



SMITH WILLIAMS CONSULTANTS, INC.

Appendix C

Design Calculations



SMITH WILLIAMS CONSULTANTS, INC.

Appendix C.1

Geogrid Calculations



REPORT

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User: Smith Williams Consultants

Title: Geogrid



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1. General Information

Table [1] units

Type	Unit
Length	ft
Force	lb
Time	day

Table [2] Model dimensions

	min.	max.
X	0.000	25.000
Y	0.000	100.000

Table [3] Model

Model	Plane Strain
Element	15-Noded

2. Geometry

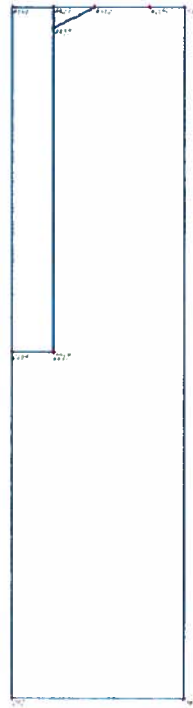


Fig. 1 Plot of geometry model with significant nodes

Table [4] Table of significant nodes

Node no.	x-coord.	y-coord.	Node no.	x-coord.	y-coord.
282	0.000	0.000	3981	25.000	100.000
2194	0.000	50.000	34	25.000	0.000
4191	0.000	100.000	4512	12.000	100.000
4427	6.000	100.000	4437	6.000	97.000
2217	6.000	50.000	4205	20.000	100.000

3. Structures

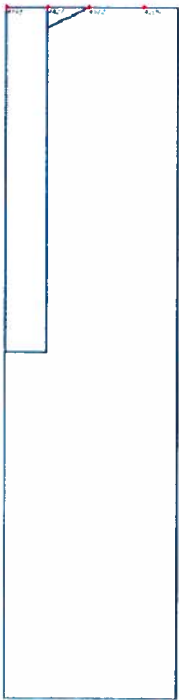


Fig. 2 Plot of geometry model with structures

Table [5] Geotextiles

Geotextiles no.	Data set	Length [ft]	Nodes
1	Geogrid	20.000	4191, 4427, 4512, 4205.

4. Results for phase 2

4.1. Deformations

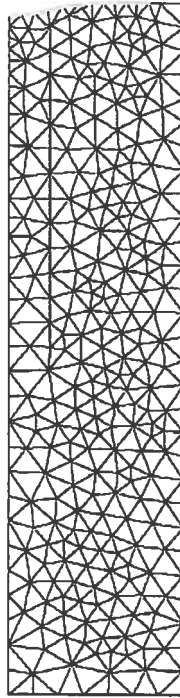


Fig. 3 Plot of deformed mesh
- Step no: 34 - (Phase: 2)

4.1.1. Plot of total displacements



Fig. 4 Plot of total displacements (arrows)
- Step no: 34 - (Phase: 2)

