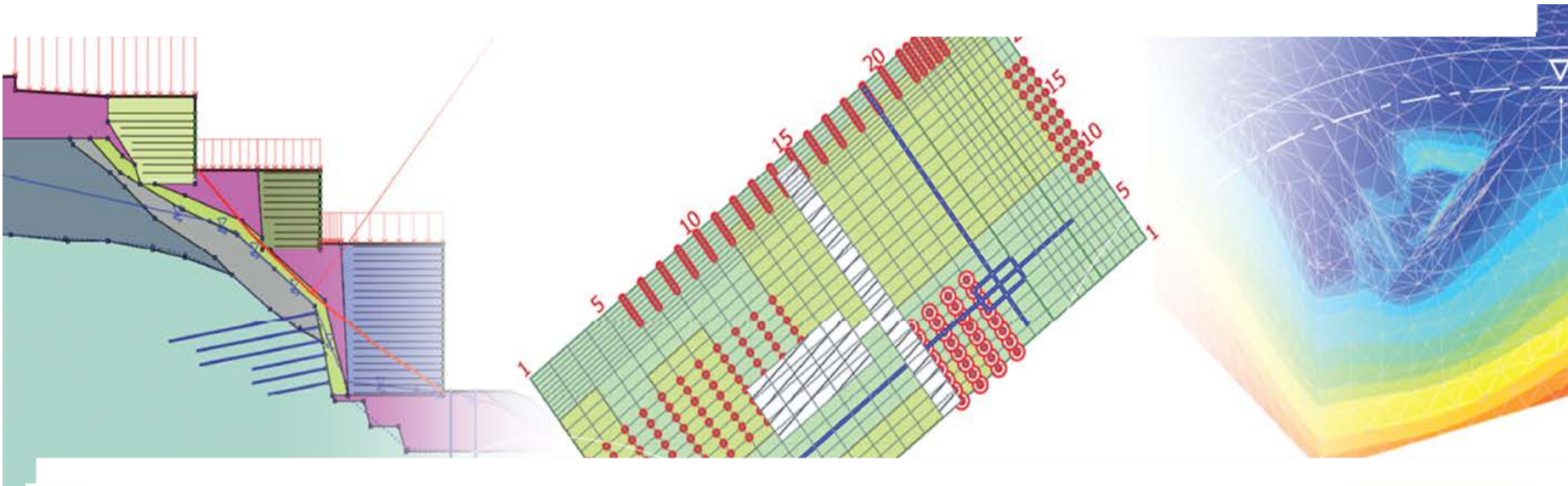


Software interface Talren v5



Summary



Introduction

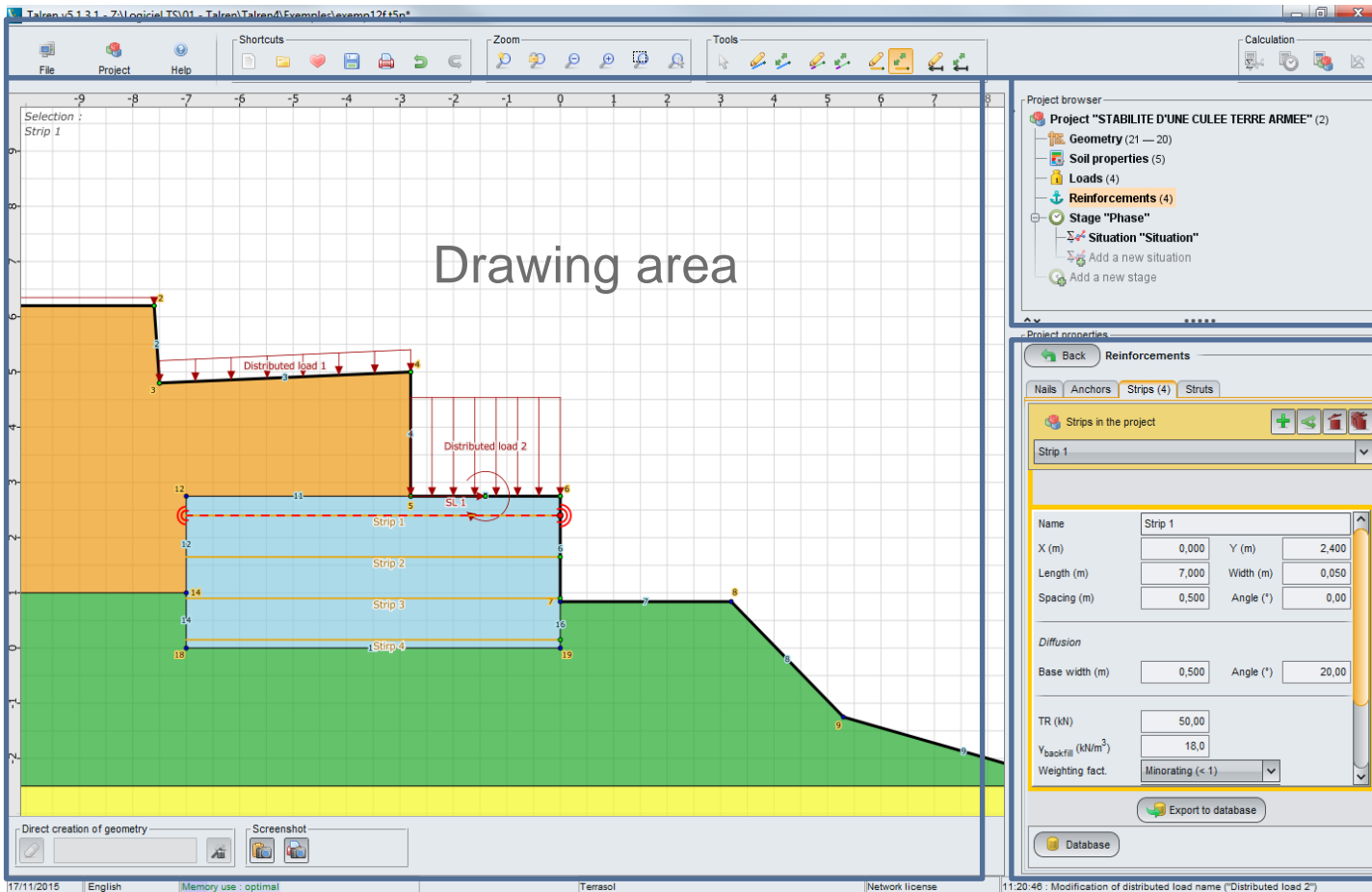
General presentation

Input data

Wizards and et data basis

