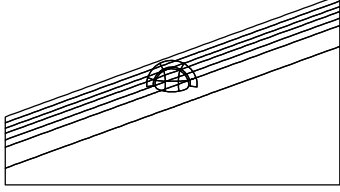
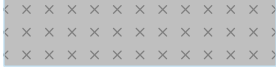
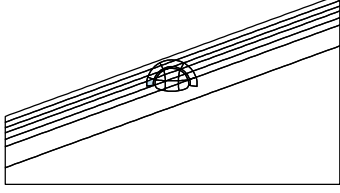
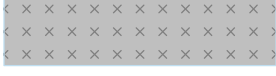
Assignment and activation

No.	Region	Active / inactive	Assigned soil
1		Active	□ □ □ □ □ □ □ 
2		Active	□ □ □ □ □ □ □ 
3		Active	□ □ □ □ □ □ □ 
4		Active	□ □ □ □ □ □ □ □ 
5		Active	□ □ □ □ □ □ □ □ 
6		Active	□ □ □ □ □ □ □ 
7		Active	□ □ □ □ □ □ □ 

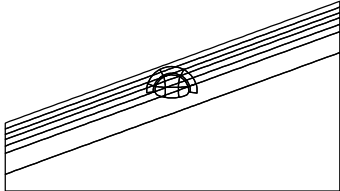
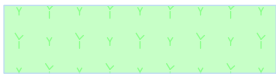
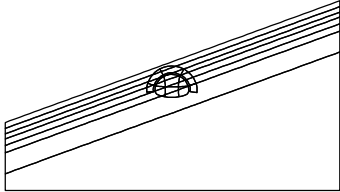
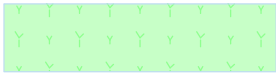
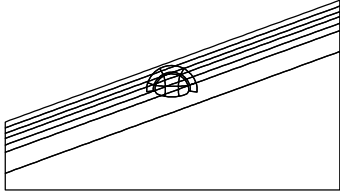
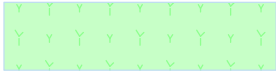
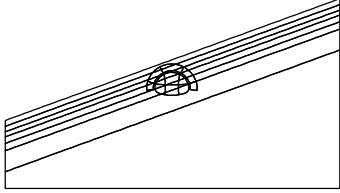
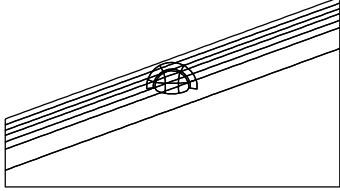
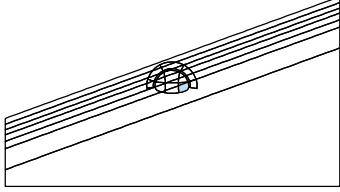
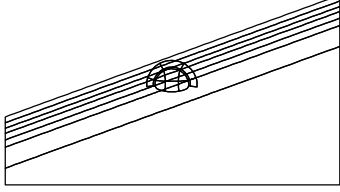
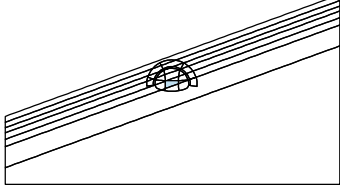
No.	Region	Active / inactive	Assigned soil
8		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
9		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
10		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
11		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
12		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
13		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
14		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			
15		Active	☐ ☐ ☐ ☐ ☐ ☐ ☐
			

No.	Region	Active / inactive	Assigned soil
16		Active	□ □ □ □
			
17		Excavation	Excavation No. 1 (□ □ 15 - 1)
			Soil remaining activity: 60.0 %
18		Active	□ □ □ □ □ □ □
			
19		Active	□ □ □ □ □ □ □
			
20		Active	□ □ □ □
			
21		Active	□ □ □ □
			
22		Active	□ □ □ □
			
23		Excavation	Excavation No. 1 (□ □ 15 - 1)
			Soil remaining activity: 60.0 %

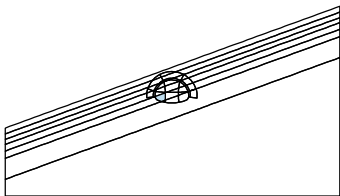
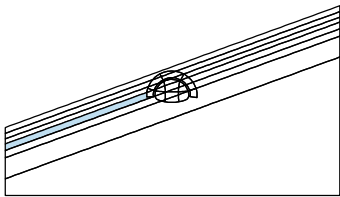
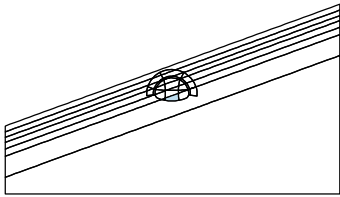
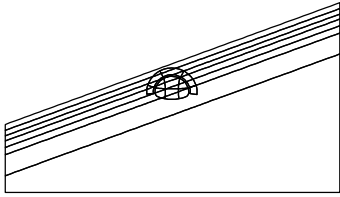
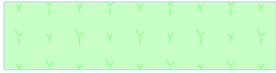
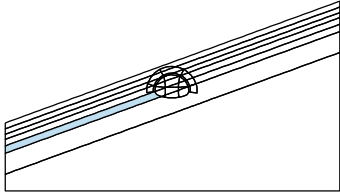
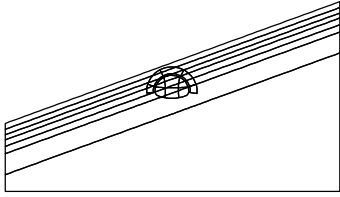
No.	Region	Active / inactive	Assigned soil
24		Active	□ □ □ □
			
25		Inactive	
26		Inactive	
27		Active	□ □ □ □ □
			
28		Active	□ □ □ □ □
			
29		Active	□ □ □ □
			
30		Inactive	
31		Inactive	

No.	Region	Active / inactive	Assigned soil
32		Active	□ □ □ □ □
			
33		Excavation	Excavation No. 1 (□ □ 15 - 1)
			Soil remaining activity: 60.0 %
34		Active	□ □ □ □ □
			
35		Active	□ □ □ □ □
			
36		Active	□ □ □ □ □
			
37		Active	□ □ □ □
			
38		Active	□ □ □ □ □
			
39		Active	□ □ □ □ □
			

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No.	Region	Active / inactive	Assigned soil
40		Active	□ □ □ □ 
41		Active	□ □ □ □ 
42		Active	□ □ □ □ 
43		Inactive	
44		Inactive	
45		Inactive	
46		Active	□ □ □ □ □ □ □ □ 
47		Active	□ □ □ □ □ □ □ □ 

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No.	Region	Active / inactive	Assigned soil
48		Inactive	
49		Active	□ □ □ □ □ □ □ □ 
50		Active	□ □ □ □ □ □ 
51		Active	□ □ □ □ 
52		Active	□ □ □ □ □ □ □ □ 
53		Inactive	

Beams

No.	Beam		Location	Support [m]		Include self weight	cross-section / Degradation in current stage [%]	Material / Beam current activity [%]	Contacts	
	new	modified		Start pt.	End pt.				left	right
1	No	No	Free line No. 9	○—	○—	Yes	without modification	without modification	(not input)	(not input)
2	No	No	Free line No. 18	○—	○—	Yes	without modification	without modification	(not input)	(not input)

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No.	Beam		Location	Support [m]		Include self weight	Cross-section / Degradation in current stage [%]	Material / Beam current activity [%]	Contacts	
	new	modified		Start pt.	End pt.				left	right
3	No	No	Free line No. 3	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
4	No	No	Free line No. 11	○—	├—	Yes	without modificatio	without modificatio	(not input)	(not input)
5	No	No	Free line No. 2	├—	├—	Yes	without modificatio	without modificatio	(not input)	(not input)
6	No	No	Free line No. 21	├—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
7	No	No	Free line No. 17	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
8	No	No	Free line No. 7	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
9	No	No	Free line No. 19	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
10	No	No	Free line No. 5	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
11	No	No	Free line No. 20	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
12	No	No	Free line No. 10	├—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
13	No	No	Free line No. 1	├—	├—	Yes	without modificatio	without modificatio	(not input)	(not input)
14	No	No	Free line No. 23	○—	├—	Yes	without modificatio	without modificatio	(not input)	(not input)

No.	Cross-section		Material	
	I _y [m ⁴ /m]	A [m ² /m]	E [MPa]	G [MPa]
1	7.59E-03	4.50E-01	28000.00	11200.00
2	5.94E-05	7.69E-03	206000.00	79000.00
3	5.94E-05	7.69E-03	206000.00	79000.00
4	7.59E-03	4.50E-01	28000.00	11200.00
5	7.59E-03	4.50E-01	28000.00	11200.00
6	7.59E-03	4.50E-01	28000.00	11200.00
7	5.94E-05	7.69E-03	206000.00	79000.00
8	7.59E-03	4.50E-01	28000.00	11200.00
9	5.94E-05	7.69E-03	206000.00	79000.00
10	5.94E-05	7.69E-03	206000.00	79000.00
11	5.94E-05	7.69E-03	206000.00	79000.00
12	7.59E-03	4.50E-01	28000.00	11200.00
13	7.59E-03	4.50E-01	28000.00	11200.00
14	7.59E-03	4.50E-01	28000.00	11200.00

Line supports

No.	Line support		Location	Support	
	new	modified		Direction X	Direction Z
A1	Yes		Mesh line No. 20	fixed	free
A2	Yes		Mesh line No. 18	fixed	free
A3	Yes		Mesh line No. 15	fixed	free
A4	Yes		Mesh line No. 12	fixed	free
A5	Yes		Mesh line No. 9	fixed	free
A6	Yes		Mesh line No. 6	fixed	free
A7	Yes		Mesh line No. 3	fixed	free
A8	Yes		Mesh line No. 22	fixed	free
A9	Yes		Mesh line No. 17	fixed	free
A10	Yes		Mesh line No. 14	fixed	free
A11	Yes		Mesh line No. 11	fixed	free
A12	Yes		Mesh line No. 8	fixed	free
A13	Yes		Mesh line No. 5	fixed	free
A14	Yes		Mesh line No. 1	fixed	free
A15	Yes		Mesh line No. 21	fixed	fixed
A1 up to A15 - automatically generated line supports along model edges					

Water

Water type : No water

Analysis settings

Stress

Method : Newton - Raphson
 Stiffness matrix change : after each iteration
 Max. number of iterations for one calc. step : 100
 Initial calculation step : 0.25
 Displacement error : 0.0100
 Imbalanced forces error : 0.0100
 Energy error : 0.0100
 Respect material interfaces : no

Plasticity

Return mapping error : 0.00100
 Max. number of iterations for one plast. step : 20

Newton - Raphson

Relaxation factor of calculation step : 2.00
 Maximum number of relaxations of calculation step : 2
 Min. number of iterations for one calc. step : 1

Line search

Solution method : iterate no
 Line search limit - minimum : 0.100
 Line search limit - maximum : 1.000

Results (Stage of construction 15)

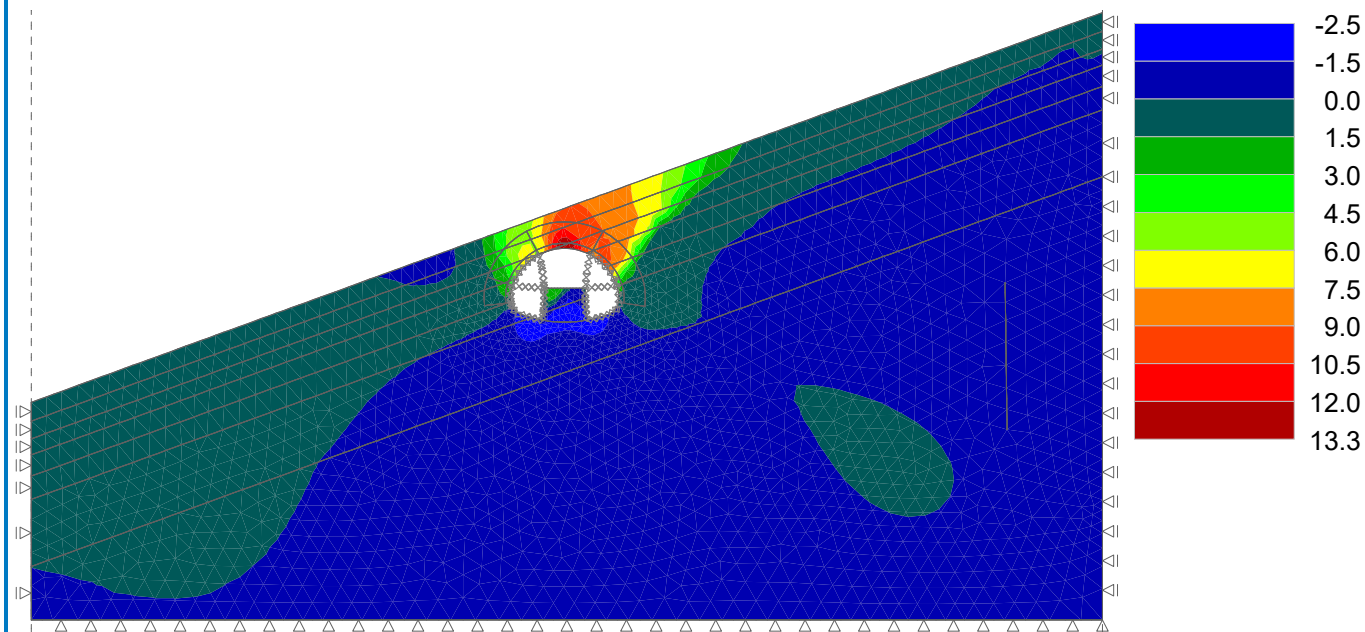
Stress analysis was successfully completed.

Analysis settings : **user-defined**

Attained loading = 100.00 %

Name : Analysis

Stage : 15

Results : overall; variable : Displacement d_z; range : <-2.5; 13.3> mm

Extremes

Displacements (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Displacements x [mm]	0.00	0.00	-3.5	4.41	4.48	13.0
Displacements z [mm]	4.41	4.48	-2.5	-0.40	7.47	13.3

Stress (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Total stress $\sigma_{z, tot}$ [kPa]	-5.45	13.03	0.00	96.79	-62.19	2205.51
Effective stress $\sigma_{z, eff}$ [kPa]	-5.45	13.03	0.00	96.79	-62.19	2205.51
Total stress $\sigma_{x, tot}$ [kPa]	100.81	51.70	-9.47	90.93	-62.19	723.60
Effective stress $\sigma_{x, eff}$ [kPa]	100.81	51.70	-9.47	90.93	-62.19	723.60
Shear stress τ_{xz} [kPa]	9.78	0.41	-262.88	-4.06	6.69	201.73
Total mean stress $\sigma_{m, tot}$ [kPa]	100.81	51.70	5.39	90.93	-62.19	1220.01
Effective mean stress $\sigma_{m, eff}$ [kPa]	100.81	51.70	5.39	90.93	-62.19	1220.01
Equivalent deviatoric stress J [kPa]	-9.35	11.61	6.78	96.79	-62.19	853.61
Total principal stress $\sigma_{1, tot}$ [kPa]	-7.23	-5.84	-24.89	90.93	-62.19	723.10
Effective principal stress $\sigma_{1, eff}$ [kPa]	-7.23	-5.84	-24.89	90.93	-62.19	723.10
Total principal stress $\sigma_{2, tot}$ [kPa]	100.81	51.70	21.36	96.79	-62.19	2205.64
Effective principal stress $\sigma_{2, eff}$ [kPa]	100.81	51.70	21.36	96.79	-62.19	2205.64
Total principal stress $\sigma_{3, tot}$ [kPa]	100.81	51.70	4.28	90.93	-62.19	732.01
Effective principal stress $\sigma_{3, eff}$ [kPa]	100.81	51.70	4.28	90.93	-62.19	732.01

Strain (extremes)

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	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Equivalent deviatoric strain E_d [%]	5.28	-5.75	0.01	3.89	0.07	0.48
Plastic equivalent deviatoric strain $E_{d, pl}$ [%]	-7.16	10.70	0.00	3.89	0.07	0.40
Strain ε_x [%]	-2.98	-3.14	-0.17	-100.00	-21.39	0.11
Strain ε_z [%]	-3.41	6.90	-0.03	-13.40	4.55	0.30
Shear strain γ_{xz} [%]	-3.89	0.08	-0.16	3.89	0.07	0.32
Plastic strain $\varepsilon_{x, pl}$ [%]	-2.98	-3.14	-0.17	-3.41	6.90	0.04
Plastic strain $\varepsilon_{z, pl}$ [%]	-3.41	6.90	-0.04	-2.98	-3.14	0.17
Plastic shear strain $\gamma_{xz, pl}$ [%]	12.65	5.77	-0.07	-3.95	-3.58	0.24
Volumetric strain ε_v [%]	-6.28	-5.50	0.00	-5.29	7.16	0.25
Plastic volumetric strain $\varepsilon_{v, pl}$ [%]	-3.88	-0.24	-0.01	-7.16	10.70	0.00
Principal strain ε_1 [%]	3.89	0.07	-0.21	-100.00	-24.91	0.05
Principal strain ε_2 [%]	-6.57	-6.58	0.01	-13.40	4.55	0.31
Principal strain ε_3 [%]			0.00			0.00

Pore pressures (extremes)

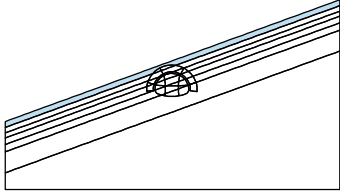
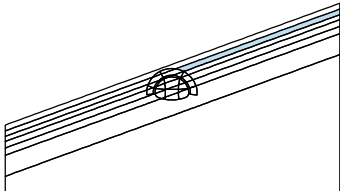
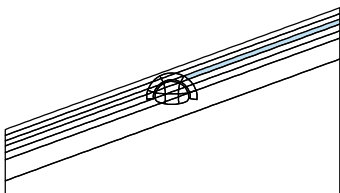
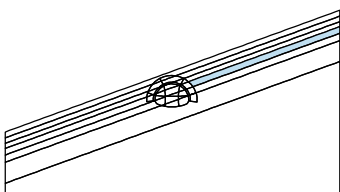
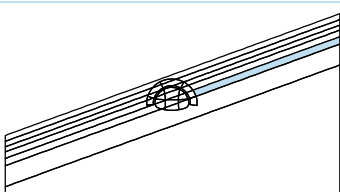
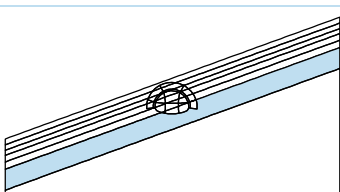
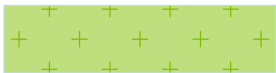
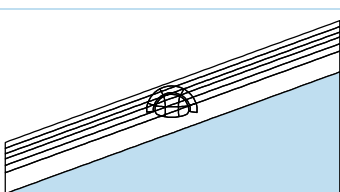
	Location		Max
	x [m]	z [m]	
Total pore pressure u_{tot} [kPa]			0.00

Distributions on beams (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
N [kN/m]	9.76	0.47	-804.8	-5.26	-5.75	-8.9
M [kNm/m]	-5.26	-5.75	-62.4	8.56	2.91	116.5
Q [kN/m]	9.76	0.47	-100.1	-4.24	-5.96	139.6

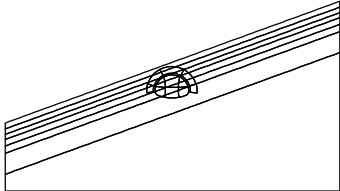
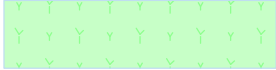
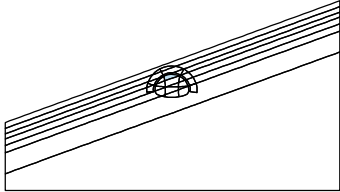
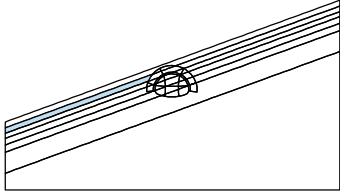
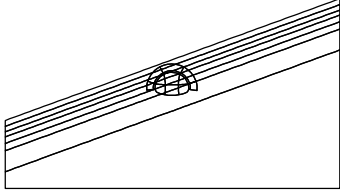
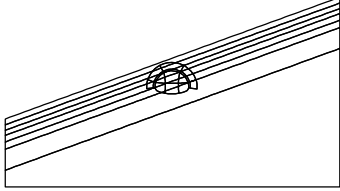
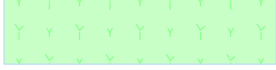
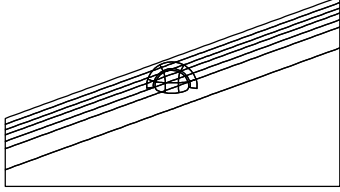
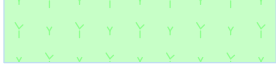
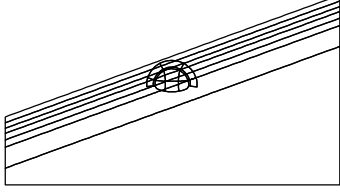
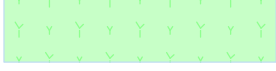
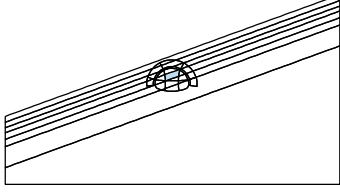
Input data (Stage of construction 16)