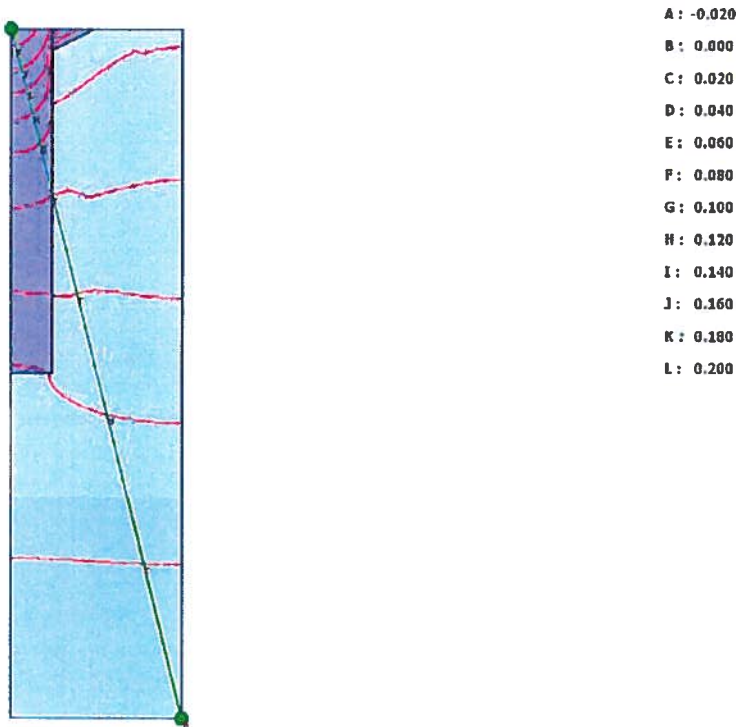


Fig. 5 Plot of total displacements (contour lines)
- Step no: 34 - (Phase: 2)

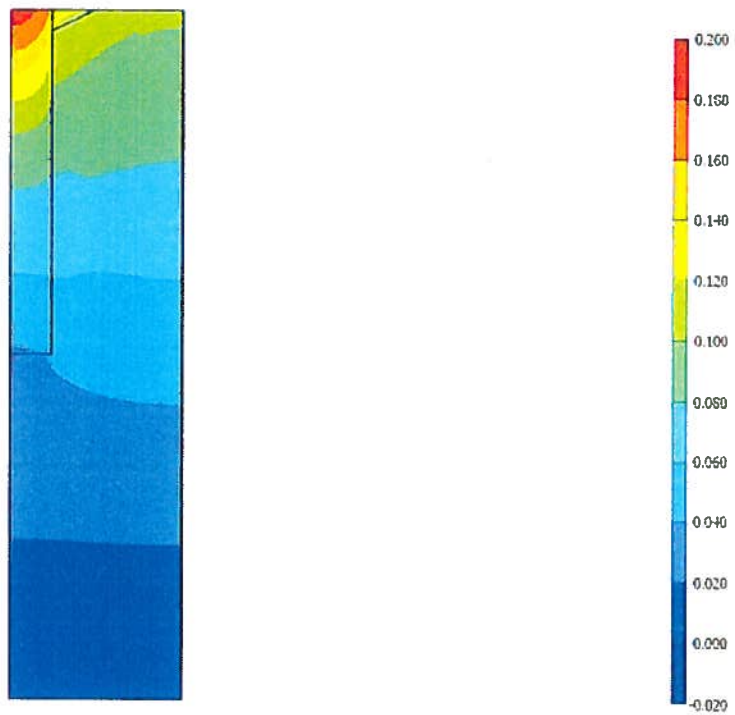


Fig. 6 Plot of total displacements (shadings)
- Step no: 34 - (Phase: 2)

4.1.2. Plot of horizontal displacements

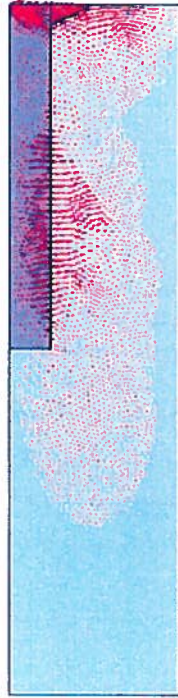


Fig. 7 Plot of horizontal displacements (arrows)
- Step no: 34 - (Phase: 2)