Calculation stages

General presentation



Toolbar

Project browser

Properties input



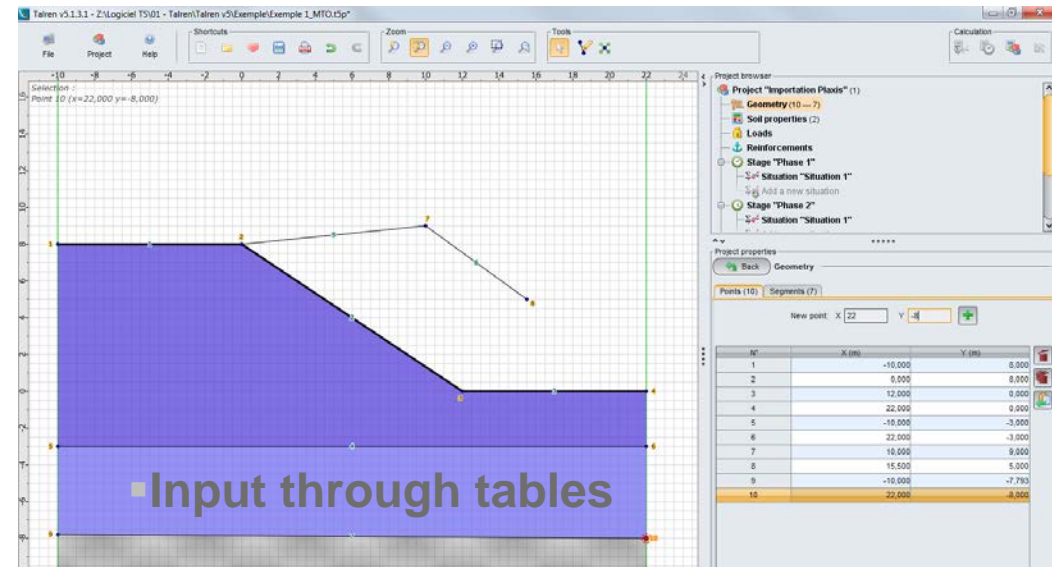
The geometry can be created in different ways