Assignment and activation

No.	Region	Active / inactive	Assigned soil
1		Active	□ □ □ □ □ □ □ 
2		Active	□ □ □ □ □ □ □ 
3		Active	□ □ □ □ □ □ □ 
4		Active	□ □ □ □ □ □ □ □ 
5		Active	□ □ □ □ □ □ □ □ 
6		Active	□ □ □ □ □ □ □ 
7		Active	□ □ □ □ □ □ □ 

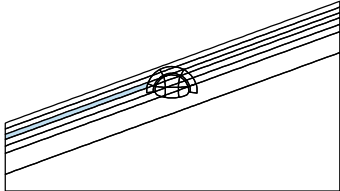
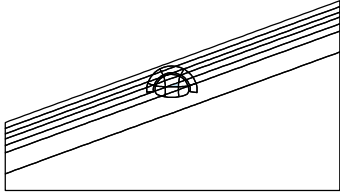
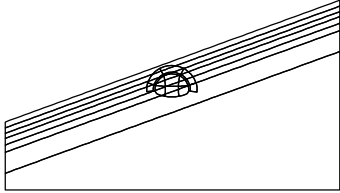
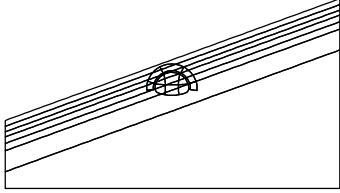
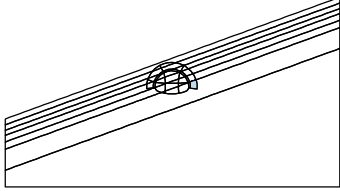
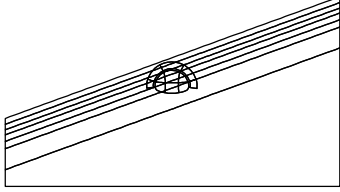
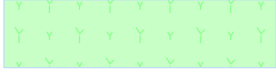
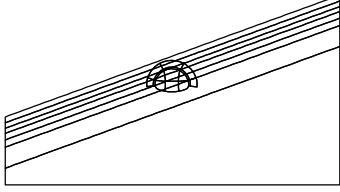
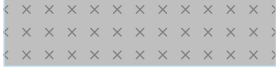
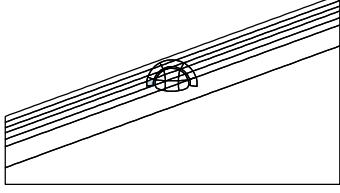
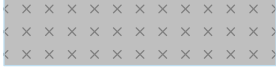


No.	Region	Active / inactive	Assigned soil
8		Active	
9		Active	
10		Active	
11		Active	
12		Active	
13		Active	
14		Active	
15		Active	

No.	Region	Active / inactive	Assigned soil
16		Active	□ □ □ □
			
17		Excavation	Excavation No. 1 (□ □ 15 - 1)
			Soil remaining activity: 30.0 %
18		Active	□ □ □ □ □ □ □
			
19		Active	□ □ □ □ □ □
			
20		Active	□ □ □ □
			
21		Active	□ □ □ □
			
22		Active	□ □ □ □
			
23		Excavation	Excavation No. 1 (□ □ 15 - 1)
			Soil remaining activity: 30.0 %



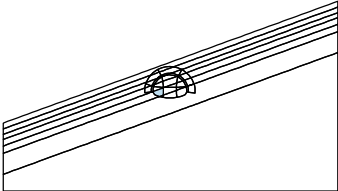
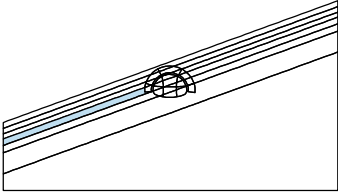
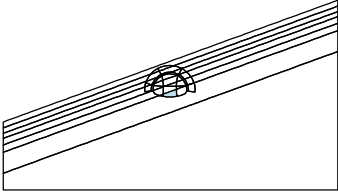
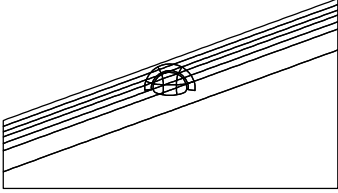
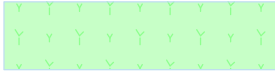
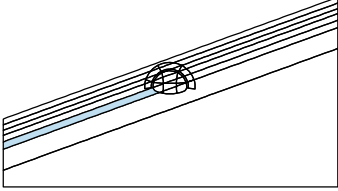
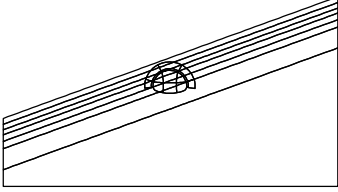
No.	Region	Active / inactive	Assigned soil
24		Active	
25		Inactive	
26		Inactive	
27		Active	
28		Active	
29		Active	
30		Inactive	
31		Inactive	

No.	Region	Active / inactive	Assigned soil
32		Active	□ □ □ □ □
			
33		Excavation	Excavation No. 1 (□ □ 15 - 1)
			Soil remaining activity: 30.0 %
34		Active	□ □ □ □ □
			
35		Active	□ □ □ □ □
			
36		Active	□ □ □ □ □
			
37		Active	□ □ □ □
			
38		Active	□ □ □ □ □
			
39		Active	□ □ □ □ □
			



No.	Region	Active / inactive	Assigned soil
40		Active	
41		Active	
42		Active	
43		Inactive	
44		Inactive	
45		Inactive	
46		Active	
47		Active	

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No.	Region	Active / inactive	Assigned soil
48		Inactive	
49		Active	□ □ □ □ □ □ □ □ 
50		Active	□ □ □ □ □ □ 
51		Active	□ □ □ □ 
52		Active	□ □ □ □ □ □ □ □ 
53		Inactive	

Beams

No.	Beam		Location	Support [m]		Include self weight	cross-section / Degradation in current stage [%]	Material / Beam current activity [%]	Contacts	
	new	modified		Start pt.	End pt.				left	right
1	No	No	Free line No. 9	○—	○—	Yes	without modification	without modification	(not input)	(not input)
2	No	No	Free line No. 18	○—	○—	Yes	without modification	without modification	(not input)	(not input)

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No.	Beam		Location	Support [m]		Include self weight	Cross-section /	Material /	Contacts	
	new	modified		Start pt.	End pt.		Degradation in current stage [%]	Beam current activity [%]	left	right
3	No	No	Free line No. 3	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
4	No	No	Free line No. 11	○—	└—	Yes	without modificatio	without modificatio	(not input)	(not input)
5	No	No	Free line No. 2	└—	└—	Yes	without modificatio	without modificatio	(not input)	(not input)
6	No	No	Free line No. 21	└—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
7	No	No	Free line No. 17	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
8	No	No	Free line No. 7	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
9	No	No	Free line No. 19	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
10	No	No	Free line No. 5	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
11	No	No	Free line No. 20	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
12	No	No	Free line No. 10	└—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
13	No	No	Free line No. 1	└—	└—	Yes	without modificatio	without modificatio	(not input)	(not input)
14	No	No	Free line No. 23	○—	└—	Yes	without modificatio	without modificatio	(not input)	(not input)
15	Yes		Free line No. 4	○—	○—	Yes	1.00 (b) x 0.45 (h) m	Q345; E = 206000.00 MPa; G = 79000.00 MPa; $\alpha = 0.000012$ 1/K; $\gamma = 78.50$ kN/m ³	(not input)	(not input)
16	Yes		Free line No. 8	○—	○—	Yes	1.00 (b) x 0.45 (h) m	C25; E = 28000.00 MPa; G = 11200.00 MPa; $\alpha = 0.000010$ 1/K; $\gamma = 25.00$ kN/m ³	(not input)	(not input)

No.	Cross-section		Material	
	I _y [m ⁴ /m]	A [m ² /m]	E [MPa]	G [MPa]
1	7.59E-03	4.50E-01	28000.00	11200.00
2	5.94E-05	7.69E-03	206000.00	79000.00
3	5.94E-05	7.69E-03	206000.00	79000.00

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No.	Cross-section		Material	
	I_y [m ⁴ /m]	A [m ² /m]	E [MPa]	G [MPa]
4	7.59E-03	4.50E-01	28000.00	11200.00
5	7.59E-03	4.50E-01	28000.00	11200.00
6	7.59E-03	4.50E-01	28000.00	11200.00
7	5.94E-05	7.69E-03	206000.00	79000.00
8	7.59E-03	4.50E-01	28000.00	11200.00
9	5.94E-05	7.69E-03	206000.00	79000.00
10	5.94E-05	7.69E-03	206000.00	79000.00
11	5.94E-05	7.69E-03	206000.00	79000.00
12	7.59E-03	4.50E-01	28000.00	11200.00
13	7.59E-03	4.50E-01	28000.00	11200.00
14	7.59E-03	4.50E-01	28000.00	11200.00
15	5.94E-05	7.69E-03	206000.00	79000.00
16	7.59E-03	4.50E-01	2800.00	1120.00

Line supports

No.	Line support		Location	Support	
	new	modified		Direction X	Direction Z
A1	Yes		Mesh line No. 20	fixed	free
A2	Yes		Mesh line No. 18	fixed	free
A3	Yes		Mesh line No. 15	fixed	free
A4	Yes		Mesh line No. 12	fixed	free
A5	Yes		Mesh line No. 9	fixed	free
A6	Yes		Mesh line No. 6	fixed	free
A7	Yes		Mesh line No. 3	fixed	free
A8	Yes		Mesh line No. 22	fixed	free
A9	Yes		Mesh line No. 17	fixed	free
A10	Yes		Mesh line No. 14	fixed	free
A11	Yes		Mesh line No. 11	fixed	free
A12	Yes		Mesh line No. 8	fixed	free
A13	Yes		Mesh line No. 5	fixed	free
A14	Yes		Mesh line No. 1	fixed	free
A15	Yes		Mesh line No. 21	fixed	fixed
A1 up to A15 - automatically generated line supports along model edges					

Water

Water type : No water

Analysis settings

Stress

Method :

Newton - Raphson

Stiffness matrix change :

after each iteration

Max. number of iterations for one calc. step :

100

Initial calculation step :

0.25

Displacement error :

0.0100

Imbalanced forces error :

0.0100

Energy error :

0.0100

Respect material interfaces :

no

Plasticity

Return mapping error :

0.00100

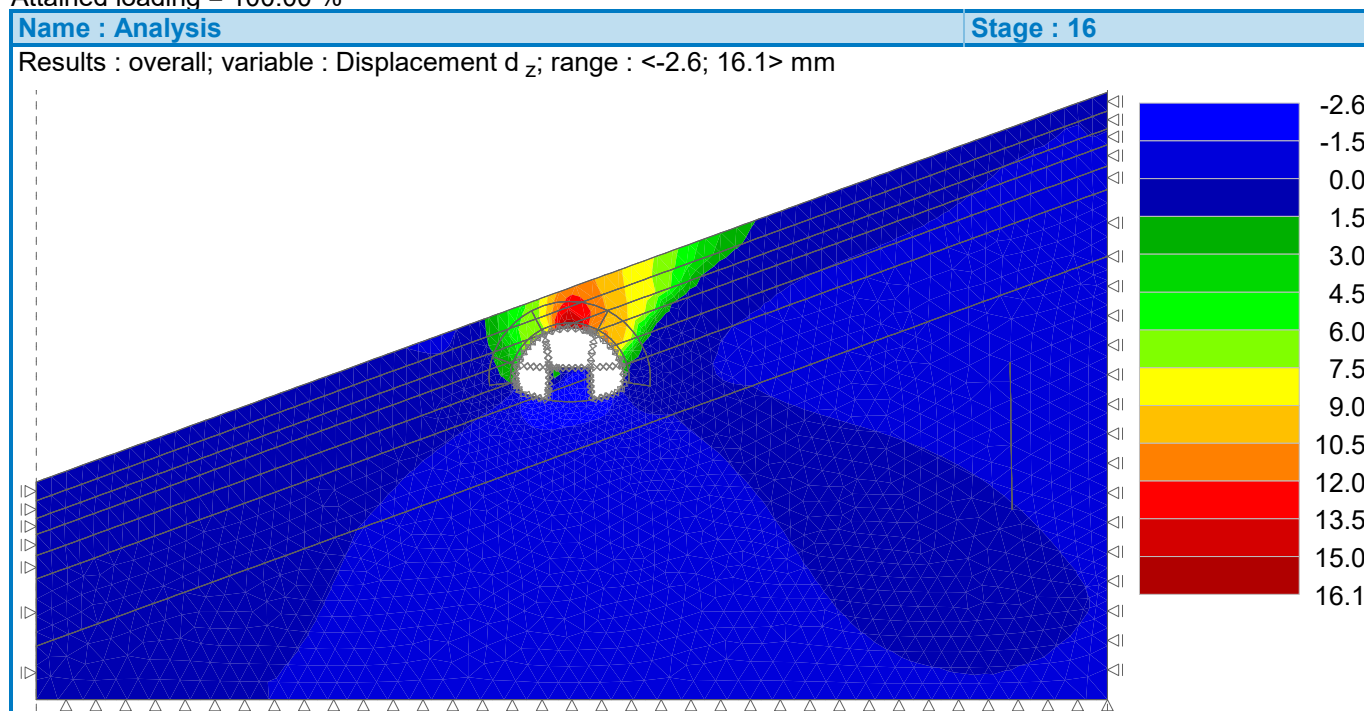
Max. number of iterations for one plast. step : 20
Newton - Raphson
 Relaxation factor of calculation step : 2.00
 Maximum number of relaxations of calculation step : 2
 Min. number of iterations for one calc. step : 1
Line search
 Solution method : iterate no
 Line search limit - minimum : 0.100
 Line search limit - maximum : 1.000

Results (Stage of construction 16)

Stress analysis was successfully completed.

Analysis settings : **user-defined**

Attained loading = 100.00 %



Extremes

Displacements (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Displacements x [mm]	0.00	0.00	-11.3	4.12	2.67	23.9
Displacements z [mm]	4.12	2.67	-2.6	-0.40	7.47	16.1

Stress (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Total stress $\sigma_{z, tot}$ [kPa]	-5.45	13.03	0.00	96.79	-62.19	2205.93
Effective stress $\sigma_{z, eff}$ [kPa]	-5.45	13.03	0.00	96.79	-62.19	2205.93
Total stress $\sigma_{x, tot}$ [kPa]	100.81	51.70	-9.47	90.93	-62.19	723.78
Effective stress $\sigma_{x, eff}$ [kPa]	100.81	51.70	-9.47	90.93	-62.19	723.78

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	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Shear stress τ_{xz} [kPa]	9.78	0.41	-271.72	-4.06	6.69	222.49
Total mean stress $\sigma_{m, tot}$ [kPa]	100.81	51.70	5.39	90.93	-62.19	1220.26
Effective mean stress $\sigma_{m, eff}$ [kPa]	100.81	51.70	5.39	90.93	-62.19	1220.26
Equivalent deviatoric stress J [kPa]	1.15	15.43	6.73	96.79	-62.19	853.76
Total principal stress $\sigma_{1, tot}$ [kPa]	-6.28	-5.50	-27.86	90.93	-62.19	723.27
Effective principal stress $\sigma_{1, eff}$ [kPa]	-6.28	-5.50	-27.86	90.93	-62.19	723.27
Total principal stress $\sigma_{2, tot}$ [kPa]	100.81	51.70	21.36	96.79	-62.19	2206.06
Effective principal stress $\sigma_{2, eff}$ [kPa]	100.81	51.70	21.36	96.79	-62.19	2206.06
Total principal stress $\sigma_{3, tot}$ [kPa]	100.81	51.70	4.28	90.93	-62.19	732.16
Effective principal stress $\sigma_{3, eff}$ [kPa]	100.81	51.70	4.28	90.93	-62.19	732.16

Strain (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Equivalent deviatoric strain E_d [%]	-5.26	-5.75	0.01	3.89	0.07	0.52
Plastic equivalent deviatoric strain $E_{d, pl}$ [%]	-7.16	10.70	0.00	3.89	0.07	0.45
Strain ϵ_x [%]	-2.98	-3.14	-0.17	-100.00	-21.39	0.11
Strain ϵ_z [%]	-3.41	6.90	-0.04	-5.29	7.16	0.30
Shear strain γ_{xz} [%]	-3.89	0.08	-0.17	3.89	0.07	0.37
Plastic strain $\epsilon_{x, pl}$ [%]	3.89	0.07	-0.17	-3.41	6.90	0.05
Plastic strain $\epsilon_{z, pl}$ [%]	-3.41	6.90	-0.05	3.89	0.07	0.17
Plastic shear strain $\gamma_{xz, pl}$ [%]	12.65	5.77	-0.07	3.89	0.07	0.28
Volumetric strain ϵ_v [%]	-6.28	-5.50	0.00	-5.29	7.16	0.26
Plastic volumetric strain $\epsilon_{v, pl}$ [%]	-4.88	6.39	-0.01	-7.16	10.70	0.00
Principal strain ϵ_1 [%]	3.89	0.07	-0.23	-100.00	-24.91	0.05
Principal strain ϵ_2 [%]	-5.26	-5.75	0.01	-3.86	7.80	0.32
Principal strain ϵ_3 [%]			0.00			0.00

Pore pressures (extremes)

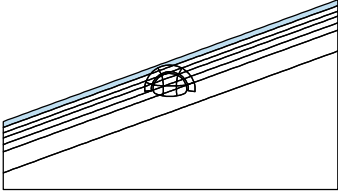
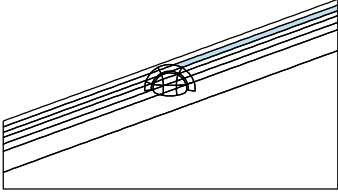
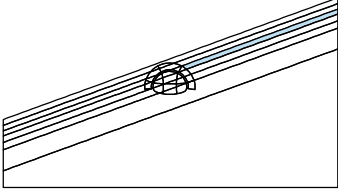
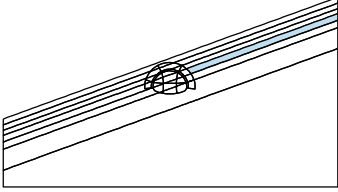
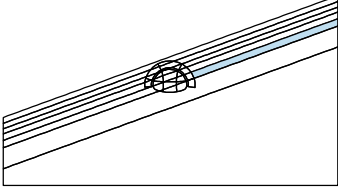
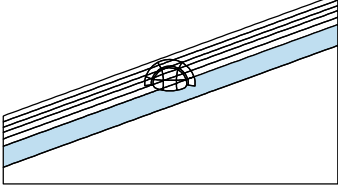
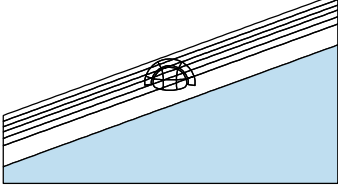
	Location		Max
	x [m]	z [m]	
Total pore pressure u_{tot} [kPa]			0.00

Distributions on beams (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
N [kN/m]	9.76	0.47	-1103.0	-3.48	0.06	30.3
M [kNm/m]	4.12	2.67	-79.6	8.56	2.91	99.0
Q [kN/m]	9.76	0.47	-100.1	4.82	6.28	124.1

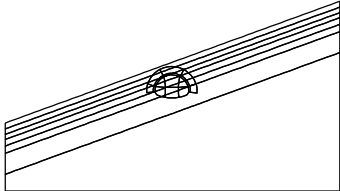
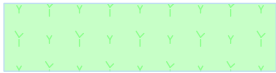
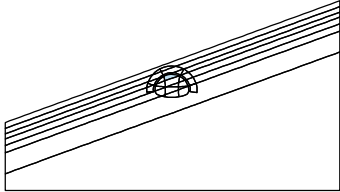
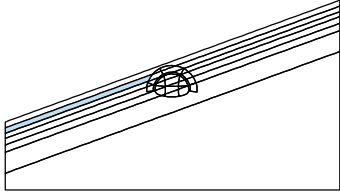
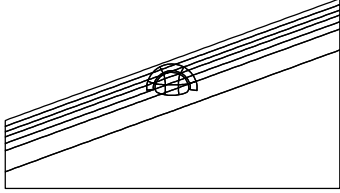
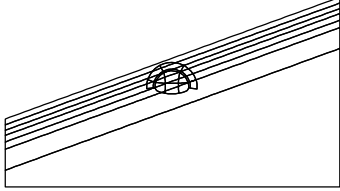
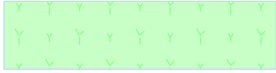
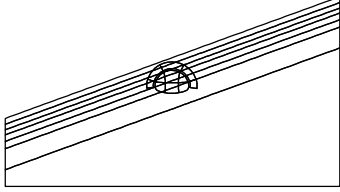
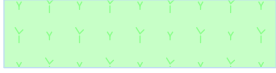
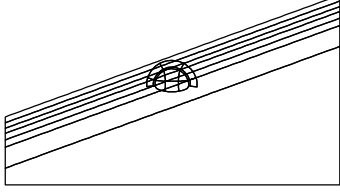
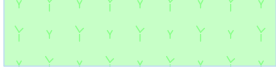
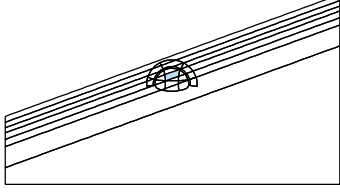
Input data (Stage of construction 17)