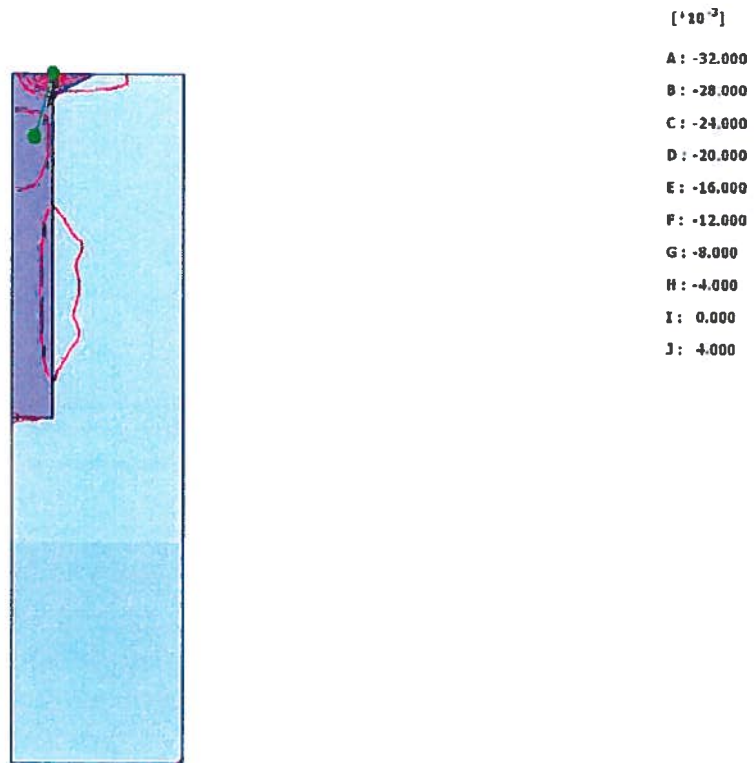


Fig. 8 Plot of horizontal displacements (contour lines)
- Step no: 34 - (Phase: 2)

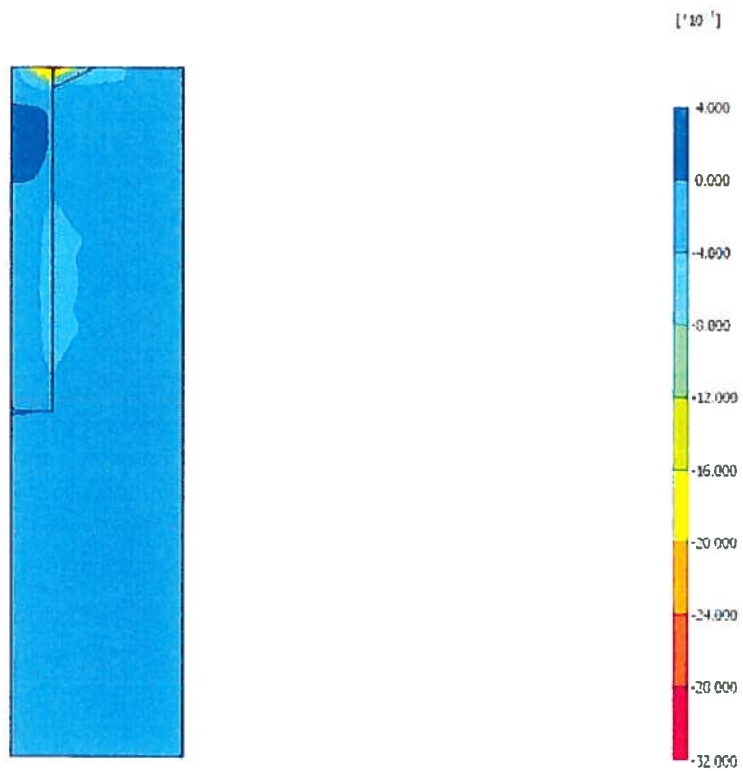
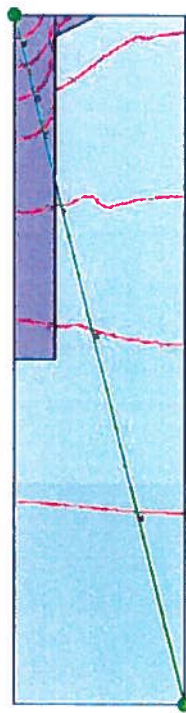


Fig. 9 Plot of horizontal displacements (shadings)
- Step no: 34 - (Phase: 2)

4.1.3. Plot of vertical displacements



Fig. 10 Plot of vertical displacements (arrows)
- Step no: 34 - (Phase: 2)