- Import files: autoCad, Plaxis...



■ Manual definition with mouse

■ Input with the “drawing” tool



■ Input through tables

Project properties

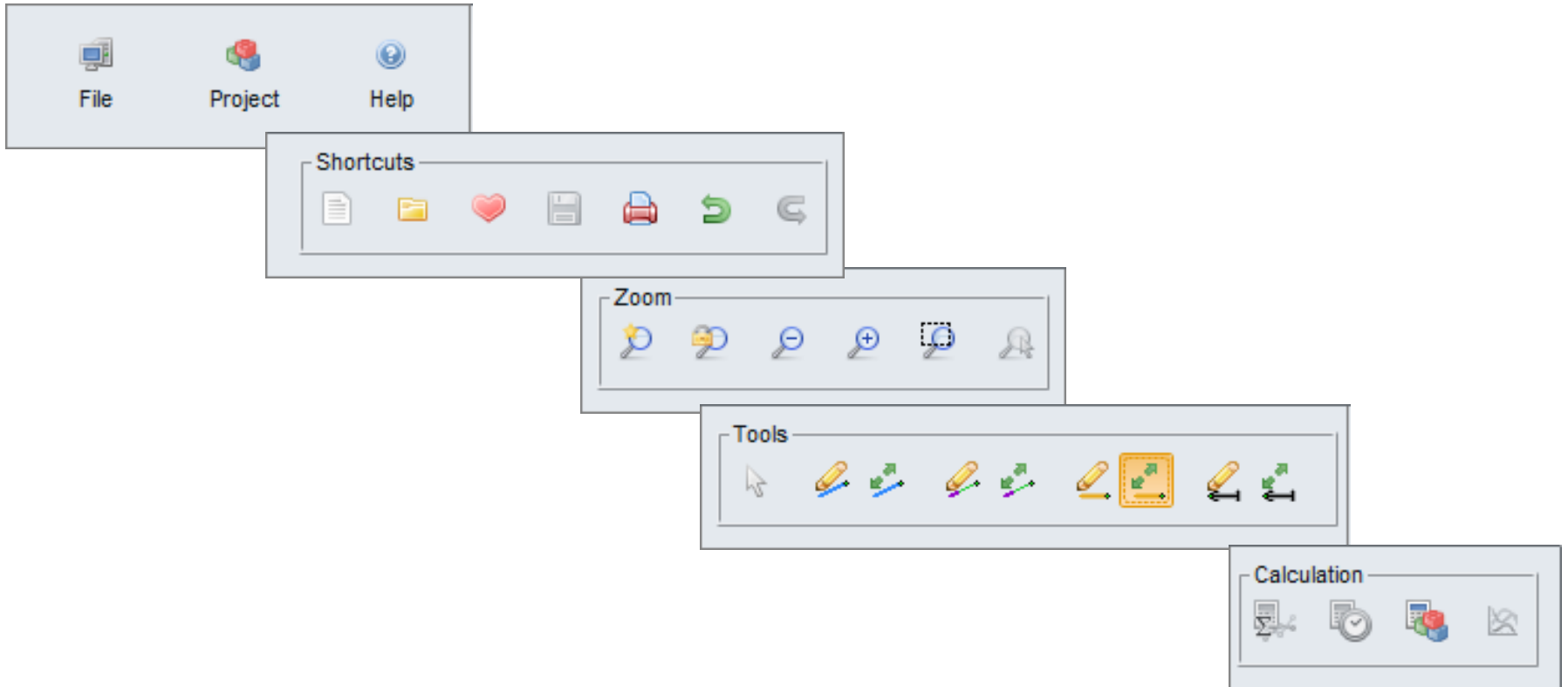
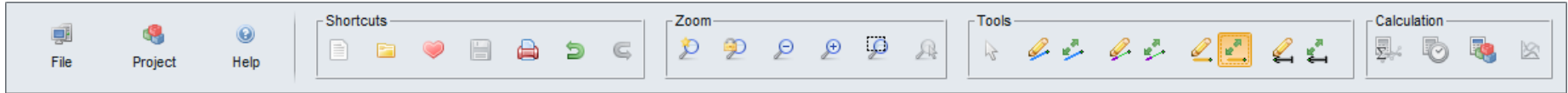
- Model borders