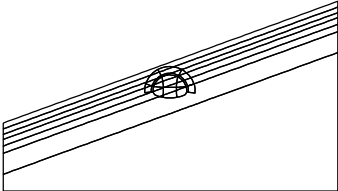
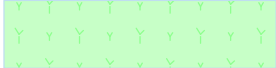
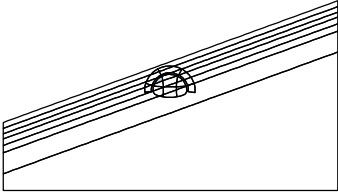
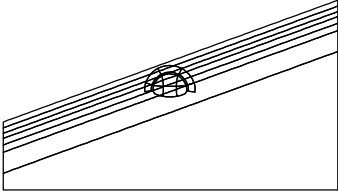
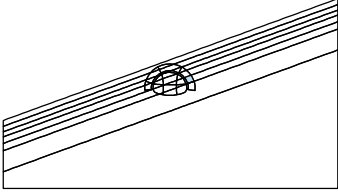
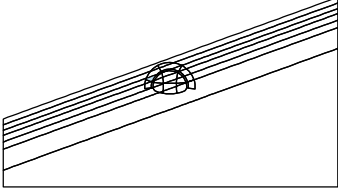
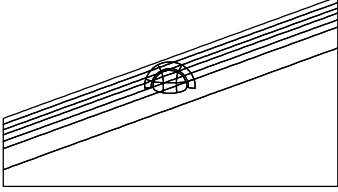
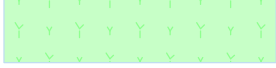
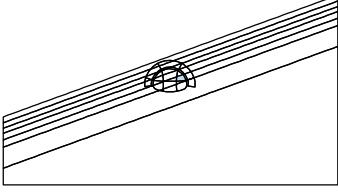
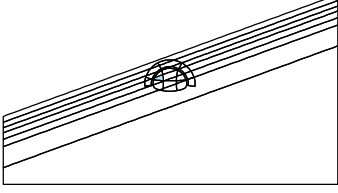
Assignment and activation

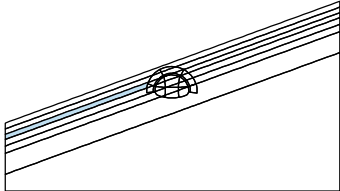
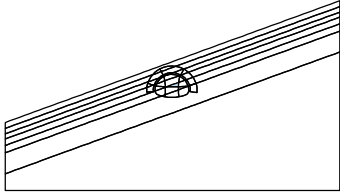
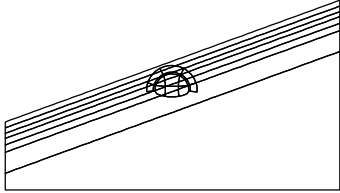
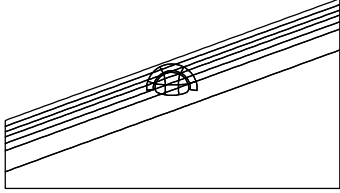
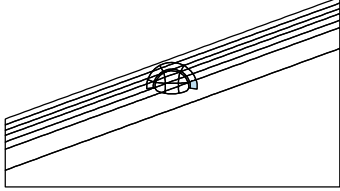
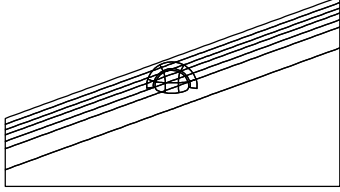
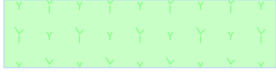
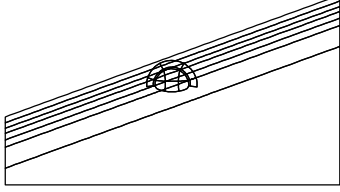
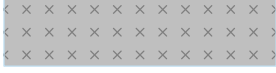
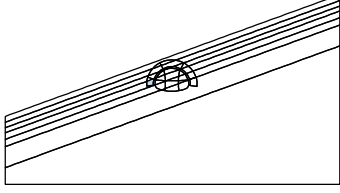
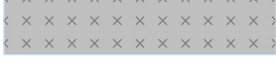
No.	Region	Active / inactive	Assigned soil
1		Active	□ □ □ □ □ □ □ 
2		Active	□ □ □ □ □ □ □ 
3		Active	□ □ □ □ □ □ □ 
4		Active	□ □ □ □ □ □ □ □ □ 
5		Active	□ □ □ □ □ □ □ □ □ 
6		Active	□ □ □ □ □ □ □ 
7		Active	□ □ □ □ □ □ □ 



No.	Region	Active / inactive	Assigned soil
8		Active	☐ ☐ ☐ ☐ ☐
9		Active	☐ ☐ ☐ ☐ ☐
10		Active	☐ ☐ ☐ ☐ ☐
11		Active	☐ ☐ ☐ ☐ ☐
12		Active	☐ ☐ ☐ ☐ ☐
13		Active	☐ ☐ ☐ ☐ ☐
14		Active	☐ ☐ ☐ ☐ ☐
15		Active	☐ ☐ ☐ ☐

No.	Region	Active / inactive	Assigned soil
16		Active	□ □ □ □
			
17		Excavation	Excavation No. 1 (□ □ 15 - 1)
			Soil remaining activity: 0.0 %
18		Active	□ □ □ □ □ □ □
			
19		Active	□ □ □ □ □ □
			
20		Active	□ □ □ □
			
21		Active	□ □ □ □
			
22		Active	□ □ □ □
			
23		Excavation	Excavation No. 1 (□ □ 15 - 1)
			Soil remaining activity: 0.0 %

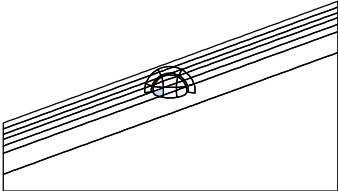
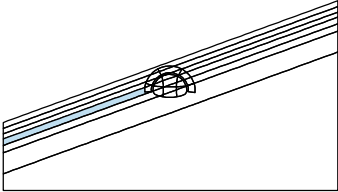
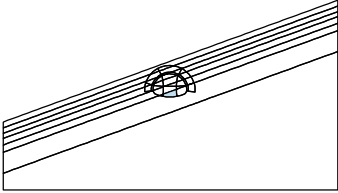
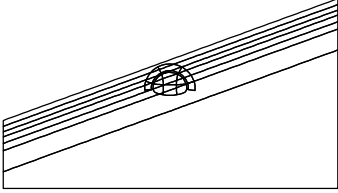
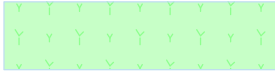
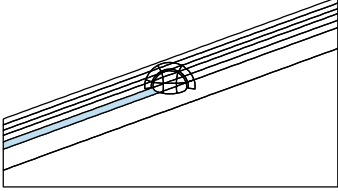
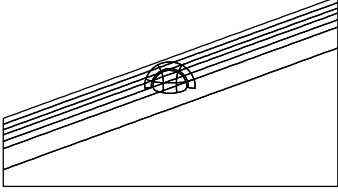
No.	Region	Active / inactive	Assigned soil
24		Active	□ □ □ □
			
25		Inactive	
26		Inactive	
27		Active	□ □ □ □ □
			
28		Active	□ □ □ □ □
			
29		Active	□ □ □ □
			
30		Inactive	
31		Inactive	

No.	Region	Active / inactive	Assigned soil
32		Active	□ □ □ □ □
			
33		Excavation	Excavation No. 1 (□ □ 15 - 1)
			Soil remaining activity: 0.0 %
34		Active	□ □ □ □ □
			
35		Active	□ □ □ □ □
			
36		Active	□ □ □ □ □
			
37		Active	□ □ □ □
			
38		Active	□ □ □ □ □
			
39		Active	□ □ □ □ □
			



No.	Region	Active / inactive	Assigned soil
40		Active	
41		Active	
42		Active	
43		Inactive	
44		Inactive	
45		Inactive	
46		Active	
47		Active	

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No.	Region	Active / inactive	Assigned soil
48		Inactive	
49		Active	□ □ □ □ □ □ □ □ 
50		Active	□ □ □ □ □ 
51		Active	□ □ □ □ 
52		Active	□ □ □ □ □ □ □ □ 
53		Inactive	

Beams

No.	Beam		Location	Support [m]		Include self weight	cross-section / Degradation in current stage [%]	Material / Beam current activity [%]	Contacts	
	new	modified		Start pt.	End pt.				left	right
1	No	No	Free line No. 9	○—	○—	Yes	without modification	without modification	(not input)	(not input)
2	No	No	Free line No. 18	○—	○—	Yes	without modification	without modification	(not input)	(not input)

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No.	Beam		Location	Support [m]		Include self weight	Cross-section /	Material /	Contacts	
	new	modified		Start pt.	End pt.		Degradation in current stage [%]	Beam current activity [%]	left	right
3	No	No	Free line No. 3	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
4	No	No	Free line No. 11	○—	├—	Yes	without modificatio	without modificatio	(not input)	(not input)
5	No	No	Free line No. 2	├—	├—	Yes	without modificatio	without modificatio	(not input)	(not input)
6	No	No	Free line No. 21	├—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
7	No	No	Free line No. 17	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
8	No	No	Free line No. 7	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
9	No	No	Free line No. 19	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
10	No	No	Free line No. 5	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
11	No	No	Free line No. 20	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
12	No	No	Free line No. 10	├—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
13	No	No	Free line No. 1	├—	├—	Yes	without modificatio	without modificatio	(not input)	(not input)
14	No	No	Free line No. 23	○—	├—	Yes	without modificatio	without modificatio	(not input)	(not input)
15	No	No	Free line No. 4	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
16	No	Yes	Free line No. 8	○—	○—	Yes	↑ h = 0.45 m	↑ E = 28000.00 MPa; G = 11200.00 MPa	(not input)	(not input)

No.	Cross-section		Material	
	I _y [m ⁴ /m]	A [m ² /m]	E [MPa]	G [MPa]
1	7.59E-03	4.50E-01	28000.00	11200.00
2	5.94E-05	7.69E-03	206000.00	79000.00
3	5.94E-05	7.69E-03	206000.00	79000.00
4	7.59E-03	4.50E-01	28000.00	11200.00
5	7.59E-03	4.50E-01	28000.00	11200.00
6	7.59E-03	4.50E-01	28000.00	11200.00
7	5.94E-05	7.69E-03	206000.00	79000.00
8	7.59E-03	4.50E-01	28000.00	11200.00
9	5.94E-05	7.69E-03	206000.00	79000.00
10	5.94E-05	7.69E-03	206000.00	79000.00
11	5.94E-05	7.69E-03	206000.00	79000.00
12	7.59E-03	4.50E-01	28000.00	11200.00
13	7.59E-03	4.50E-01	28000.00	11200.00

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No.	Cross-section		Material	
	I_y [m ⁴ /m]	A [m ² /m]	E [MPa]	G [MPa]
14	7.59E-03	4.50E-01	28000.00	11200.00
15	5.94E-05	7.69E-03	206000.00	79000.00
16	7.59E-03	4.50E-01	28000.00	11200.00

Line supports

No.	Line support		Location	Support	
	new	modified		Direction X	Direction Z
A1	Yes		Mesh line No. 20	fixed	free
A2	Yes		Mesh line No. 18	fixed	free
A3	Yes		Mesh line No. 15	fixed	free
A4	Yes		Mesh line No. 12	fixed	free
A5	Yes		Mesh line No. 9	fixed	free
A6	Yes		Mesh line No. 6	fixed	free
A7	Yes		Mesh line No. 3	fixed	free
A8	Yes		Mesh line No. 22	fixed	free
A9	Yes		Mesh line No. 17	fixed	free
A10	Yes		Mesh line No. 14	fixed	free
A11	Yes		Mesh line No. 11	fixed	free
A12	Yes		Mesh line No. 8	fixed	free
A13	Yes		Mesh line No. 5	fixed	free
A14	Yes		Mesh line No. 1	fixed	free
A15	Yes		Mesh line No. 21	fixed	fixed
A1 up to A15 - automatically generated line supports along model edges					

Water

Water type : No water

Analysis settings

Stress

Method : Newton - Raphson
 Stiffness matrix change : after each iteration
 Max. number of iterations for one calc. step : 100
 Initial calculation step : 0.25
 Displacement error : 0.0100
 Imbalanced forces error : 0.0100
 Energy error : 0.0100
 Respect material interfaces : no

Plasticity

Return mapping error : 0.00100
 Max. number of iterations for one plast. step : 20

Newton - Raphson

Relaxation factor of calculation step : 2.00
 Maximum number of relaxations of calculation step : 2
 Min. number of iterations for one calc. step : 1

Line search

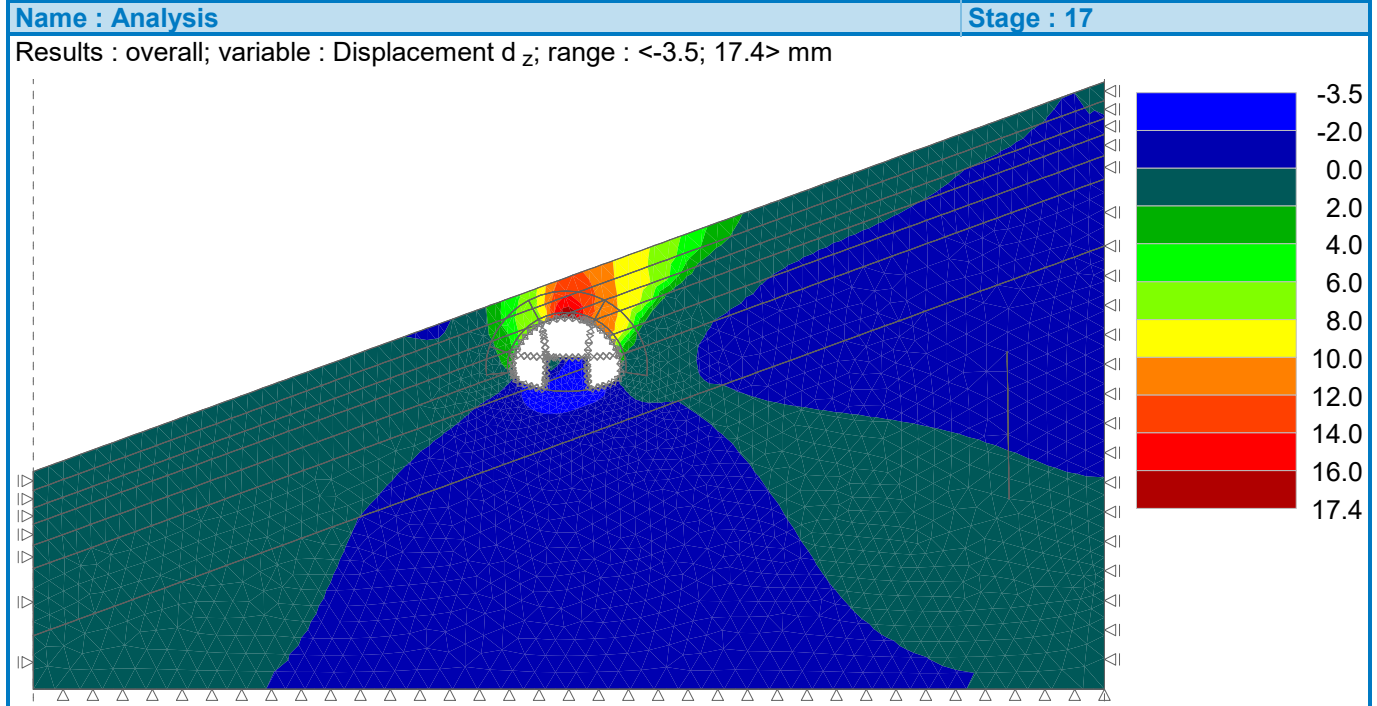
Solution method : iterate no
 Line search limit - minimum : 0.100
 Line search limit - maximum : 1.000

Results (Stage of construction 17)

Stress analysis was successfully completed.

Analysis settings : **user-defined**

Attained loading = 100.00 %



Extremes

Displacements (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Displacements x [mm]	0.00	0.00	-16.9	4.12	2.67	32.7
Displacements z [mm]	4.12	2.67	-3.5	-0.40	7.47	17.4

Stress (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Total stress $\sigma_{z, \text{tot}}$ [kPa]	-4.06	-4.69	-15.43	96.79	-62.19	2206.09
Effective stress $\sigma_{z, \text{eff}}$ [kPa]	-4.06	-4.69	-15.43	96.79	-62.19	2206.09
Total stress $\sigma_{x, \text{tot}}$ [kPa]	-4.14	-5.33	-17.78	90.93	-62.19	723.80
Effective stress $\sigma_{x, \text{eff}}$ [kPa]	-4.14	-5.33	-17.78	90.93	-62.19	723.80
Shear stress τ_{xz} [kPa]	9.78	0.41	-277.38	-4.06	6.69	222.47
Total mean stress $\sigma_{m, \text{tot}}$ [kPa]	-4.06	-4.69	-5.72	90.93	-62.19	1220.33
Effective mean stress $\sigma_{m, \text{eff}}$ [kPa]	-4.06	-4.69	-5.72	90.93	-62.19	1220.33
Equivalent deviatoric stress J [kPa]	-9.35	11.61	6.69	96.79	-62.19	853.84
Total principal stress $\sigma_{1, \text{tot}}$ [kPa]	-6.28	-5.50	-32.59	90.93	-62.19	723.29
Effective principal stress $\sigma_{1, \text{eff}}$ [kPa]	-6.28	-5.50	-32.59	90.93	-62.19	723.29
Total principal stress $\sigma_{2, \text{tot}}$ [kPa]	-0.75	0.00	9.05	96.79	-62.19	2206.22
Effective principal stress $\sigma_{2, \text{eff}}$ [kPa]	-0.75	0.00	9.05	96.79	-62.19	2206.22

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	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Total principal stress $\sigma_{3, \text{tot}}$ [kPa]	-4.06	-4.69	-5.18	90.93	-62.19	732.20
Effective principal stress $\sigma_{3, \text{eff}}$ [kPa]	-4.06	-4.69	-5.18	90.93	-62.19	732.20

Strain (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Equivalent deviatoric strain E_d [%]	-5.42	-6.36	0.01	3.89	0.07	0.54
Plastic equivalent deviatoric strain $E_{d, pl}$ [%]	-7.16	10.70	0.00	3.89	0.07	0.49
Strain ε_x [%]	-2.98	-3.14	-0.16	-100.00	-21.39	0.11
Strain ε_z [%]	-3.41	6.90	-0.04	-5.29	7.16	0.30
Shear strain γ_{xz} [%]	4.46	6.46	-0.18	3.89	0.07	0.41
Plastic strain $\varepsilon_{x, pl}$ [%]	3.89	0.07	-0.18	-3.41	6.90	0.05
Plastic strain $\varepsilon_{z, pl}$ [%]	-3.41	6.90	-0.05	3.89	0.07	0.17
Plastic shear strain $\gamma_{xz, pl}$ [%]	12.65	5.77	-0.07	3.89	0.07	0.34
Volumetric strain ε_v [%]	-0.75	0.00	0.00	-5.29	7.16	0.26
Plastic volumetric strain $\varepsilon_{v, pl}$ [%]	-4.88	6.39	-0.01	-7.16	10.70	0.00
Principal strain ε_1 [%]	3.89	0.07	-0.26	-100.00	-24.91	0.05
Principal strain ε_2 [%]	-5.26	-5.75	0.01	-3.86	7.80	0.33
Principal strain ε_3 [%]			0.00			0.00

Pore pressures (extremes)

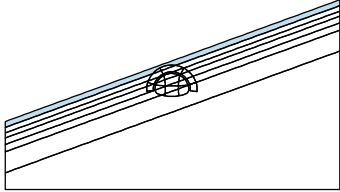
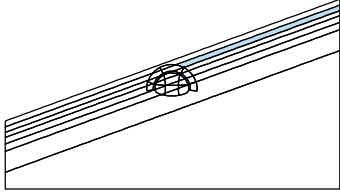
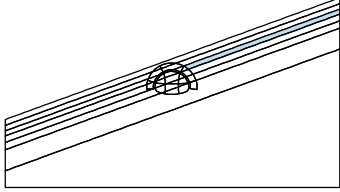
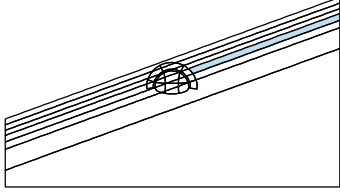
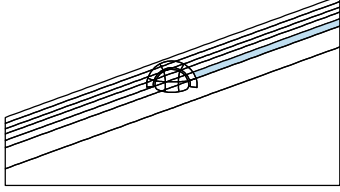
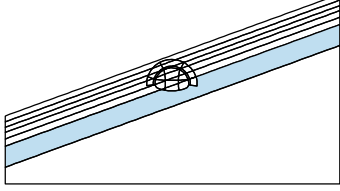
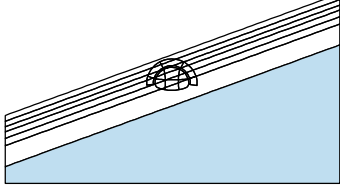
	Location		Max
	x [m]	z [m]	
Total pore pressure u_{tot} [kPa]			0.00