A : -0.200
B : -0.175
C : -0.150
D : -0.125
E : -0.100
F : -0.075
G : -0.050
H : -0.025
I : 0.000
J : 0.025

Fig. 11 Plot of vertical displacements (contour lines)
- Step no: 34 - (Phase: 2)

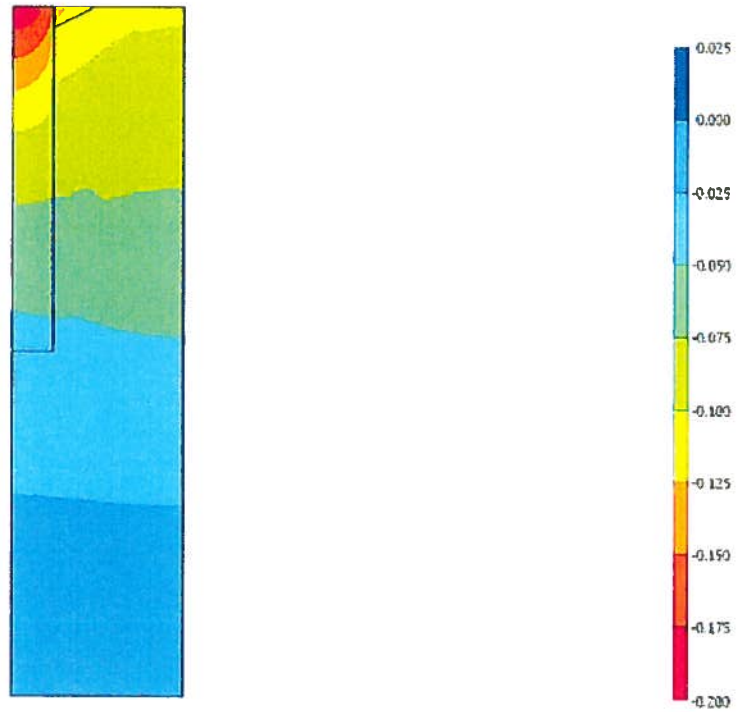


Fig. 12 Plot of vertical displacements (shadings)
- Step no: 34 - (Phase: 2)

4.1.4. Plot of total strains

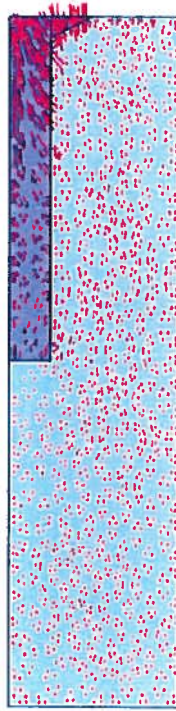
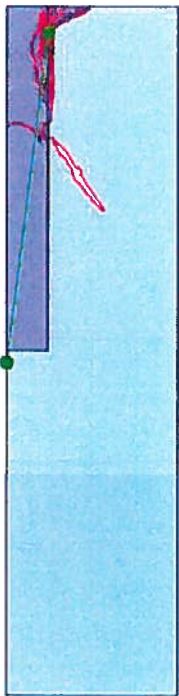


Fig. 13 Plot of total strains (principal directions)
- Step no: 34 - (Phase: 2)



A : -1.000
B : -0.900
C : -0.800
D : -0.700
E : -0.600
F : -0.500
G : -0.400
H : -0.300
I : -0.200
J : -0.100
K : 0.000

Fig. 14 Plot of total strains (volume contours)
- Step no: 34 - (Phase: 2)



A : 0.000
B : 0.250
C : 0.500
D : 0.750
E : 1.000
F : 1.250
G : 1.500
H : 1.750
I : 2.000
J : 2.250
K : 2.500

Fig. 15 Plot of total strains (shear contours)
- Step no: 34 - (Phase: 2)