The geometry should absolutely start from X_{min} and end at X_{max}

- Calculations default options

Project properties	
Project reference	19870DEV.
Calculation title	Stabilization of an unstable slope
Location	
Comments	Vertical piles reinforcement
<hr/>	
Xmin (m)	-200,000
Xmax (m)	50,000
<hr/>	
Units	kN, kPa, kN/m ³ ▼
Y_w (kN/m ³)	10,0
<hr/>	
Calculation method*	Bishop ▼
<hr/>	
Safety factor set*	Unit ▼
<small>* by default</small>	Define →
<hr/>	
Background	Define →
<hr/>	
Geometry	Define →
Soil properties	Define →
Loads	Define →
Reinforcements	Define →

Toolbar



Soil layers

Selection : Soil cluster 6

You fly over : Soil cluster 19

Distributed load 2

Distributed load 3

Substratum

- Soil layer 1
- Soil layer 2
- Soil layer 3
- Soil layer 4
- Soil layer 5
- Soil layer 6

Strip 1

Strip 2

Strip 3

Strip 4

Strip 5

Strip 6

Strip 7

Strip 8

Strip 9

Strip 10

Strip 11

Strip 12

Strip 13

Strip 14

Strip 15

Project browser

Project "STABILISATION DE TALUS PAR MUR ANCRE" (2)

Project properties

Soil properties

Soil layers in the project (6)

Soil layer 1

Soil layer 2

Soil layer 3

Soil layer 4

Soil layer 5

Soil layer 6

Name: Soil layer 3

γ (kN/m³): 19,0 Favorable

c (kPa): 0,0 Δ_c (kPa/m): 0,0

Cohesion: Effective

Anisotropy:

ϕ (°): 32,00

Curve: Linear

Enforce the display of all nail properties

Specific safety factors

γ_y : 1,05 γ_c : 1,50

$\gamma_{\tan(\phi)}$: 1,20

These coefficients overwrite those of the selected safety factor set in each situation!