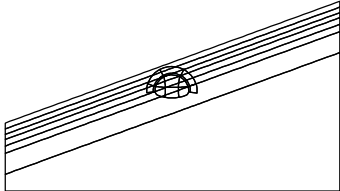
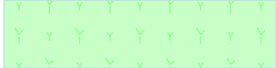
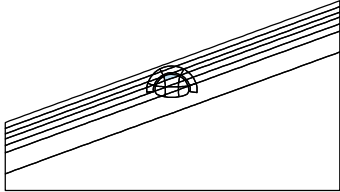
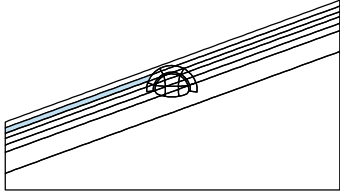
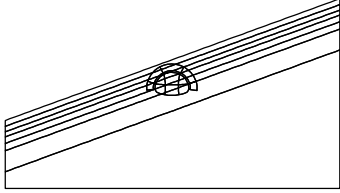
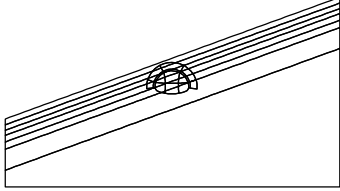
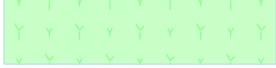
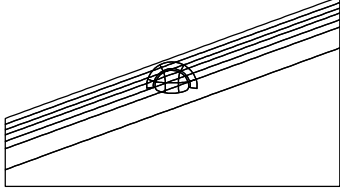
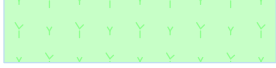
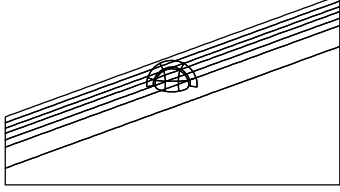
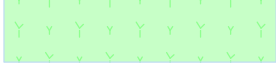
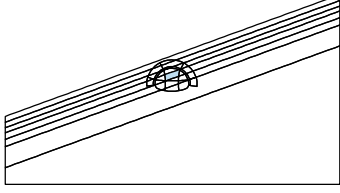
Distributions on beams (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
N [kN/m]	9.76	0.47	-1291.4	-3.89	0.08	34.8
M [kNm/m]	4.12	2.67	-109.5	-10.07	-2.67	88.6
Q [kN/m]	4.82	6.28	-97.5	4.82	6.28	121.9

Input data (Stage of construction 18)

Assignment and activation

No.	Region	Active / inactive	Assigned soil
1		Active	□ □ □ □ □ □ □ 
2		Active	□ □ □ □ □ □ □ 
3		Active	□ □ □ □ □ □ □ 
4		Active	□ □ □ □ □ □ □ □ □ 
5		Active	□ □ □ □ □ □ □ □ □ 
6		Active	□ □ □ □ □ □ □ 
7		Active	□ □ □ □ □ □ □ 

No.	Region	Active / inactive	Assigned soil
16		Active	□ □ □ □
			
17		Inactive	
18		Active	□ □ □ □ □ □ □
			
19		Active	□ □ □ □ □ □
			
20		Active	□ □ □ □
			
21		Active	□ □ □ □
			
22		Active	□ □ □ □
			
23		Inactive	

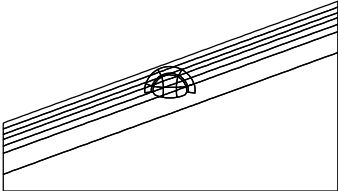
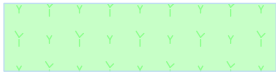
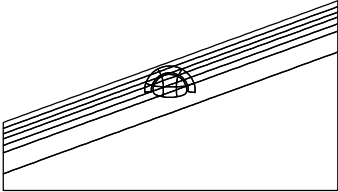
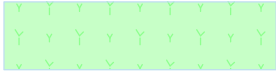
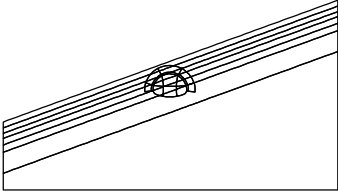
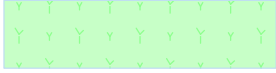
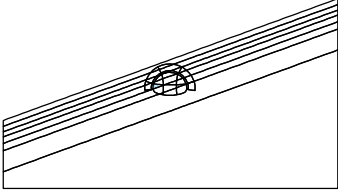
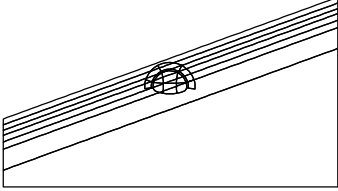
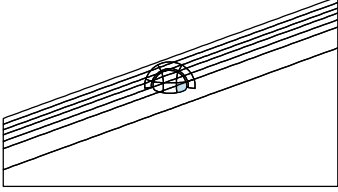
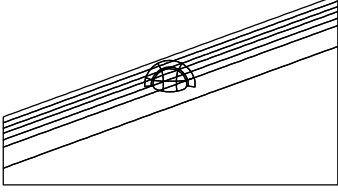
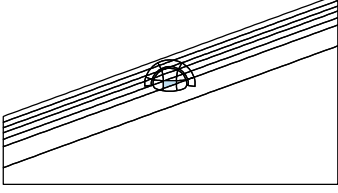


No.	Region	Active / inactive	Assigned soil
24		Active	
25		Inactive	
26		Inactive	
27		Active	
28		Active	
29		Active	
30		Inactive	
31		Inactive	

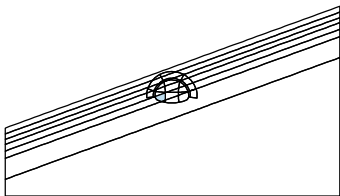
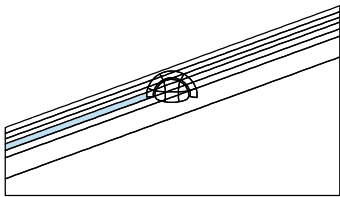
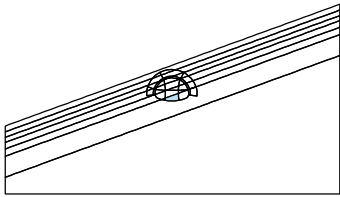
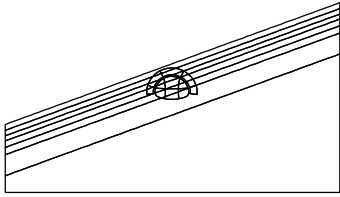
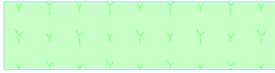
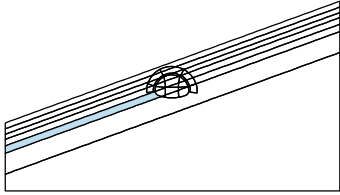
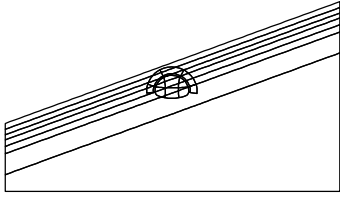


No.	Region	Active / inactive	Assigned soil
32		Active	□ □ □ □ □
33		Inactive	
34		Active	□ □ □ □ □
35		Active	□ □ □ □ □
36		Active	□ □ □ □ □
37		Active	□ □ □ □
38		Active	□ □ □ □ □
39		Active	□ □ □ □ □

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No.	Region	Active / inactive	Assigned soil
40		Active	□ □ □ □
			
41		Active	□ □ □ □
			
42		Active	□ □ □ □
			
43		Inactive	
44		Inactive	
45		Inactive	
46		Active	□ □ □ □ □ □ □ □
			
47		Active	□ □ □ □ □ □ □ □
			

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No.	Region	Active / inactive	Assigned soil
48		Inactive	
49		Active	□ □ □ □ □ □ □ □ 
50		Active	□ □ □ □ □ □ 
51		Active	□ □ □ □ 
52		Active	□ □ □ □ □ □ □ □ 
53		Inactive	

Beams

No.	Beam		Location	Support [m]		Include self weight	cross-section / Degradation in current stage [%]	Material / Beam current activity [%]	Contacts	
	new	modified		Start pt.	End pt.				left	right
1	No	No	Free line No. 9	○—	○—	Yes	without modification	without modification	(not input)	(not input)
2	No	No	Free line No. 18	○—	○—	Yes	without modification	without modification	(not input)	(not input)

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No.	Beam		Location	Support [m]		Include self weight	Cross-section /	Material /	Contacts	
	new	modified		Start pt.	End pt.		Degradation in current stage [%]	Beam current activity [%]	left	right
3	No	No	Free line No. 3	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
4	No	No	Free line No. 11	○—	├—	Yes	without modificatio	without modificatio	(not input)	(not input)
5	No	No	Free line No. 2	├—	├—	Yes	without modificatio	without modificatio	(not input)	(not input)
6	No	No	Free line No. 21	├—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
7	No	No	Free line No. 17	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
8	No	No	Free line No. 7	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
9	No	No	Free line No. 19	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
10	No	No	Free line No. 5	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
11	No	No	Free line No. 20	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
12	No	No	Free line No. 10	├—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
13	No	No	Free line No. 1	├—	├—	Yes	without modificatio	without modificatio	(not input)	(not input)
14	No	No	Free line No. 23	○—	├—	Yes	without modificatio	without modificatio	(not input)	(not input)
15	No	No	Free line No. 8	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)

No.	Cross-section		Material	
	I_y [m ⁴ /m]	A [m ² /m]	E [MPa]	G [MPa]
1	7.59E-03	4.50E-01	28000.00	11200.00
2	5.94E-05	7.69E-03	206000.00	79000.00
3	5.94E-05	7.69E-03	206000.00	79000.00
4	7.59E-03	4.50E-01	28000.00	11200.00
5	7.59E-03	4.50E-01	28000.00	11200.00
6	7.59E-03	4.50E-01	28000.00	11200.00
7	5.94E-05	7.69E-03	206000.00	79000.00
8	7.59E-03	4.50E-01	28000.00	11200.00
9	5.94E-05	7.69E-03	206000.00	79000.00
10	5.94E-05	7.69E-03	206000.00	79000.00
11	5.94E-05	7.69E-03	206000.00	79000.00
12	7.59E-03	4.50E-01	28000.00	11200.00
13	7.59E-03	4.50E-01	28000.00	11200.00
14	7.59E-03	4.50E-01	28000.00	11200.00
15	7.59E-03	4.50E-01	28000.00	11200.00

Line supports

No.	Line support		Location	Support	
	new	modified		Direction X	Direction Z
A1	Yes		Mesh line No. 20	fixed	free
A2	Yes		Mesh line No. 18	fixed	free
A3	Yes		Mesh line No. 15	fixed	free
A4	Yes		Mesh line No. 12	fixed	free
A5	Yes		Mesh line No. 9	fixed	free
A6	Yes		Mesh line No. 6	fixed	free
A7	Yes		Mesh line No. 3	fixed	free
A8	Yes		Mesh line No. 22	fixed	free
A9	Yes		Mesh line No. 17	fixed	free
A10	Yes		Mesh line No. 14	fixed	free
A11	Yes		Mesh line No. 11	fixed	free
A12	Yes		Mesh line No. 8	fixed	free
A13	Yes		Mesh line No. 5	fixed	free
A14	Yes		Mesh line No. 1	fixed	free
A15	Yes		Mesh line No. 21	fixed	fixed
A1 up to A15 - automatically generated line supports along model edges					

Water

Water type : No water

Analysis settings

Stress

Method : Newton - Raphson
 Stiffness matrix change : after each iteration
 Max. number of iterations for one calc. step : 100
 Initial calculation step : 0.25
 Displacement error : 0.0100
 Imbalanced forces error : 0.0100
 Energy error : 0.0100
 Respect material interfaces : no

Plasticity

Return mapping error : 0.00100
 Max. number of iterations for one plast. step : 20

Newton - Raphson

Relaxation factor of calculation step : 2.00
 Maximum number of relaxations of calculation step : 2
 Min. number of iterations for one calc. step : 1

Line search

Solution method : iterate no
 Line search limit - minimum : 0.100
 Line search limit - maximum : 1.000

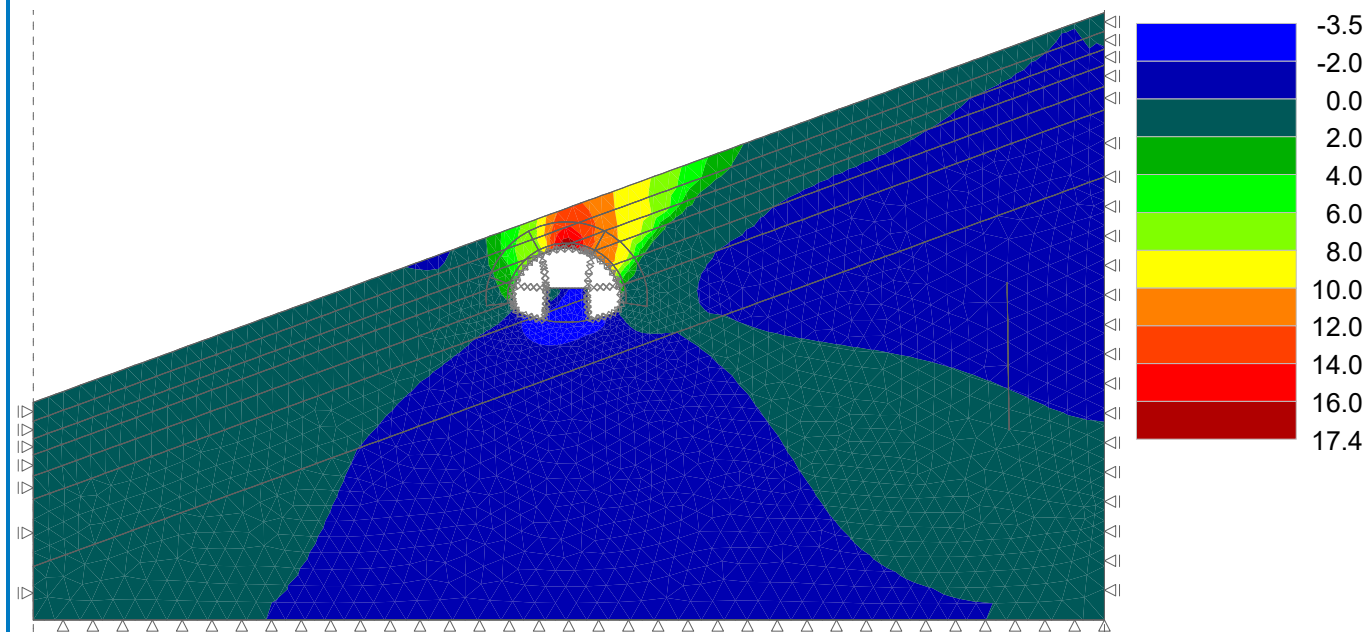
Results (Stage of construction 18)

Stress analysis was successfully completed.

Analysis settings : **user-defined**

Attained loading = 100.00 %

Name : Analysis
Stage : 18

 Results : overall; variable : Displacement d_z; range : <-3.5; 17.4> mm

Extremes
Displacements (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Displacements x [mm]	0.00	0.00	-16.8	4.12	2.67	32.5
Displacements z [mm]	4.12	2.67	-3.5	-0.40	7.47	17.4

Stress (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Total stress $\sigma_{z, \text{tot}}$ [kPa]	-4.06	-4.69	-18.97	96.79	-62.19	2206.04
Effective stress $\sigma_{z, \text{eff}}$ [kPa]	-4.06	-4.69	-18.97	96.79	-62.19	2206.04
Total stress $\sigma_{x, \text{tot}}$ [kPa]	-4.14	-5.33	-20.72	90.93	-62.19	723.78
Effective stress $\sigma_{x, \text{eff}}$ [kPa]	-4.14	-5.33	-20.72	90.93	-62.19	723.78
Shear stress τ_{xz} [kPa]	9.78	0.41	-278.10	-4.06	6.69	222.15
Total mean stress $\sigma_{m, \text{tot}}$ [kPa]	-4.06	-4.69	-7.64	90.93	-62.19	1220.31
Effective mean stress $\sigma_{m, \text{eff}}$ [kPa]	-4.06	-4.69	-7.64	90.93	-62.19	1220.31
Equivalent deviatoric stress J [kPa]	-9.35	11.61	6.66	96.79	-62.19	853.82
Total principal stress $\sigma_{1, \text{tot}}$ [kPa]	-6.28	-5.50	-33.07	90.93	-62.19	723.28
Effective principal stress $\sigma_{1, \text{eff}}$ [kPa]	-6.28	-5.50	-33.07	90.93	-62.19	723.28
Total principal stress $\sigma_{2, \text{tot}}$ [kPa]	-4.06	-4.69	6.50	96.79	-62.19	2206.17
Effective principal stress $\sigma_{2, \text{eff}}$ [kPa]	-4.06	-4.69	6.50	96.79	-62.19	2206.17
Total principal stress $\sigma_{3, \text{tot}}$ [kPa]	-4.06	-4.69	-6.52	90.93	-62.19	732.18
Effective principal stress $\sigma_{3, \text{eff}}$ [kPa]	-4.06	-4.69	-6.52	90.93	-62.19	732.18

Strain (extremes)

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	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Equivalent deviatoric strain E_d [%]	-5.42	-6.36	0.01	3.89	0.07	0.58
Plastic equivalent deviatoric strain $E_{d, pl}$ [%]	-7.16	10.70	0.00	3.89	0.07	0.54
Strain ε_x [%]	-2.98	-3.14	-0.16	-100.00	-21.39	0.11
Strain ε_z [%]	-3.41	6.90	-0.04	-5.29	7.16	0.30
Shear strain γ_{xz} [%]	-3.89	0.08	-0.21	3.89	0.07	0.49
Plastic strain $\varepsilon_{x, pl}$ [%]	-2.98	-3.14	-0.17	-3.41	6.90	0.05
Plastic strain $\varepsilon_{z, pl}$ [%]	-3.41	6.90	-0.05	-2.98	-3.14	0.17
Plastic shear strain $\gamma_{xz, pl}$ [%]	-3.89	0.08	-0.16	3.89	0.07	0.43
Volumetric strain ε_v [%]	-3.86	-1.36	0.00	-5.29	7.16	0.26
Plastic volumetric strain $\varepsilon_{v, pl}$ [%]	-4.88	6.39	-0.01	-7.16	10.70	0.00
Principal strain ε_1 [%]	3.89	0.07	-0.28	-100.00	-24.91	0.05
Principal strain ε_2 [%]	-5.26	-5.75	0.01	-3.86	7.80	0.33
Principal strain ε_3 [%]			0.00			0.00

Pore pressures (extremes)

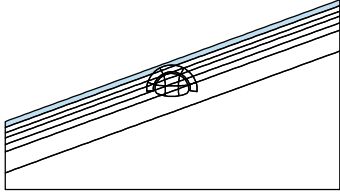
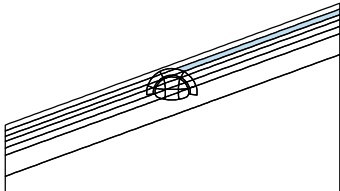
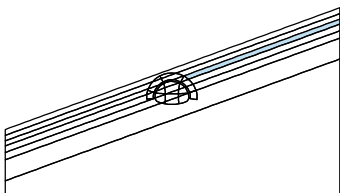
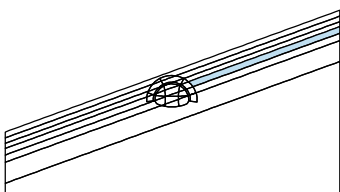
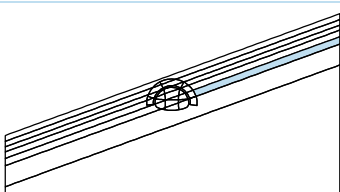
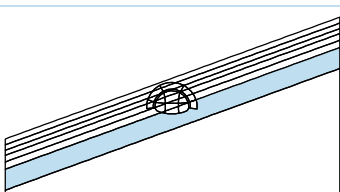
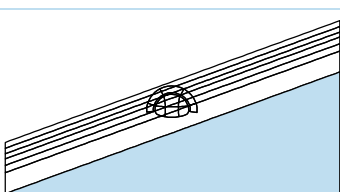
	Location		Max
	x [m]	z [m]	
Total pore pressure u_{tot} [kPa]			0.00

Distributions on beams (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
N [kN/m]	9.76	0.47	-1301.5	-9.76	0.48	23.0
M [kNm/m]	4.12	2.67	-108.3	-10.07	-2.67	89.3
Q [kN/m]	4.82	6.28	-95.2	4.82	6.28	121.0

Input data (Stage of construction 19)

Assignment and activation

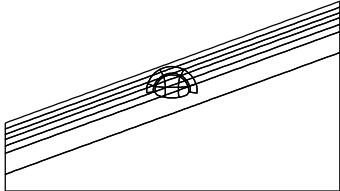
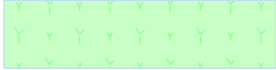
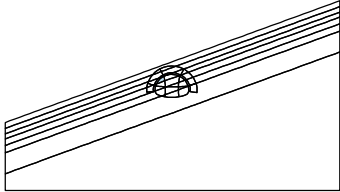
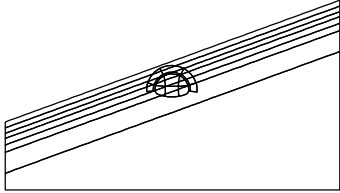
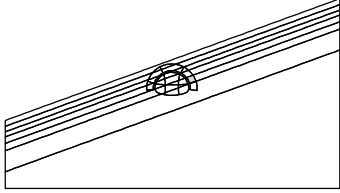
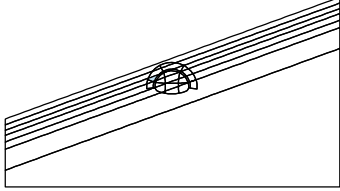
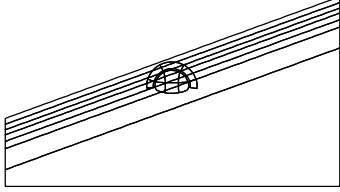
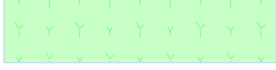
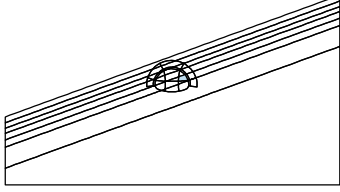
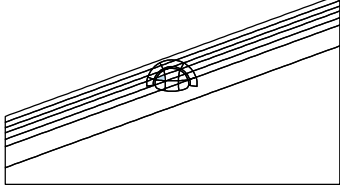
No.	Region	Active / inactive	Assigned soil
1		Active	□ □ □ □ □ □ 
2		Active	□ □ □ □ □ □ 
3		Active	□ □ □ □ □ □ 
4		Active	□ □ □ □ □ □ □ □ 
5		Active	□ □ □ □ □ □ □ □ 
6		Active	□ □ □ □ □ □ 
7		Active	□ □ □ □ □ □ 