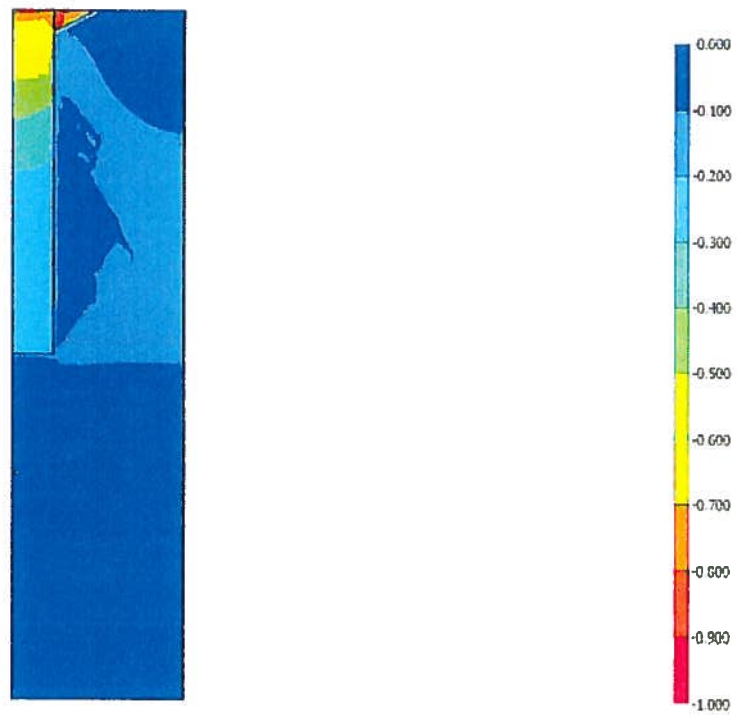


Fig. 16 Plot of total strains (volume shadings)
- Step no: 34 - (Phase: 2)

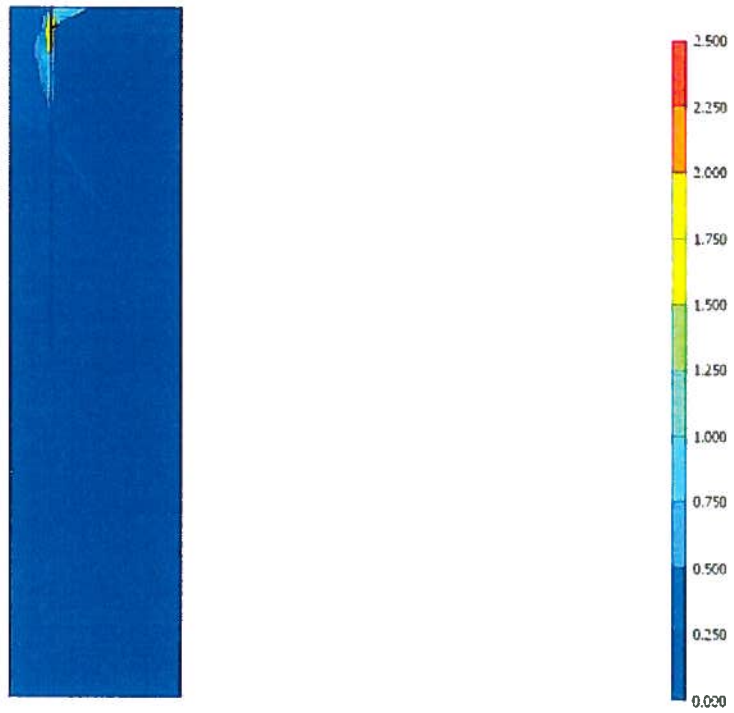


Fig. 17 Plot of total strains (shear shadings)
- Step no: 34 - (Phase: 2)

4.2. Stresses

4.2.5. Plot of effective stresses

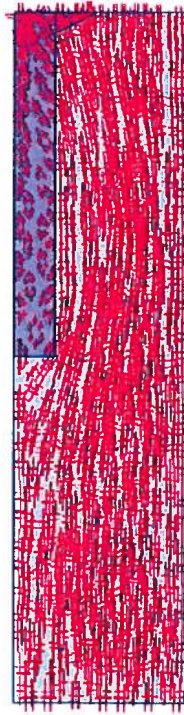


Fig. 18 Plot of effective stresses (principal directions)
- Step no: 34 - (Phase: 2)