Export to database

Database

Direct creation of geometry

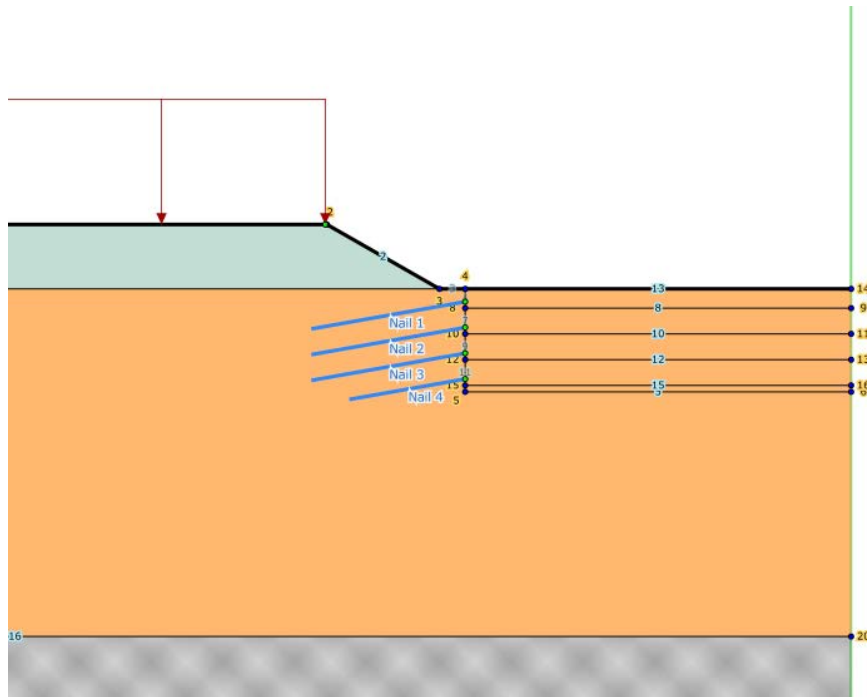
Screenshot

1/2015 English Memory use : optimal Terrasol Network license 12:22:36 : Modification of strip name ("Strip 15")

- Definition by selection in the drawing area

- Drag & Drop

Soil layers



- Define all the lines which will be used for the staged construction (excavation levels or fill geometry included for example)

- Bedrock: soil layer without parameters, available in all projects
This layer is assigned by default to all clusters (grey colour);

In the calculations, the passage of the failure surfaces within this layer is not allowed

Options

- The data input is controlled in real time.

There are 3 levels of control:



Errors: One or several input data are not corrects and the calculation is not possible.



Warnings: One or several input data are not consistent.



Information : The choice of the user should be made by taking it into account

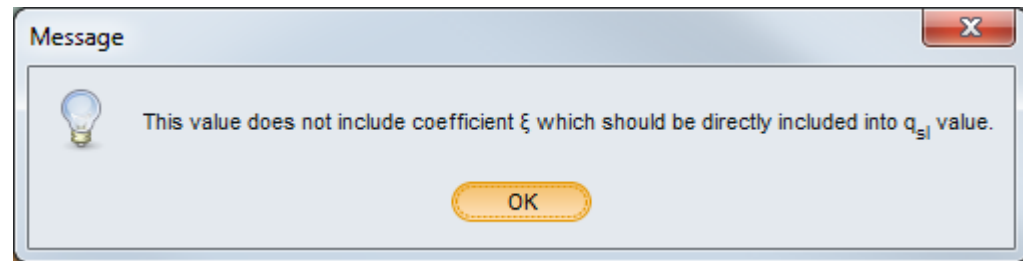
- Tables, zoom tools and edit tools are available at all stages of your calculations