No.	Region	Active / inactive	Assigned soil
8		Active	□ □ □ □ □
9		Active	□ □ □ □ □
10		Active	□ □ □ □ □
11		Active	□ □ □ □ □
12		Active	□ □ □ □ □
13		Active	□ □ □ □ □
14		Active	□ □ □ □ □
15		Active	□ □ □ □ □

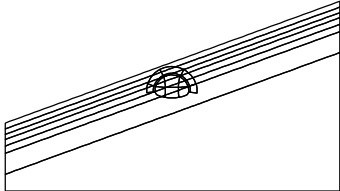
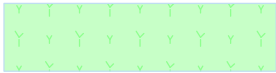
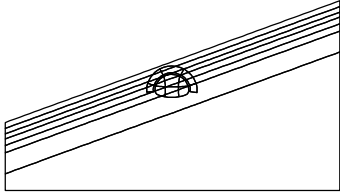
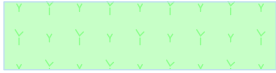
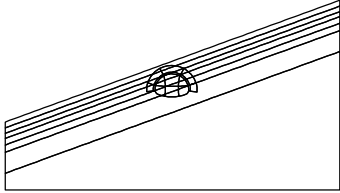
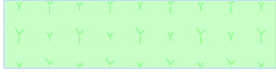
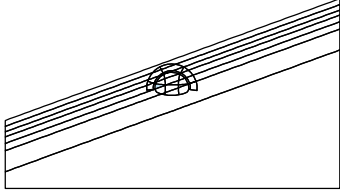
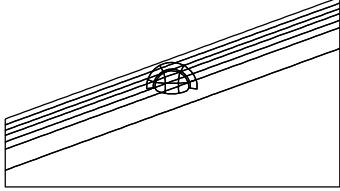
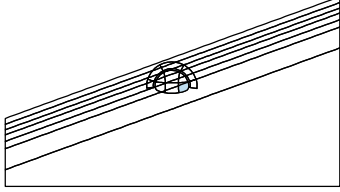
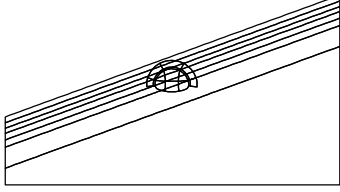
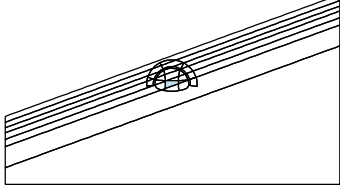


No.	Region	Active / inactive	Assigned soil
16		Active	□ □ □ □
17		Inactive	
18		Active	□ □ □ □ □ □ □
19		Active	□ □ □ □ □ □
20		Active	□ □ □ □
21		Active	□ □ □ □
22		Active	□ □ □ □
23		Inactive	

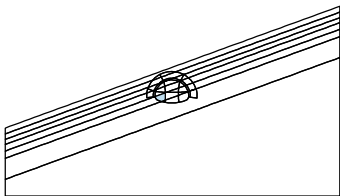
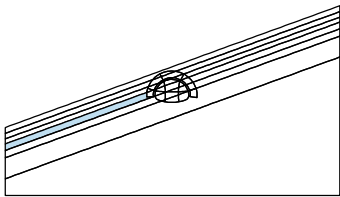
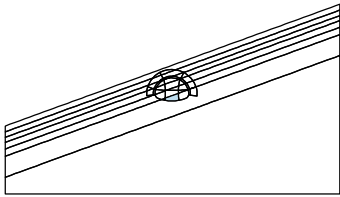
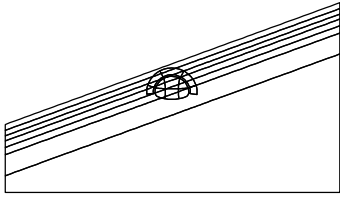
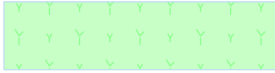
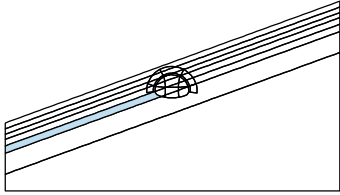
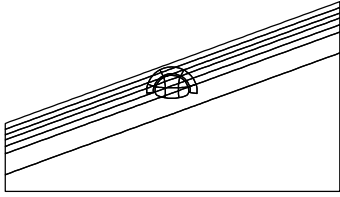
No.	Region	Active / inactive	Assigned soil
24		Active	□ □ □ □
			
25		Inactive	
26		Inactive	
27		Active	□ □ □ □ □
			
28		Active	□ □ □ □ □
			
29		Active	□ □ □ □
			
30		Inactive	
31		Inactive	



No.	Region	Active / inactive	Assigned soil
32		Active	□ □ □ □ □
33		Inactive	
34		Active	□ □ □ □ □
35		Active	□ □ □ □ □
36		Active	□ □ □ □ □
37		Active	□ □ □ □
38		Active	□ □ □ □ □
39		Active	□ □ □ □ □

No.	Region	Active / inactive	Assigned soil
40		Active	□ □ □ □
			
41		Active	□ □ □ □
			
42		Active	□ □ □ □
			
43		Inactive	
44		Inactive	
45		Inactive	
46		Excavation	Excavation No. 1 (□ □ 19 - 1)
			Soil remaining activity: 60.0 %
47		Excavation	Excavation No. 1 (□ □ 19 - 1)
			Soil remaining activity: 60.0 %

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No.	Region	Active / inactive	Assigned soil
48		Inactive	
49		Active	□ □ □ □ □ □ □ □ 
50		Excavation	Excavation No. 1 (□ □ 19 - 1) Soil remaining activity: 60.0 %
51		Active	□ □ □ □ 
52		Active	□ □ □ □ □ □ □ □ 
53		Inactive	

Beams

No.	Beam		Location	Support [m]		Include self weight	cross-section / Degradation in current stage [%]	Material / Beam current activity [%]	Contacts	
	new	modified		Start pt.	End pt.				left	right
1	No	No	Free line No. 9	○—	○—	Yes	without modification	without modification	(not input)	(not input)
2	No	No	Free line No. 18	○—	○—	Yes	without modification	without modification	(not input)	(not input)

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No.	Beam		Location	Support [m]		Include self weight	Cross-section / Degradation in current stage [%]	Material / Beam current activity [%]	Contacts	
	new	modified		Start pt.	End pt.				left	right
3	No	No	Free line No. 3	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
4	No	No	Free line No. 11	○—	├—	Yes	without modificatio	without modificatio	(not input)	(not input)
5	No	No	Free line No. 2	├—	├—	Yes	without modificatio	without modificatio	(not input)	(not input)
6	No	No	Free line No. 21	├—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
7	No	No	Free line No. 17	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
8	No	No	Free line No. 7	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
9	No	No	Free line No. 19	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
10	No	No	Free line No. 5	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
11	No	No	Free line No. 20	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
12	No	No	Free line No. 10	├—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
13	No	No	Free line No. 1	├—	├—	Yes	without modificatio	without modificatio	(not input)	(not input)
14	No	No	Free line No. 23	○—	├—	Yes	without modificatio	without modificatio	(not input)	(not input)
15	No	No	Free line No. 8	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)

No.	Cross-section		Material	
	I_y [m ⁴ /m]	A [m ² /m]	E [MPa]	G [MPa]
1	7.59E-03	4.50E-01	28000.00	11200.00
2	5.94E-05	7.69E-03	206000.00	79000.00
3	5.94E-05	7.69E-03	206000.00	79000.00
4	7.59E-03	4.50E-01	28000.00	11200.00
5	7.59E-03	4.50E-01	28000.00	11200.00
6	7.59E-03	4.50E-01	28000.00	11200.00
7	5.94E-05	7.69E-03	206000.00	79000.00
8	7.59E-03	4.50E-01	28000.00	11200.00
9	5.94E-05	7.69E-03	206000.00	79000.00
10	5.94E-05	7.69E-03	206000.00	79000.00
11	5.94E-05	7.69E-03	206000.00	79000.00
12	7.59E-03	4.50E-01	28000.00	11200.00
13	7.59E-03	4.50E-01	28000.00	11200.00
14	7.59E-03	4.50E-01	28000.00	11200.00
15	7.59E-03	4.50E-01	28000.00	11200.00

Line supports

No.	Line support		Location	Support	
	new	modified		Direction X	Direction Z
A1	Yes		Mesh line No. 20	fixed	free
A2	Yes		Mesh line No. 18	fixed	free
A3	Yes		Mesh line No. 15	fixed	free
A4	Yes		Mesh line No. 12	fixed	free
A5	Yes		Mesh line No. 9	fixed	free
A6	Yes		Mesh line No. 6	fixed	free
A7	Yes		Mesh line No. 3	fixed	free
A8	Yes		Mesh line No. 22	fixed	free
A9	Yes		Mesh line No. 17	fixed	free
A10	Yes		Mesh line No. 14	fixed	free
A11	Yes		Mesh line No. 11	fixed	free
A12	Yes		Mesh line No. 8	fixed	free
A13	Yes		Mesh line No. 5	fixed	free
A14	Yes		Mesh line No. 1	fixed	free
A15	Yes		Mesh line No. 21	fixed	fixed
A1 up to A15 - automatically generated line supports along model edges					

Water

Water type : No water

Analysis settings

Stress

Method : Newton - Raphson
 Stiffness matrix change : after each iteration
 Max. number of iterations for one calc. step : 100
 Initial calculation step : 0.25
 Displacement error : 0.0100
 Imbalanced forces error : 0.0100
 Energy error : 0.0100
 Respect material interfaces : no

Plasticity

Return mapping error : 0.00100
 Max. number of iterations for one plast. step : 20

Newton - Raphson

Relaxation factor of calculation step : 2.00
 Maximum number of relaxations of calculation step : 2
 Min. number of iterations for one calc. step : 1

Line search

Solution method : iterate no
 Line search limit - minimum : 0.100
 Line search limit - maximum : 1.000

Results (Stage of construction 19)

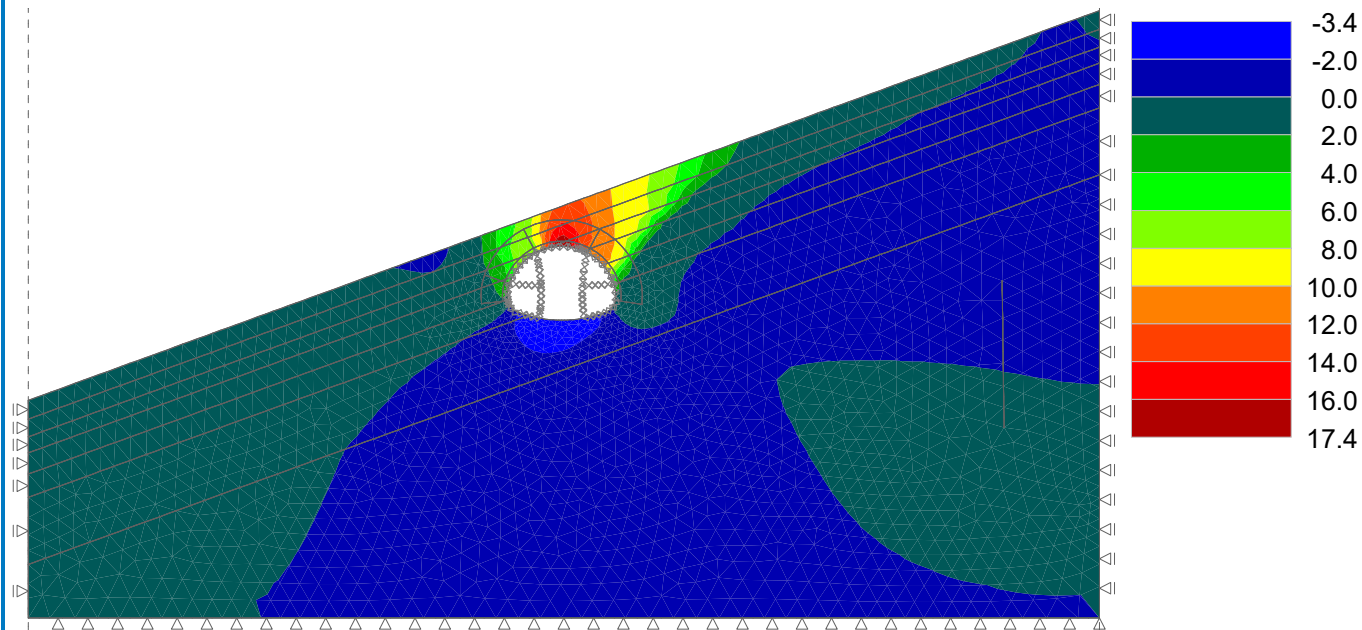
Stress analysis was successfully completed.

Analysis settings : **user-defined**

Attained loading = 100.00 %

Name : Analysis

Stage : 19

Results : overall; variable : Displacement d_z; range : <-3.4; 17.4> mm

Extremes

Displacements (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Displacements x [mm]	0.00	0.00	-15.2	4.12	2.67	29.4
Displacements z [mm]	4.12	2.67	-3.4	-0.40	7.47	17.4

Stress (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Total stress $\sigma_{z, \text{tot}}$ [kPa]	-5.45	13.03	0.00	96.79	-62.19	2205.97
Effective stress $\sigma_{z, \text{eff}}$ [kPa]	-5.45	13.03	0.00	96.79	-62.19	2205.97
Total stress $\sigma_{x, \text{tot}}$ [kPa]	100.81	51.70	-9.47	90.93	-62.19	723.70
Effective stress $\sigma_{x, \text{eff}}$ [kPa]	100.81	51.70	-9.47	90.93	-62.19	723.70
Shear stress τ_{xz} [kPa]	9.78	0.41	-275.99	-4.06	6.69	220.98
Total mean stress $\sigma_{m, \text{tot}}$ [kPa]	100.81	51.70	5.39	90.93	-62.19	1220.23
Effective mean stress $\sigma_{m, \text{eff}}$ [kPa]	100.81	51.70	5.39	90.93	-62.19	1220.23
Equivalent deviatoric stress J [kPa]	4.14	16.51	6.66	96.79	-62.19	853.81
Total principal stress $\sigma_{1, \text{tot}}$ [kPa]	-6.28	-5.50	-33.55	90.93	-62.19	723.19
Effective principal stress $\sigma_{1, \text{eff}}$ [kPa]	-6.28	-5.50	-33.55	90.93	-62.19	723.19
Total principal stress $\sigma_{2, \text{tot}}$ [kPa]	100.81	51.70	21.36	96.79	-62.19	2206.10
Effective principal stress $\sigma_{2, \text{eff}}$ [kPa]	100.81	51.70	21.36	96.79	-62.19	2206.10
Total principal stress $\sigma_{3, \text{tot}}$ [kPa]	100.81	51.70	4.28	90.93	-62.19	732.14
Effective principal stress $\sigma_{3, \text{eff}}$ [kPa]	100.81	51.70	4.28	90.93	-62.19	732.14

Strain (extremes)

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	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Equivalent deviatoric strain E_d [%]	-2.13	-6.25	0.01	-4.06	6.69	0.43
Plastic equivalent deviatoric strain $E_{d, pl}$ [%]	-7.16	10.70	0.00	12.65	5.77	0.29
Strain ε_x [%]	12.65	5.77	-0.15	-100.00	-21.39	0.11
Strain ε_z [%]	-3.41	6.90	-0.04	-5.29	7.16	0.30
Shear strain γ_{xz} [%]	4.46	6.46	-0.19	-4.06	6.69	0.33
Plastic strain $\varepsilon_{x, pl}$ [%]	12.65	5.77	-0.14	-3.41	6.90	0.05
Plastic strain $\varepsilon_{z, pl}$ [%]	-3.41	6.90	-0.05	12.65	5.77	0.14
Plastic shear strain $\gamma_{xz, pl}$ [%]	12.65	5.77	-0.07	-3.41	6.90	0.16
Volumetric strain ε_v [%]	-6.28	-5.50	0.00	-5.29	7.16	0.26
Plastic volumetric strain $\varepsilon_{v, pl}$ [%]	-4.88	6.39	-0.01	-7.16	10.70	0.00
Principal strain ε_1 [%]	12.65	5.77	-0.16	-100.00	-24.91	0.05
Principal strain ε_2 [%]	-2.13	-6.25	0.01	-3.86	7.80	0.33
Principal strain ε_3 [%]			0.00			0.00

Pore pressures (extremes)

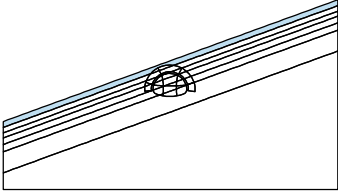
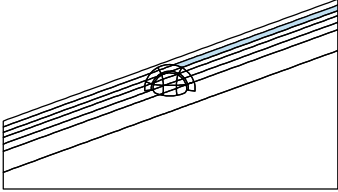
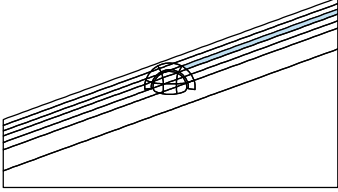
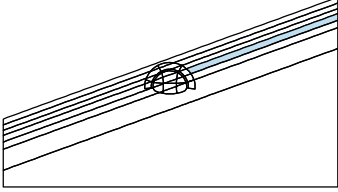
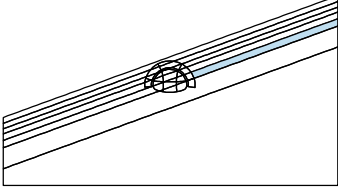
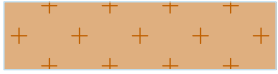
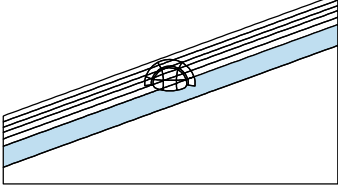
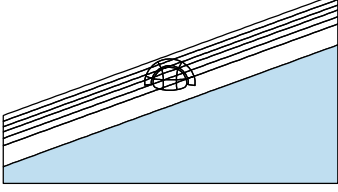
	Location		Max
	x [m]	z [m]	
Total pore pressure u_{tot} [kPa]			0.00

Distributions on beams (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
N [kN/m]	9.76	0.47	-1382.1	-9.76	0.48	42.0
M [kNm/m]	4.12	2.67	-96.0	-10.07	-2.67	94.1
Q [kN/m]	9.78	0.41	-96.9	4.82	6.28	111.7

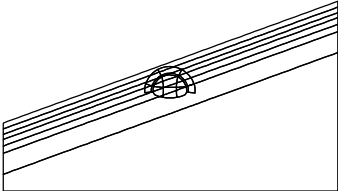
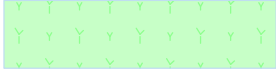
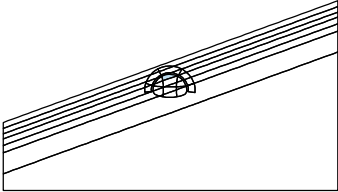
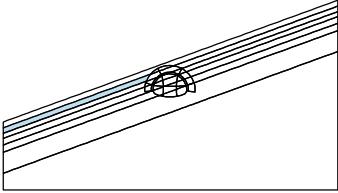
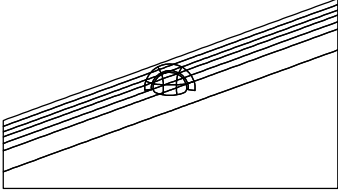
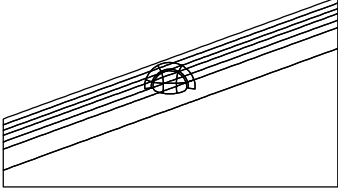
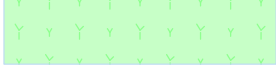
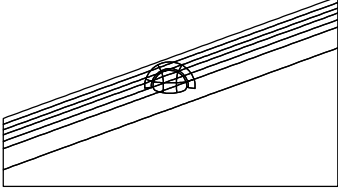
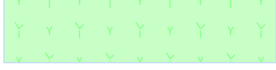
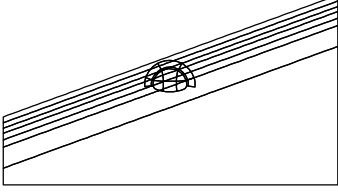
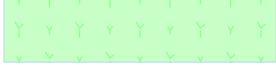
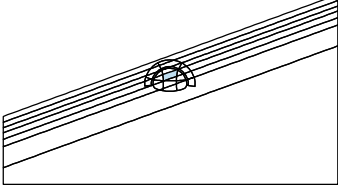
Input data (Stage of construction 20)