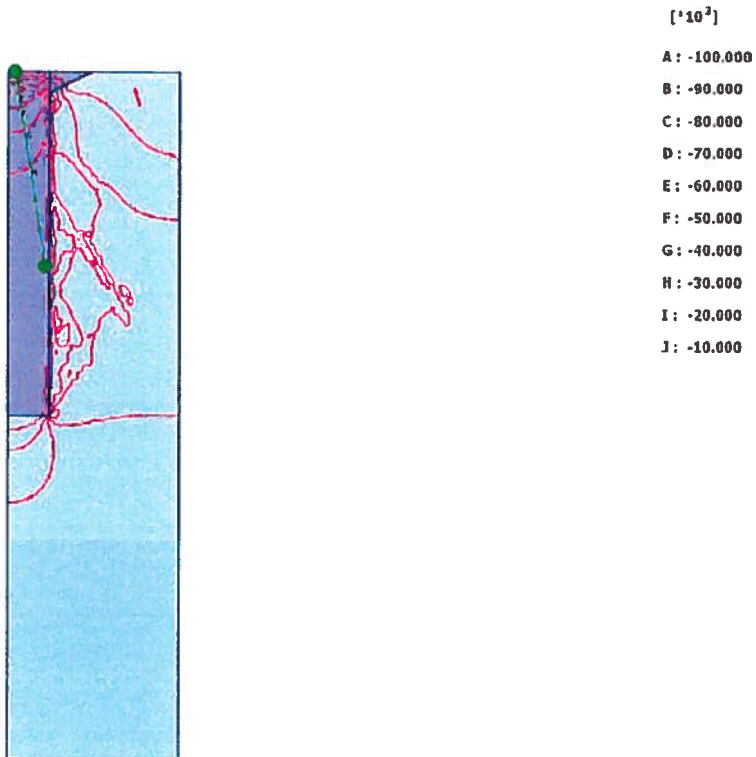


Fig. 19 Plot of effective stresses (mean contours)
- Step no: 34 - (Phase: 2)

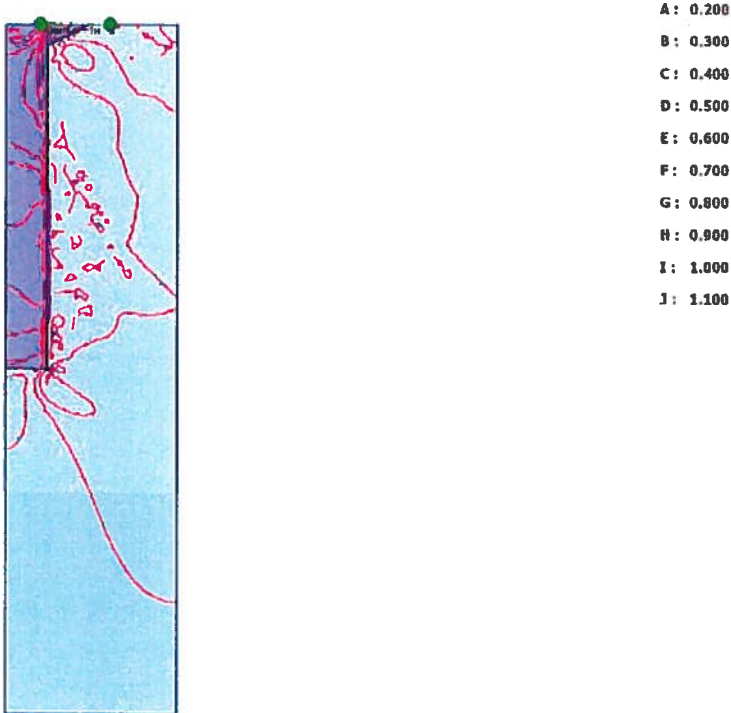


Fig. 20 Plot of effective stresses (relative shear contours)
- Step no: 34 - (Phase: 2)