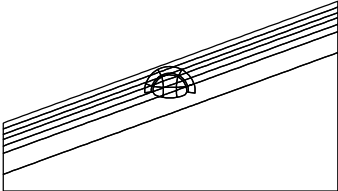
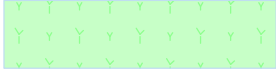
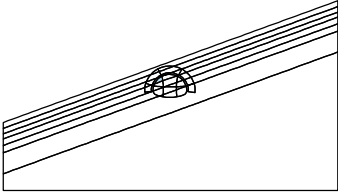
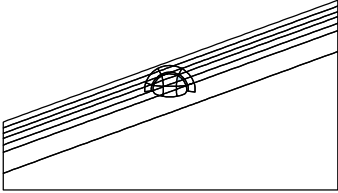
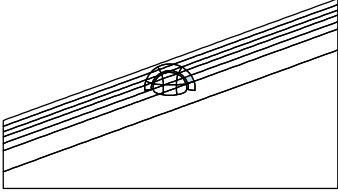
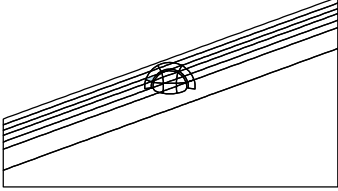
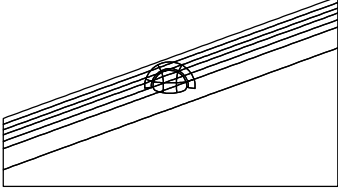
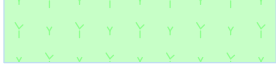
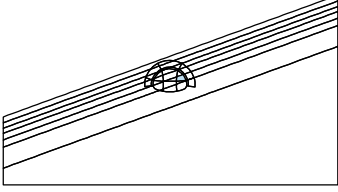
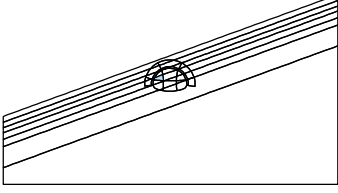
Assignment and activation

No.	Region	Active / inactive	Assigned soil
1		Active	□ □ □ □ □ □ □ 
2		Active	□ □ □ □ □ □ □ 
3		Active	□ □ □ □ □ □ □ 
4		Active	□ □ □ □ □ □ □ □ 
5		Active	□ □ □ □ □ □ □ □ 
6		Active	□ □ □ □ □ □ □ 
7		Active	□ □ □ □ □ □ □ 



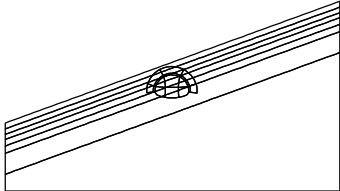
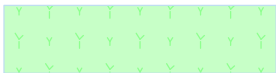
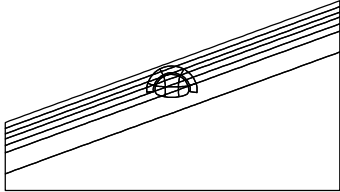
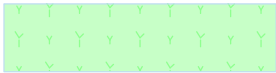
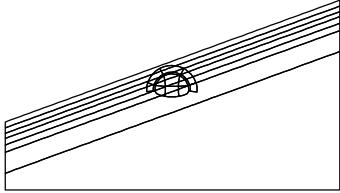
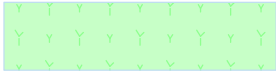
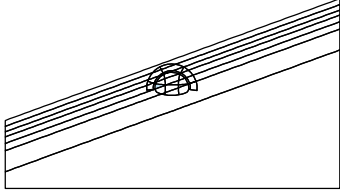
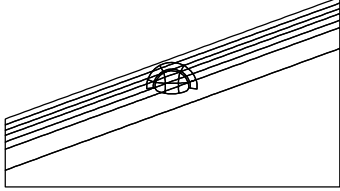
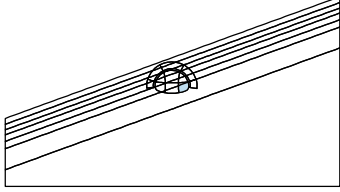
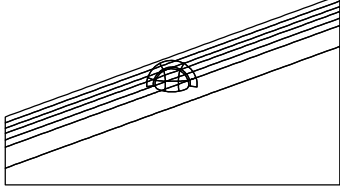
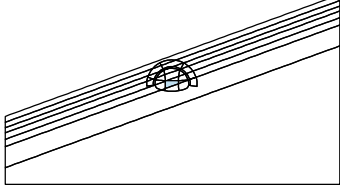
No.	Region	Active / inactive	Assigned soil
8		Active	☐ ☐ ☐ ☐ ☐
9		Active	☐ ☐ ☐ ☐ ☐
10		Active	☐ ☐ ☐ ☐ ☐
11		Active	☐ ☐ ☐ ☐ ☐
12		Active	☐ ☐ ☐ ☐ ☐
13		Active	☐ ☐ ☐ ☐ ☐
14		Active	☐ ☐ ☐ ☐ ☐
15		Active	☐ ☐ ☐ ☐

No.	Region	Active / inactive	Assigned soil
16		Active	□ □ □ □
			
17		Inactive	
18		Active	□ □ □ □ □ □ □
			
19		Active	□ □ □ □ □ □
			
20		Active	□ □ □ □
			
21		Active	□ □ □ □
			
22		Active	□ □ □ □
			
23		Inactive	

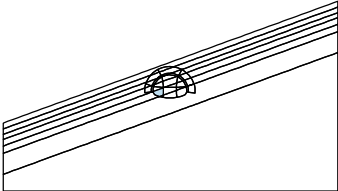
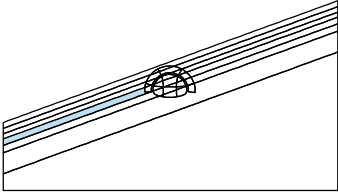
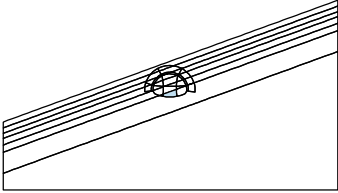
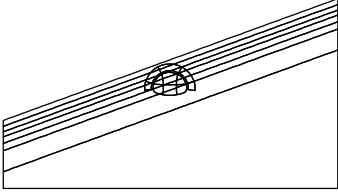
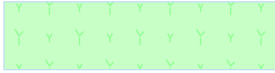
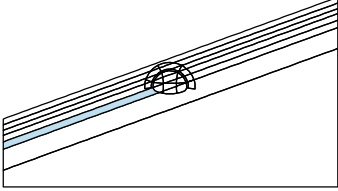
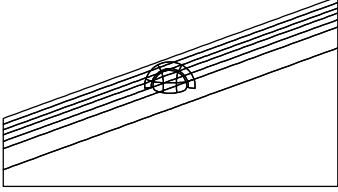
No.	Region	Active / inactive	Assigned soil
24		Active	□ □ □ □
			
25		Inactive	
26		Inactive	
27		Active	□ □ □ □ □
			
28		Active	□ □ □ □ □
			
29		Active	□ □ □ □
			
30		Inactive	
31		Inactive	



No.	Region	Active / inactive	Assigned soil
32		Active	□ □ □ □ □
33		Inactive	
34		Active	□ □ □ □ □
35		Active	□ □ □ □ □
36		Active	□ □ □ □ □
37		Active	□ □ □ □
38		Active	□ □ □ □ □
39		Active	□ □ □ □ □

No.	Region	Active / inactive	Assigned soil
40		Active	□ □ □ □
			
41		Active	□ □ □ □
			
42		Active	□ □ □ □
			
43		Inactive	
44		Inactive	
45		Inactive	
46		Excavation	Excavation No. 1 (□ □ 19 - 1)
			Soil remaining activity: 30.0 %
47		Excavation	Excavation No. 1 (□ □ 19 - 1)
			Soil remaining activity: 30.0 %

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No.	Region	Active / inactive	Assigned soil
48		Inactive	
49		Active	□ □ □ □ □ □ □ □ 
50		Excavation	Excavation No. 1 (□ □ 19 - 1) Soil remaining activity: 30.0 %
51		Active	□ □ □ □ 
52		Active	□ □ □ □ □ □ □ □ 
53		Inactive	

Beams

No.	Beam		Location	Support [m]		Include self weight	cross-section / Degradation in current stage [%]	Material / Beam current activity [%]	Contacts	
	new	modified		Start pt.	End pt.				left	right
1	No	No	Free line No. 9	○—	○—	Yes	without modification	without modification	(not input)	(not input)
2	No	No	Free line No. 18	○—	○—	Yes	without modification	without modification	(not input)	(not input)

No.	Beam		Location	Support [m]		Include self weight	Cross-section / Degradation in current stage [%]	Material / Beam current activity [%]	Contacts	
	new	modified		Start pt.	End pt.				left	right
3	No	No	Free line No. 3	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
4	No	No	Free line No. 11	○—	├—	Yes	without modificatio	without modificatio	(not input)	(not input)
5	No	No	Free line No. 2	├—	├—	Yes	without modificatio	without modificatio	(not input)	(not input)
6	No	No	Free line No. 21	├—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
7	No	No	Free line No. 17	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
8	No	No	Free line No. 7	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
9	No	No	Free line No. 19	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
10	No	No	Free line No. 5	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
11	No	No	Free line No. 20	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
12	No	No	Free line No. 10	├—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
13	No	No	Free line No. 1	├—	├—	Yes	without modificatio	without modificatio	(not input)	(not input)
14	No	No	Free line No. 23	○—	├—	Yes	without modificatio	without modificatio	(not input)	(not input)
15	No	No	Free line No. 8	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
16	Yes		Free line No. 22	○—	○—	Yes	1.00 (b) x 0.45 (h) m	C25 ¹ ÊÊÊ; E = 2800.00 MPa; G = 1120.00 MPa; α = 0.000010 1/K; γ = 25.00 kN/m ³	(not input)	(not input)

No.	Cross-section		Material	
	I _y [m ⁴ /m]	A [m ² /m]	E [MPa]	G [MPa]
1	7.59E-03	4.50E-01	28000.00	11200.00
2	5.94E-05	7.69E-03	206000.00	79000.00
3	5.94E-05	7.69E-03	206000.00	79000.00
4	7.59E-03	4.50E-01	28000.00	11200.00
5	7.59E-03	4.50E-01	28000.00	11200.00
6	7.59E-03	4.50E-01	28000.00	11200.00
7	5.94E-05	7.69E-03	206000.00	79000.00
8	7.59E-03	4.50E-01	28000.00	11200.00
9	5.94E-05	7.69E-03	206000.00	79000.00

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No.	Cross-section		Material	
	I _y [m ⁴ /m]	A [m ² /m]	E [MPa]	G [MPa]
10	5.94E-05	7.69E-03	206000.00	79000.00
11	5.94E-05	7.69E-03	206000.00	79000.00
12	7.59E-03	4.50E-01	28000.00	11200.00
13	7.59E-03	4.50E-01	28000.00	11200.00
14	7.59E-03	4.50E-01	28000.00	11200.00
15	7.59E-03	4.50E-01	28000.00	11200.00
16	7.59E-03	4.50E-01	2800.00	1120.00

Line supports

No.	Line support		Location	Support	
	new	modified		Direction X	Direction Z
A1	Yes		Mesh line No. 20	fixed	free
A2	Yes		Mesh line No. 18	fixed	free
A3	Yes		Mesh line No. 15	fixed	free
A4	Yes		Mesh line No. 12	fixed	free
A5	Yes		Mesh line No. 9	fixed	free
A6	Yes		Mesh line No. 6	fixed	free
A7	Yes		Mesh line No. 3	fixed	free
A8	Yes		Mesh line No. 22	fixed	free
A9	Yes		Mesh line No. 17	fixed	free
A10	Yes		Mesh line No. 14	fixed	free
A11	Yes		Mesh line No. 11	fixed	free
A12	Yes		Mesh line No. 8	fixed	free
A13	Yes		Mesh line No. 5	fixed	free
A14	Yes		Mesh line No. 1	fixed	free
A15	Yes		Mesh line No. 21	fixed	fixed
A1 up to A15 - automatically generated line supports along model edges					

Water

Water type : No water

Analysis settings

Stress

Method : Newton - Raphson
 Stiffness matrix change : after each iteration
 Max. number of iterations for one calc. step : 100
 Initial calculation step : 0.25
 Displacement error : 0.0100
 Imbalanced forces error : 0.0100
 Energy error : 0.0100
 Respect material interfaces : no

Plasticity

Return mapping error : 0.00100
 Max. number of iterations for one plast. step : 20

Newton - Raphson

Relaxation factor of calculation step : 2.00
 Maximum number of relaxations of calculation step : 2
 Min. number of iterations for one calc. step : 1

Line search

Solution method : iterate no

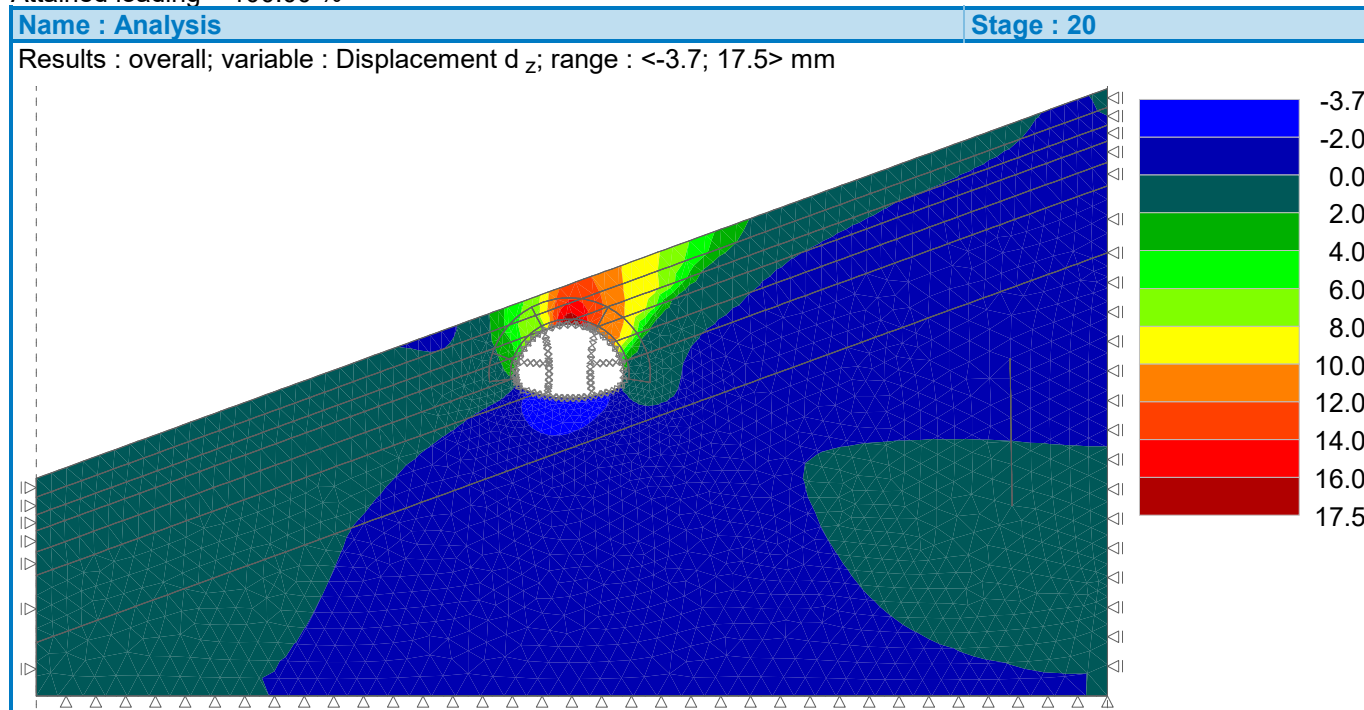
Line search limit - minimum : 0.100
Line search limit - maximum : 1.000

Results (Stage of construction 20)

Stress analysis was successfully completed.

Analysis settings : **user-defined**

Attained loading = 100.00 %



Extremes

Displacements (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Displacements x [mm]	0.00	0.00	-13.9	4.12	2.67	27.1
Displacements z [mm]	4.12	2.67	-3.7	-0.40	7.47	17.5

Stress (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Total stress $\sigma_{z, \text{tot}}$ [kPa]	-5.45	13.03	0.00	96.79	-62.19	2205.96
Effective stress $\sigma_{z, \text{eff}}$ [kPa]	-5.45	13.03	0.00	96.79	-62.19	2205.96
Total stress $\sigma_{x, \text{tot}}$ [kPa]	100.81	51.70	-9.47	90.93	-62.19	723.67
Effective stress $\sigma_{x, \text{eff}}$ [kPa]	100.81	51.70	-9.47	90.93	-62.19	723.67
Shear stress τ_{xz} [kPa]	4.46	6.46	-275.07	-4.06	6.69	219.51
Total mean stress $\sigma_{m, \text{tot}}$ [kPa]	100.81	51.70	5.39	90.93	-62.19	1220.21
Effective mean stress $\sigma_{m, \text{eff}}$ [kPa]	100.81	51.70	5.39	90.93	-62.19	1220.21
Equivalent deviatoric stress J [kPa]	4.14	16.51	6.60	96.79	-62.19	853.81
Total principal stress $\sigma_{1, \text{tot}}$ [kPa]	-6.28	-5.50	-33.74	90.93	-62.19	723.16
Effective principal stress $\sigma_{1, \text{eff}}$ [kPa]	-6.28	-5.50	-33.74	90.93	-62.19	723.16

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	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Total principal stress $\sigma_{2, \text{tot}}$ [kPa]	100.81	51.70	21.36	96.79	-62.19	2206.09
Effective principal stress $\sigma_{2, \text{eff}}$ [kPa]	100.81	51.70	21.36	96.79	-62.19	2206.09
Total principal stress $\sigma_{3, \text{tot}}$ [kPa]	100.81	51.70	4.28	90.93	-62.19	732.13
Effective principal stress $\sigma_{3, \text{eff}}$ [kPa]	100.81	51.70	4.28	90.93	-62.19	732.13

Strain (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Equivalent deviatoric strain E_d [%]	-2.13	-6.25	0.01	-4.06	6.69	0.43
Plastic equivalent deviatoric strain $E_{d, \text{pl}}$ [%]	-7.16	10.70	0.00	12.65	5.77	0.29
Strain ϵ_x [%]	12.65	5.77	-0.15	-100.00	-21.39	0.11
Strain ϵ_z [%]	-3.41	6.90	-0.04	-5.29	7.16	0.30
Shear strain γ_{xz} [%]	4.46	6.46	-0.19	-4.06	6.69	0.33
Plastic strain $\epsilon_{x, \text{pl}}$ [%]	12.65	5.77	-0.14	-3.41	6.90	0.05
Plastic strain $\epsilon_{z, \text{pl}}$ [%]	-3.41	6.90	-0.05	12.65	5.77	0.14
Plastic shear strain $\gamma_{xz, \text{pl}}$ [%]	12.65	5.77	-0.07	-3.41	6.90	0.16
Volumetric strain ϵ_v [%]	-6.28	-5.50	0.00	-5.29	7.16	0.26
Plastic volumetric strain $\epsilon_{v, \text{pl}}$ [%]	-4.88	6.39	-0.01	-7.16	10.70	0.00
Principal strain ϵ_1 [%]	12.65	5.77	-0.16	-100.00	-24.91	0.05
Principal strain ϵ_2 [%]	-2.13	-6.25	0.01	-3.86	7.80	0.33
Principal strain ϵ_3 [%]			0.00			0.00

Pore pressures (extremes)

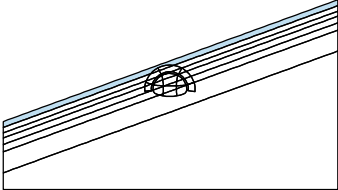
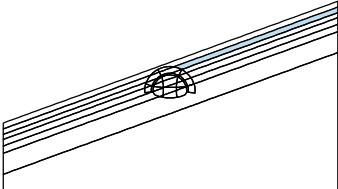
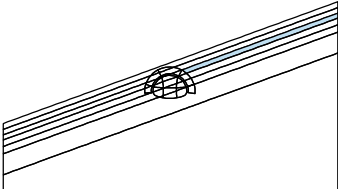
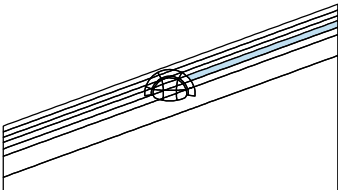
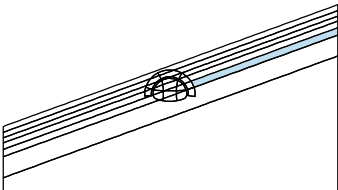
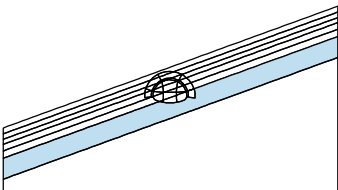
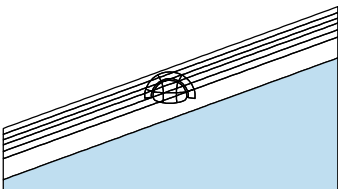
	Location		Max
	x [m]	z [m]	
Total pore pressure u_{tot} [kPa]			0.00

Distributions on beams (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
N [kN/m]	9.76	0.47	-1448.3	-9.76	0.48	55.7
M [kNm/m]	10.11	-1.14	-98.6	10.11	-1.14	98.6
Q [kN/m]	9.76	0.47	-123.0	4.82	6.28	105.0

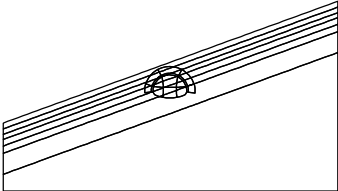
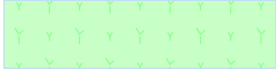
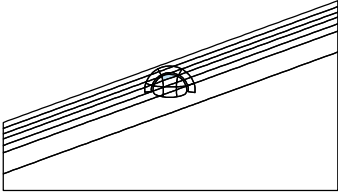
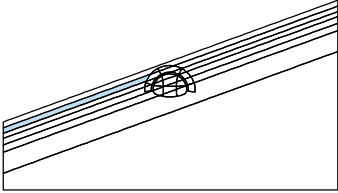
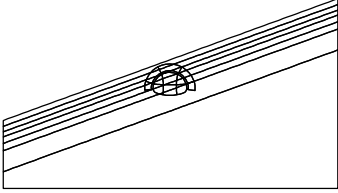
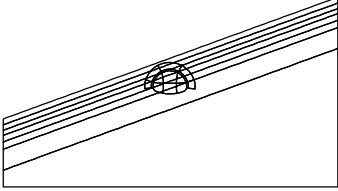
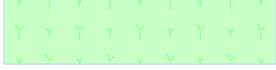
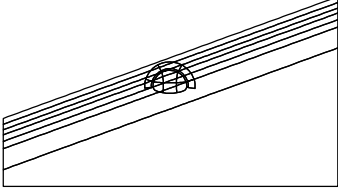
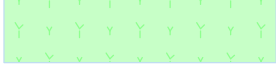
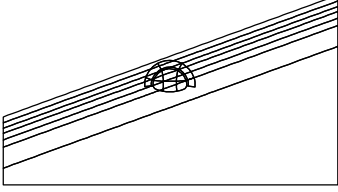
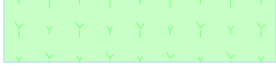
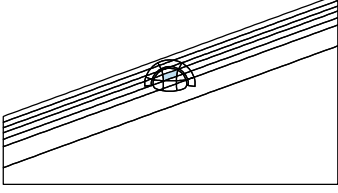
Input data (Stage of construction 21)

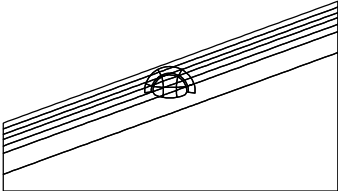
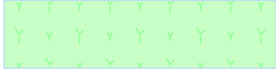
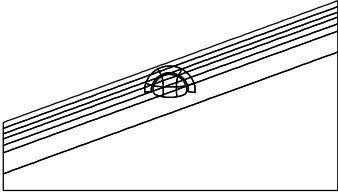
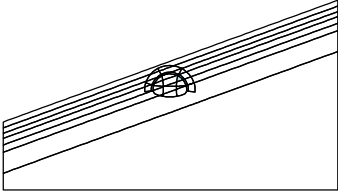
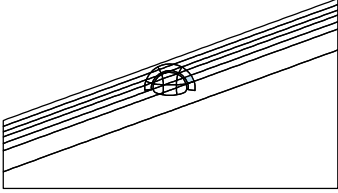
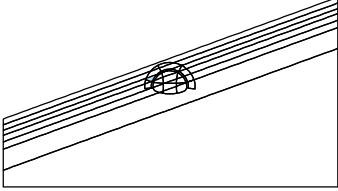
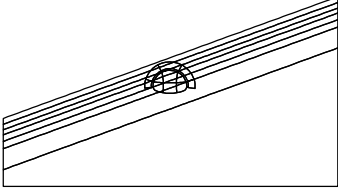
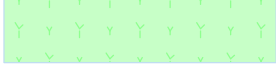
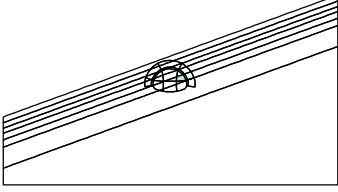
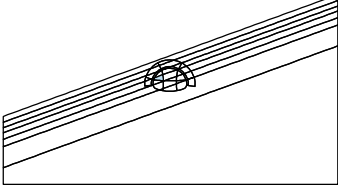
Assignment and activation

No.	Region	Active / inactive	Assigned soil
1		Active	□ □ □ □ □ □ □ 
2		Active	□ □ □ □ □ □ □ 
3		Active	□ □ □ □ □ □ □ 
4		Active	□ □ □ □ □ □ □ □ □ 
5		Active	□ □ □ □ □ □ □ □ □ 
6		Active	□ □ □ □ □ □ □ 
7		Active	□ □ □ □ □ □ □ 



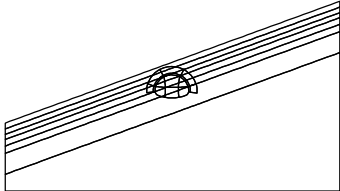
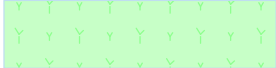
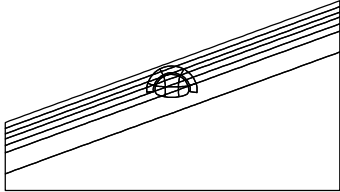
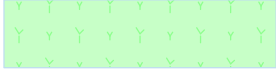
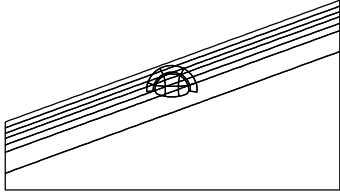
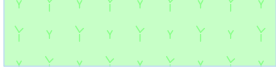
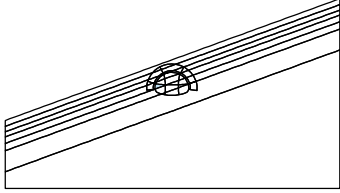
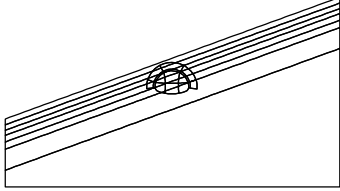
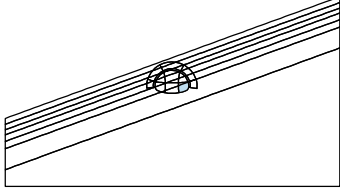
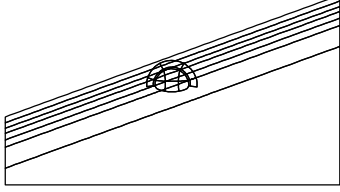
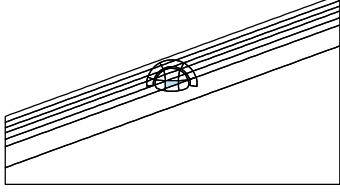
No.	Region	Active / inactive	Assigned soil
8		Active	
9		Active	
10		Active	
11		Active	
12		Active	
13		Active	
14		Active	
15		Active	

No.	Region	Active / inactive	Assigned soil
16		Active	□ □ □ □
			
17		Inactive	
18		Active	□ □ □ □ □ □ □
			
19		Active	□ □ □ □ □ □
			
20		Active	□ □ □ □
			
21		Active	□ □ □ □
			
22		Active	□ □ □ □
			
23		Inactive	

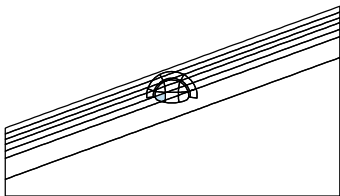
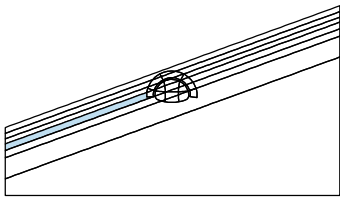
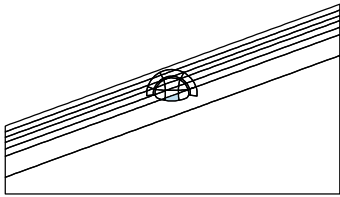
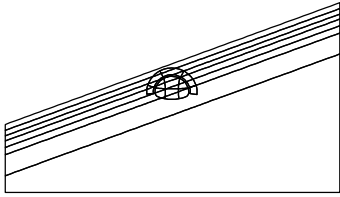
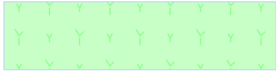
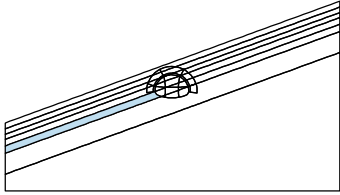
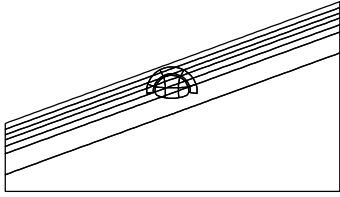
No.	Region	Active / inactive	Assigned soil
24		Active	□ □ □ □
			
25		Inactive	
26		Inactive	
27		Active	□ □ □ □ □
			
28		Active	□ □ □ □ □
			
29		Active	□ □ □ □
			
30		Inactive	
31		Inactive	



No.	Region	Active / inactive	Assigned soil
32		Active	□ □ □ □ □
33		Inactive	
34		Active	□ □ □ □ □
35		Active	□ □ □ □ □
36		Active	□ □ □ □ □
37		Active	□ □ □ □
38		Active	□ □ □ □ □
39		Active	□ □ □ □ □

No.	Region	Active / inactive	Assigned soil
40		Active	☐ ☐ ☐ ☐
			
41		Active	☐ ☐ ☐ ☐
			
42		Active	☐ ☐ ☐ ☐
			
43		Inactive	
44		Inactive	
45		Inactive	
46		Excavation	Excavation No. 1 (☐ ☐ 19 - 1)
			Soil remaining activity: 0.0 %
47		Excavation	Excavation No. 1 (☐ ☐ 19 - 1)
			Soil remaining activity: 0.0 %

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No.	Region	Active / inactive	Assigned soil
48		Inactive	
49		Active	□ □ □ □ □ □ □ □ 
50		Excavation	Excavation No. 1 (□ □ 19 - 1) Soil remaining activity: 0.0 %
51		Active	□ □ □ □ 
52		Active	□ □ □ □ □ □ □ □ 
53		Inactive	

Beams

No.	Beam		Location	Support [m]		Include self weight	cross-section / Degradation in current stage [%]	Material / Beam current activity [%]	Contacts	
	new	modified		Start pt.	End pt.				left	right
1	No	No	Free line No. 9	○—	○—	Yes	without modification	without modification	(not input)	(not input)
2	No	No	Free line No. 18	○—	○—	Yes	without modification	without modification	(not input)	(not input)

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No.	Beam		Location	Support [m]		Include self weight	Cross-section /	Material /	Contacts	
	new	modified		Start pt.	End pt.		Degradation in current stage [%]	Beam current activity [%]	left	right
3	No	No	Free line No. 3	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
4	No	No	Free line No. 11	○—	├—	Yes	without modificatio	without modificatio	(not input)	(not input)
5	No	No	Free line No. 2	├—	├—	Yes	without modificatio	without modificatio	(not input)	(not input)
6	No	No	Free line No. 21	├—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
7	No	No	Free line No. 17	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
8	No	No	Free line No. 7	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
9	No	No	Free line No. 19	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
10	No	No	Free line No. 5	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
11	No	No	Free line No. 20	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
12	No	No	Free line No. 10	├—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
13	No	No	Free line No. 1	├—	├—	Yes	without modificatio	without modificatio	(not input)	(not input)
14	No	No	Free line No. 23	○—	├—	Yes	without modificatio	without modificatio	(not input)	(not input)
15	No	No	Free line No. 8	○—	○—	Yes	without modificatio	without modificatio	(not input)	(not input)
16	No	Yes	Free line No. 22	○—	○—	Yes	↑ h = 0.45 m	↑ E = 28000.00 MPa; G = 11200.00 MPa	(not input)	(not input)

No.	Cross-section		Material	
	I _y [m ⁴ /m]	A [m ² /m]	E [MPa]	G [MPa]
1	7.59E-03	4.50E-01	28000.00	11200.00
2	5.94E-05	7.69E-03	206000.00	79000.00
3	5.94E-05	7.69E-03	206000.00	79000.00
4	7.59E-03	4.50E-01	28000.00	11200.00
5	7.59E-03	4.50E-01	28000.00	11200.00
6	7.59E-03	4.50E-01	28000.00	11200.00
7	5.94E-05	7.69E-03	206000.00	79000.00
8	7.59E-03	4.50E-01	28000.00	11200.00
9	5.94E-05	7.69E-03	206000.00	79000.00
10	5.94E-05	7.69E-03	206000.00	79000.00
11	5.94E-05	7.69E-03	206000.00	79000.00
12	7.59E-03	4.50E-01	28000.00	11200.00
13	7.59E-03	4.50E-01	28000.00	11200.00

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No.	Cross-section		Material	
	I_y [m ⁴ /m]	A [m ² /m]	E [MPa]	G [MPa]
14	7.59E-03	4.50E-01	28000.00	11200.00
15	7.59E-03	4.50E-01	28000.00	11200.00
16	7.59E-03	4.50E-01	28000.00	11200.00

Line supports

No.	Line support		Location	Support	
	new	modified		Direction X	Direction Z
A1	Yes		Mesh line No. 20	fixed	free
A2	Yes		Mesh line No. 18	fixed	free
A3	Yes		Mesh line No. 15	fixed	free
A4	Yes		Mesh line No. 12	fixed	free
A5	Yes		Mesh line No. 9	fixed	free
A6	Yes		Mesh line No. 6	fixed	free
A7	Yes		Mesh line No. 3	fixed	free
A8	Yes		Mesh line No. 22	fixed	free
A9	Yes		Mesh line No. 17	fixed	free
A10	Yes		Mesh line No. 14	fixed	free
A11	Yes		Mesh line No. 11	fixed	free
A12	Yes		Mesh line No. 8	fixed	free
A13	Yes		Mesh line No. 5	fixed	free
A14	Yes		Mesh line No. 1	fixed	free
A15	Yes		Mesh line No. 21	fixed	fixed
A1 up to A15 - automatically generated line supports along model edges					

Water

Water type : No water

Analysis settings

Stress

Method : Newton - Raphson
 Stiffness matrix change : after each iteration
 Max. number of iterations for one calc. step : 100
 Initial calculation step : 0.25
 Displacement error : 0.0100
 Imbalanced forces error : 0.0100
 Energy error : 0.0100
 Respect material interfaces : no

Plasticity

Return mapping error : 0.00100
 Max. number of iterations for one plast. step : 20

Newton - Raphson

Relaxation factor of calculation step : 2.00
 Maximum number of relaxations of calculation step : 2
 Min. number of iterations for one calc. step : 1

Line search

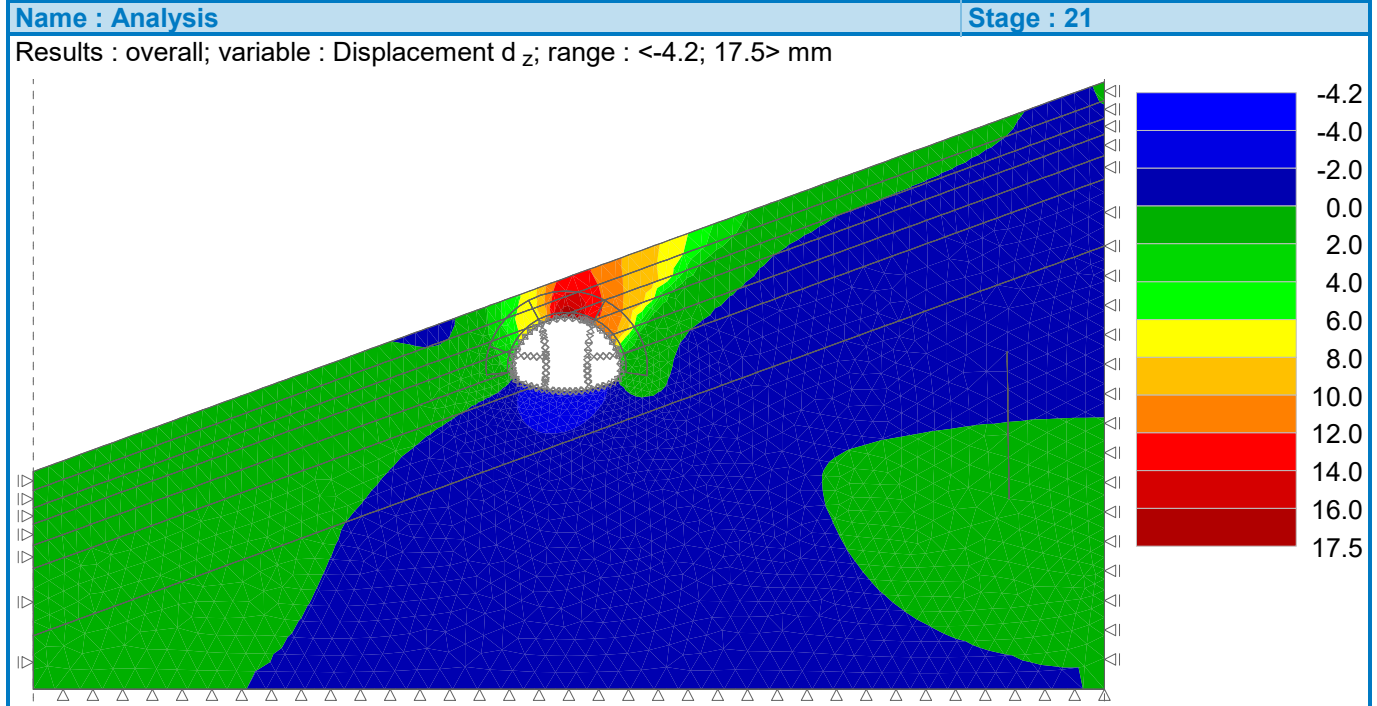
Solution method : iterate no
 Line search limit - minimum : 0.100
 Line search limit - maximum : 1.000

Results (Stage of construction 21)

Stress analysis was successfully completed.

Analysis settings : **user-defined**

Attained loading = 100.00 %



Extremes

Displacements (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Displacements x [mm]	0.00	0.00	-12.6	4.12	2.67	24.8
Displacements z [mm]	4.12	2.67	-4.2	-0.40	7.47	17.5

Stress (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Total stress $\sigma_{z, \text{tot}}$ [kPa]	-5.45	13.03	0.00	96.79	-62.19	2205.94
Effective stress $\sigma_{z, \text{eff}}$ [kPa]	-5.45	13.03	0.00	96.79	-62.19	2205.94
Total stress $\sigma_{x, \text{tot}}$ [kPa]	-1.06	-6.32	-15.07	90.93	-62.19	723.63
Effective stress $\sigma_{x, \text{eff}}$ [kPa]	-1.06	-6.32	-15.07	90.93	-62.19	723.63
Shear stress τ_{xz} [kPa]	4.46	6.46	-275.39	-4.06	6.69	218.18
Total mean stress $\sigma_{m, \text{tot}}$ [kPa]	-1.06	-6.32	2.82	96.79	-62.19	1220.19
Effective mean stress $\sigma_{m, \text{eff}}$ [kPa]	-1.06	-6.32	2.82	96.79	-62.19	1220.19
Equivalent deviatoric stress J [kPa]	4.14	16.51	6.55	96.79	-62.19	853.82
Total principal stress $\sigma_{1, \text{tot}}$ [kPa]	-6.28	-5.50	-33.49	90.93	-62.19	723.12
Effective principal stress $\sigma_{1, \text{eff}}$ [kPa]	-6.28	-5.50	-33.49	90.93	-62.19	723.12
Total principal stress $\sigma_{2, \text{tot}}$ [kPa]	100.81	51.70	21.36	96.79	-62.19	2206.08
Effective principal stress $\sigma_{2, \text{eff}}$ [kPa]	100.81	51.70	21.36	96.79	-62.19	2206.08

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	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Total principal stress $\sigma_{3, \text{tot}}$ [kPa]	-1.06	-6.32	1.96	96.79	-62.19	732.11
Effective principal stress $\sigma_{3, \text{eff}}$ [kPa]	-1.06	-6.32	1.96	96.79	-62.19	732.11

Strain (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Equivalent deviatoric strain E_d [%]	-1.20	-7.26	0.00	-4.06	6.69	0.43
Plastic equivalent deviatoric strain $E_{d, pl}$ [%]	-7.16	10.70	0.00	12.65	5.77	0.29
Strain ε_x [%]	12.65	5.77	-0.16	-100.00	-21.39	0.11
Strain ε_z [%]	-3.41	6.90	-0.04	-5.29	7.16	0.30
Shear strain γ_{xz} [%]	4.46	6.46	-0.20	-4.06	6.69	0.33
Plastic strain $\varepsilon_{x, pl}$ [%]	12.65	5.77	-0.14	-3.41	6.90	0.05
Plastic strain $\varepsilon_{z, pl}$ [%]	-3.41	6.90	-0.05	12.65	5.77	0.14
Plastic shear strain $\gamma_{xz, pl}$ [%]	12.65	5.77	-0.07	-3.41	6.90	0.16
Volumetric strain ε_v [%]	-1.06	-6.32	0.00	-5.29	7.16	0.26
Plastic volumetric strain $\varepsilon_{v, pl}$ [%]	-4.88	6.39	-0.01	-7.16	10.70	0.00
Principal strain ε_1 [%]	12.65	5.77	-0.16	-100.00	-24.91	0.05
Principal strain ε_2 [%]	-1.06	-6.32	0.00	-3.86	7.80	0.32
Principal strain ε_3 [%]			0.00			0.00