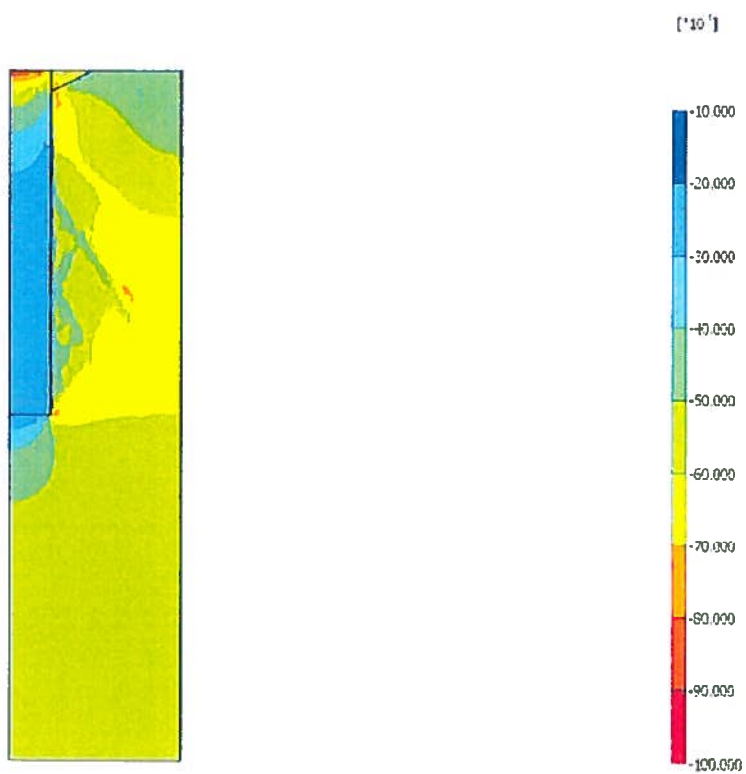
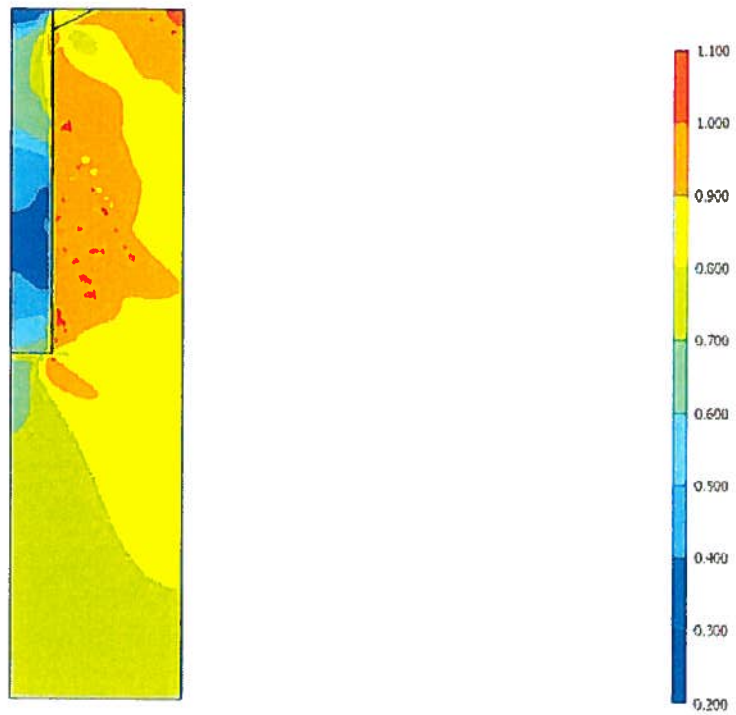


Fig. 21 Plot of effective stresses (mean shadings)
- Step no: 34 - (Phase: 2)



**Fig. 22 Plot of effective stresses (relative shear shadings)
- Step no: 34 - (Phase: 2)**

4.3. Structures

4.3.6. Geotextiles

4.3.6.1. Geotextiles

4.3.6.2. Geotextiles