Pore pressures (extremes)

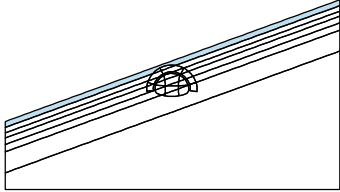
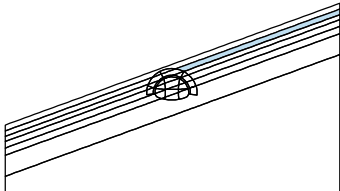
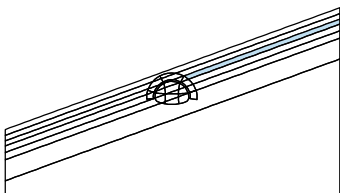
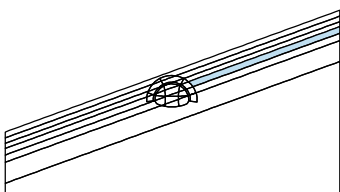
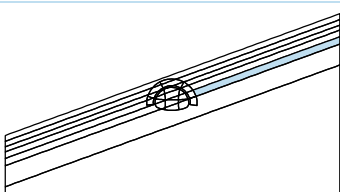
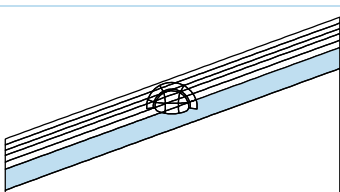
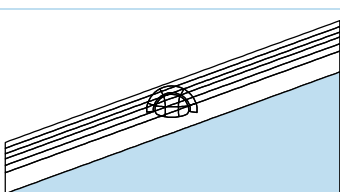
	Location		Max
	x [m]	z [m]	
Total pore pressure u_{tot} [kPa]			0.00

Distributions on beams (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
N [kN/m]	9.76	0.47	-1518.3	8.59	0.37	100.2
M [kNm/m]	10.11	-1.14	-115.0	10.11	-1.14	115.0
Q [kN/m]	9.76	0.47	-151.7	4.82	6.28	99.1

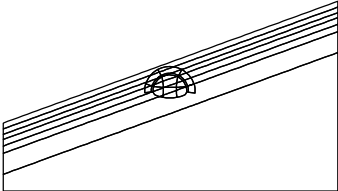
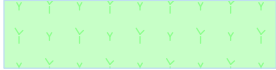
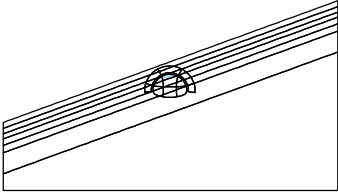
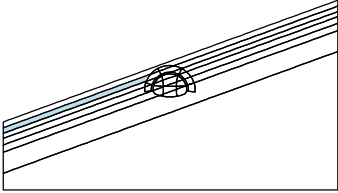
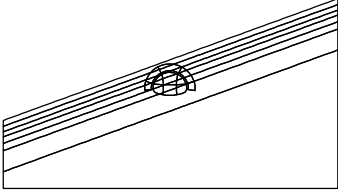
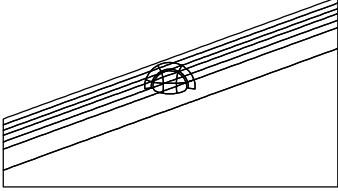
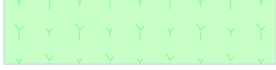
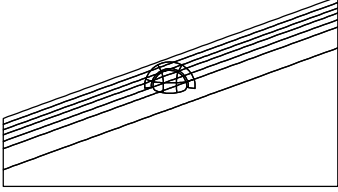
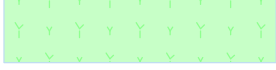
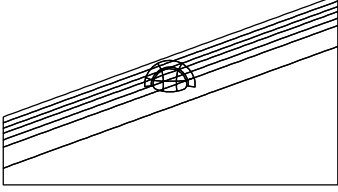
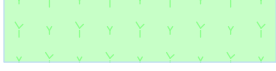
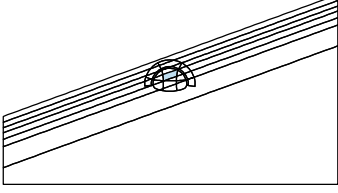
Input data (Stage of construction 22)

Assignment and activation

No.	Region	Active / inactive	Assigned soil
1		Active	□ □ □ □ □ □ □ 
2		Active	□ □ □ □ □ □ □ 
3		Active	□ □ □ □ □ □ □ 
4		Active	□ □ □ □ □ □ □ □ 
5		Active	□ □ □ □ □ □ □ □ 
6		Active	□ □ □ □ □ □ □ 
7		Active	□ □ □ □ □ □ □ 



No.	Region	Active / inactive	Assigned soil
8		Active	
9		Active	
10		Active	
11		Active	
12		Active	
13		Active	
14		Active	
15		Active	

No.	Region	Active / inactive	Assigned soil
16		Active	□ □ □ □
			
17		Inactive	
18		Active	□ □ □ □ □ □ □
			
19		Active	□ □ □ □ □ □
			
20		Active	□ □ □ □
			
21		Active	□ □ □ □
			
22		Active	□ □ □ □
			
23		Inactive	

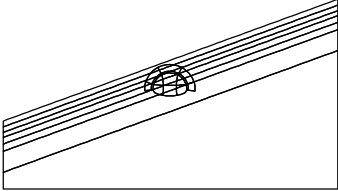
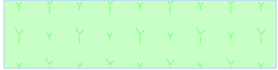
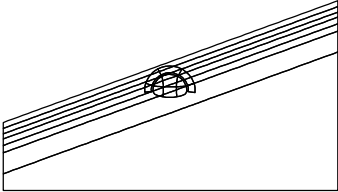
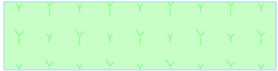
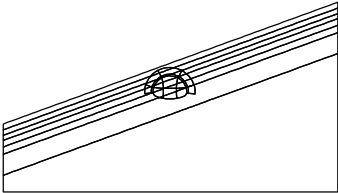
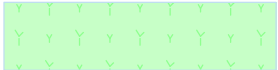
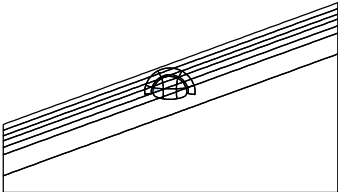
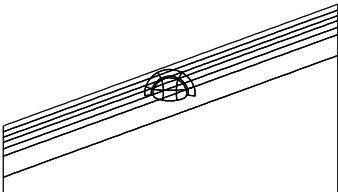
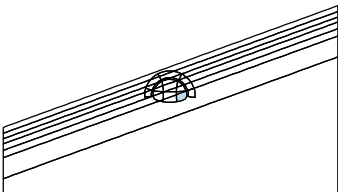
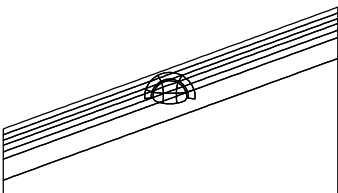
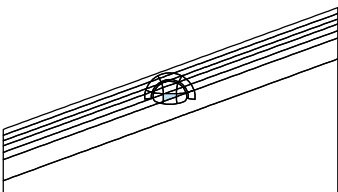


No.	Region	Active / inactive	Assigned soil
24		Active	
25		Inactive	
26		Inactive	
27		Active	
28		Active	
29		Active	
30		Inactive	
31		Inactive	

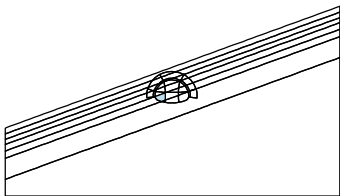
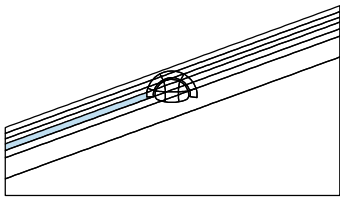
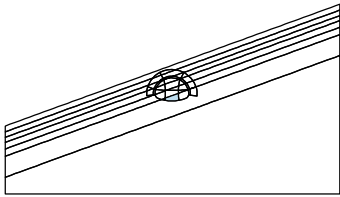
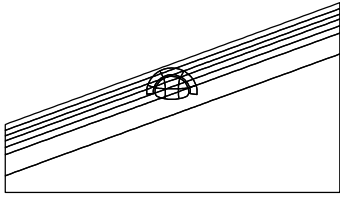
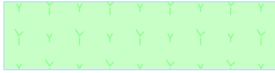
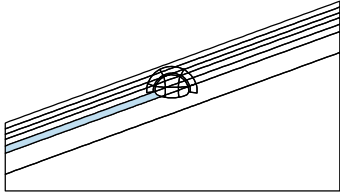
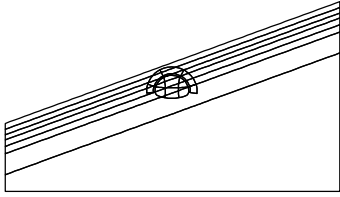


No.	Region	Active / inactive	Assigned soil
32		Active	
33		Inactive	
34		Active	
35		Active	
36		Active	
37		Active	
38		Active	
39		Active	

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No.	Region	Active / inactive	Assigned soil
40		Active	☐ ☐ ☐ ☐
			
41		Active	☐ ☐ ☐ ☐
			
42		Active	☐ ☐ ☐ ☐
			
43		Inactive	
44		Inactive	
45		Inactive	
46		Inactive	
47		Inactive	

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No.	Region	Active / inactive	Assigned soil
48		Inactive	
49		Active	□ □ □ □ □ □ □ □ 
50		Inactive	
51		Active	□ □ □ □ 
52		Active	□ □ □ □ □ □ □ □ 
53		Inactive	

Beams

No.	Beam		Location	Support [m]		Include self weight	cross-section / Degradation in current stage [%]	Material / Beam current activity [%]	Contacts	
	new	modified		Start pt.	End pt.				left	right
1	No	No	Free line No. 9			Yes	without modification	without modification	(not input)	(not input)
2	No	No	Free line No. 11			Yes	without modification	without modification	(not input)	(not input)

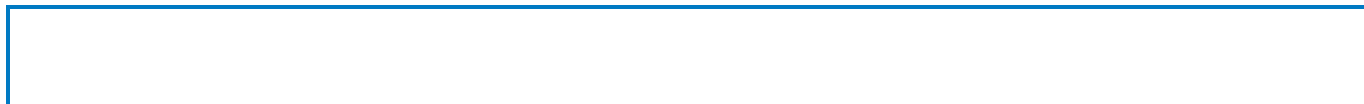
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No.	Beam		Location	Support [m]		Include self weight	Cross-section / Degradation in current stage [%]	Material / Beam current activity [%]	Contacts	
	new	modified		Start pt.	End pt.				left	right
3	No	No	Free line No. 2	├─	├─	Yes	without modificatio	without modificatio	(not input)	(not input)
4	No	No	Free line No. 21	├─	○─	Yes	without modificatio	without modificatio	(not input)	(not input)
5	No	No	Free line No. 7	○─	○─	Yes	without modificatio	without modificatio	(not input)	(not input)
6	No	No	Free line No. 10	├─	○─	Yes	without modificatio	without modificatio	(not input)	(not input)
7	No	No	Free line No. 1	├─	├─	Yes	without modificatio	without modificatio	(not input)	(not input)
8	No	No	Free line No. 23	○─	├─	Yes	without modificatio	without modificatio	(not input)	(not input)
9	No	No	Free line No. 8	○─	○─	Yes	without modificatio	without modificatio	(not input)	(not input)
10	No	No	Free line No. 22	○─	○─	Yes	without modificatio	without modificatio	(not input)	(not input)

No.	Cross-section		Material	
	I _y [m ⁴ /m]	A [m ² /m]	E [MPa]	G [MPa]
1	7.59E-03	4.50E-01	28000.00	11200.00
2	7.59E-03	4.50E-01	28000.00	11200.00
3	7.59E-03	4.50E-01	28000.00	11200.00
4	7.59E-03	4.50E-01	28000.00	11200.00
5	7.59E-03	4.50E-01	28000.00	11200.00
6	7.59E-03	4.50E-01	28000.00	11200.00
7	7.59E-03	4.50E-01	28000.00	11200.00
8	7.59E-03	4.50E-01	28000.00	11200.00
9	7.59E-03	4.50E-01	28000.00	11200.00
10	7.59E-03	4.50E-01	28000.00	11200.00

Line supports

No.	Line support		Location	Support	
	new	modified		Direction X	Direction Z
A1	Yes		Mesh line No. 20	fixed	free
A2	Yes		Mesh line No. 18	fixed	free
A3	Yes		Mesh line No. 15	fixed	free
A4	Yes		Mesh line No. 12	fixed	free
A5	Yes		Mesh line No. 9	fixed	free
A6	Yes		Mesh line No. 6	fixed	free
A7	Yes		Mesh line No. 3	fixed	free
A8	Yes		Mesh line No. 22	fixed	free
A9	Yes		Mesh line No. 17	fixed	free
A10	Yes		Mesh line No. 14	fixed	free
A11	Yes		Mesh line No. 11	fixed	free
A1 up to A15 - automatically generated line supports along model edges					



No.	Line support		Location	Support	
	new	modified		Direction X	Direction Z
A12	Yes		Mesh line No. 8	fixed	free
A13	Yes		Mesh line No. 5	fixed	free
A14	Yes		Mesh line No. 1	fixed	free
A15	Yes		Mesh line No. 21	fixed	fixed
A1 up to A15 - automatically generated line supports along model edges					

Water

Water type : No water

Analysis settings

Stress

Method :	Newton - Raphson
Stiffness matrix change :	after each iteration
Max. number of iterations for one calc. step :	100
Initial calculation step :	0.25
Displacement error :	0.0100
Imbalanced forces error :	0.0100
Energy error :	0.0100
Respect material interfaces :	no

Plasticity

Return mapping error :	0.00100
Max. number of iterations for one plast. step :	20

Newton - Raphson

Relaxation factor of calculation step :	2.00
Maximum number of relaxations of calculation step :	2
Min. number of iterations for one calc. step :	1

Line search

Solution method :	iterate no
Line search limit - minimum :	0.100
Line search limit - maximum :	1.000

Results (Stage of construction 22)

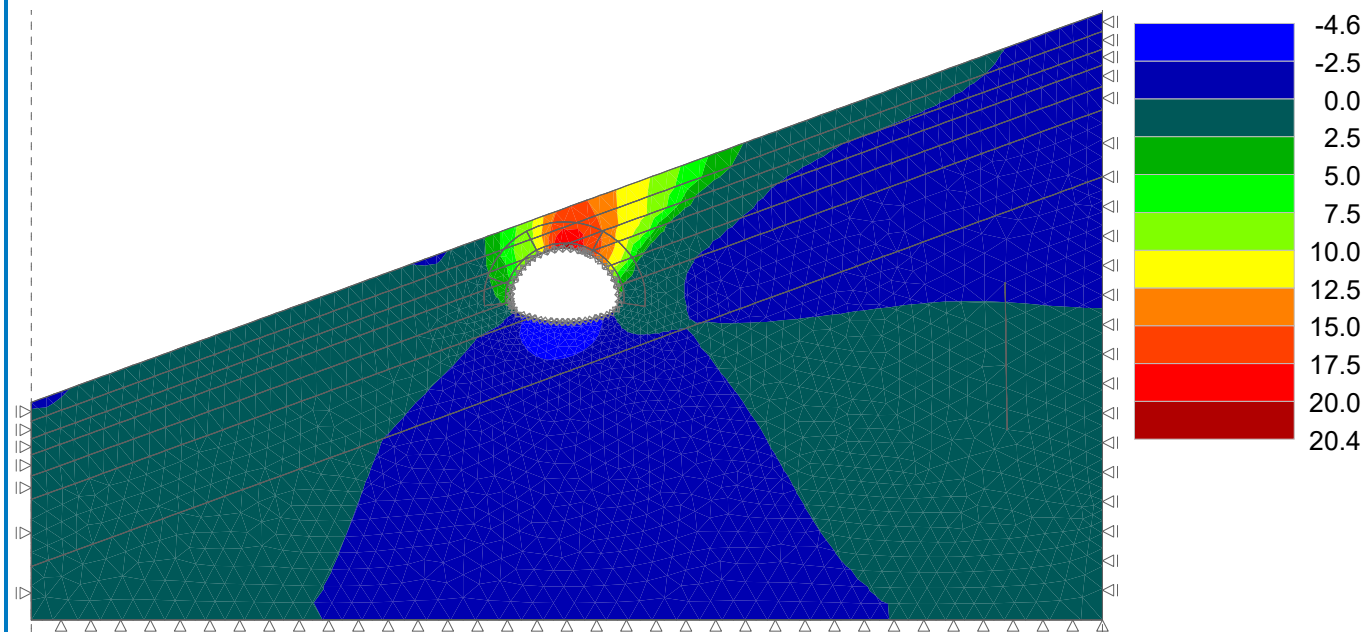
Stress analysis was successfully completed.

Analysis settings : **user-defined**

Attained loading = 100.00 %

Name : Analysis

Stage : 22

Results : overall; variable : Displacement d_z; range : <-4.6; 20.4> mm

Extremes

Displacements (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Displacements x [mm]	0.00	0.00	-1.5	9.15	18.34	10.2
Displacements z [mm]	9.15	18.34	-4.6	1.13	7.41	20.4

Stress (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Total stress $\sigma_{z, \text{tot}}$ [kPa]	-3.18	-6.13	-30.26	96.79	-62.19	2207.47
Effective stress $\sigma_{z, \text{eff}}$ [kPa]	-3.18	-6.13	-30.26	96.79	-62.19	2207.47
Total stress $\sigma_{x, \text{tot}}$ [kPa]	-1.06	-6.32	-10.03	90.93	-62.19	724.23
Effective stress $\sigma_{x, \text{eff}}$ [kPa]	-1.06	-6.32	-10.03	90.93	-62.19	724.23
Shear stress τ_{xz} [kPa]	9.80	0.35	-273.47	-9.76	0.48	211.70
Total mean stress $\sigma_{m, \text{tot}}$ [kPa]	-3.18	-6.13	-4.15	90.93	-62.19	1221.09
Effective mean stress $\sigma_{m, \text{eff}}$ [kPa]	-3.18	-6.13	-4.15	90.93	-62.19	1221.09
Equivalent deviatoric stress J [kPa]	4.14	16.51	5.60	96.79	-62.19	854.37
Total principal stress $\sigma_{1, \text{tot}}$ [kPa]	-5.26	-5.75	-48.14	90.93	-62.19	723.72
Effective principal stress $\sigma_{1, \text{eff}}$ [kPa]	-5.26	-5.75	-48.14	90.93	-62.19	723.72
Total principal stress $\sigma_{2, \text{tot}}$ [kPa]	100.81	51.70	21.36	96.79	-62.19	2207.60
Effective principal stress $\sigma_{2, \text{eff}}$ [kPa]	100.81	51.70	21.36	96.79	-62.19	2207.60
Total principal stress $\sigma_{3, \text{tot}}$ [kPa]	-3.18	-6.13	-3.48	90.93	-62.19	732.65
Effective principal stress $\sigma_{3, \text{eff}}$ [kPa]	-3.18	-6.13	-3.48	90.93	-62.19	732.65

Strain (extremes)

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	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
Equivalent deviatoric strain E_d [%]	-2.59	-7.45	0.00	-4.06	6.69	0.43
Plastic equivalent deviatoric strain $E_{d, pl}$ [%]	-7.16	10.70	0.00	12.65	5.77	0.29
Strain ε_x [%]	12.65	5.77	-0.16	-100.00	-21.39	0.11
Strain ε_z [%]	-3.41	6.90	-0.04	-5.29	7.16	0.29
Shear strain γ_{xz} [%]	4.46	6.46	-0.26	-4.06	6.69	0.34
Plastic strain $\varepsilon_{x, pl}$ [%]	12.65	5.77	-0.14	-3.41	6.90	0.06
Plastic strain $\varepsilon_{z, pl}$ [%]	-3.41	6.90	-0.06	12.65	5.77	0.14
Plastic shear strain $\gamma_{xz, pl}$ [%]	4.46	6.46	-0.15	-4.82	6.28	0.22
Volumetric strain ε_v [%]	-3.18	-6.13	0.00	-5.29	7.16	0.25
Plastic volumetric strain $\varepsilon_{v, pl}$ [%]	-4.88	6.39	-0.01	-7.16	10.70	0.00
Principal strain ε_1 [%]	12.65	5.77	-0.16	-100.00	-24.91	0.05
Principal strain ε_2 [%]	-2.13	-6.25	0.00	-5.29	7.16	0.32
Principal strain ε_3 [%]			0.00			0.00

Pore pressures (extremes)

	Location		Max
	x [m]	z [m]	
Total pore pressure u_{tot} [kPa]			0.00

Distributions on beams (extremes)

	Location		Min	Location		Max
	x [m]	z [m]		x [m]	z [m]	
N [kN/m]	9.24	1.73	-1874.7	-4.24	-5.96	-48.9
M [kNm/m]	10.11	-1.14	-115.5	-10.07	-2.67	131.9
Q [kN/m]	9.78	0.41	-126.0	4.82	6.28	62.7





中国中铁一局承建牛寨山隧道

注意安全

关注安全

中国中铁一局承建牛寨山隧道

建设文明工地



 中国中铁一局承建牛寨山隧道