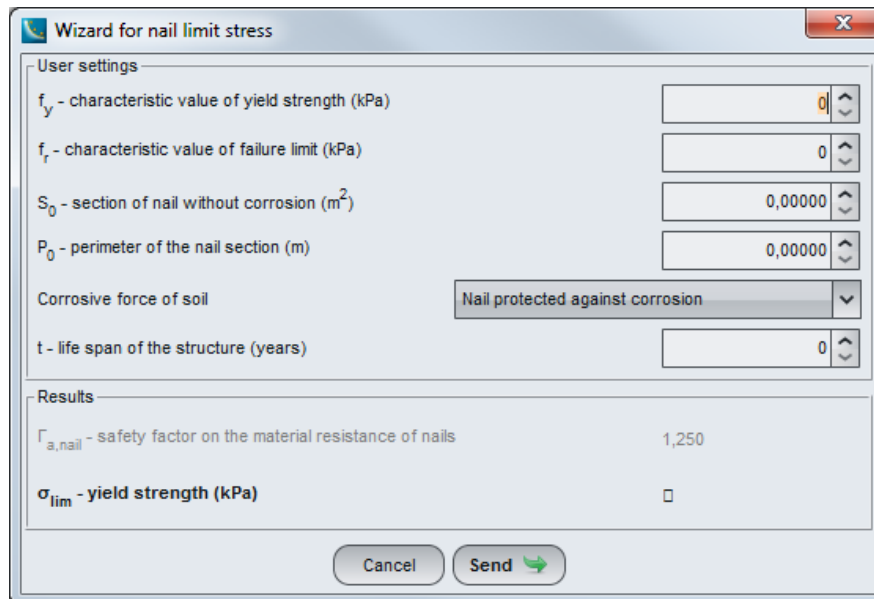
	Name	X	Y	Horizon...	Angle/...	Width of ...	Diffus...	TR	Length	Rsc	Equal...	Traction...	Prescribed ...	Plastic...	EI	Critic...	Tracti...	Shear	qs _{nails}	θ _{bar}	σ _s	Direct input ...	Rsc calc...	Shear force ...
1	Nail 1	0,000	9,000	2,000	10,00	2,000	10,00	-	12,000	-	0,065	T _{cal} C _{imp}	0,000	-	-	5,000	external	-	Charts	0,040	50000...	No	Yes	No
2	Nail 2	0,000	7,000	2,000	10,00	2,000	10,00	-	12,000	-	0,065	T _{cal} C _{imp}	0,000	-	-	5,000	external	-	Charts	0,040	50000...	No	Yes	No
3	Nail 3	0,000	5,000	2,000	10,00	2,000	10,00	-	12,000	-	0,065	T _{cal} C _{imp}	0,000	-	-	5,000	external	-	Charts	0,040	50000...	No	Yes	No
4	Nail 4	0,000	3,000	2,000	10,00	2,000	10,00	-	9,000	-	0,065	T _{cal} C _{imp}	0,000	-	-	5,000	external	-	Charts	0,040	50000...	No	Yes	No

Help and wizards

- Several help tools are available for the creation of your model



- Wizards help you to determine some of the parameters



Databases

- For the partial safety factors, soil layers and the reinforcements

Project properties

Back Safety factor sets

Safety factor sets for the project (6)

Unit

Name	Unit	Name	Unit
γ_{min}	1,000	$\gamma_{qsl,anchor,ab}$	1,000
γ_{s1}	1,000	$\gamma_{qsl,anchor,es}$	1,000
γ_{s1}	1,000	$\gamma_{qsl,strip}$	1,000
γ_g	1,000	γ_{pl}	1,000
γ_c	1,000	$\gamma_{a,nail}$	1,000
γ_{cu}	1,000	$\gamma_{a,anchor}$	1,000
γ_Q	1,000	$\gamma_{a,strip}$	1,000
$\gamma_{qsl,nail,ab}$	1,000	γ_{strut}	1,000
$\gamma_{qsl,nail,es}$	1,000	γ_{s3}	1,000

Export to database

Database (20)

Unit

Project properties

Back Safety factor sets

Safety factor sets for the project (6)

Eurocode (French standard) - Fundamental - Standard

Import into project

Name	EC7 Design Approach 1/1	
γ_{min}	1,000	$\gamma_{qsl,anchor,ab}$ 1,000
γ_{s1}	1,350	$\gamma_{qsl,anchor,es}$ 1,000
γ_{s1}	1,000	$\gamma_{qsl,strip}$ 1,000
γ_g	1,000	γ_{pl} 1,000
γ_c	1,000	$\gamma_{a,nail}$ 1,000
γ_{cu}	1,000	$\gamma_{a,anchor}$ 1,000
γ_Q	1,500	$\gamma_{a,strip}$ 1,000
$\gamma_{qsl,nail,ab}$	1,000	γ_{strut} 1,000
$\gamma_{qsl,nail,es}$	1,000	γ_{s3} 1,100

Database (20)

EC7 Design Approach 1/1



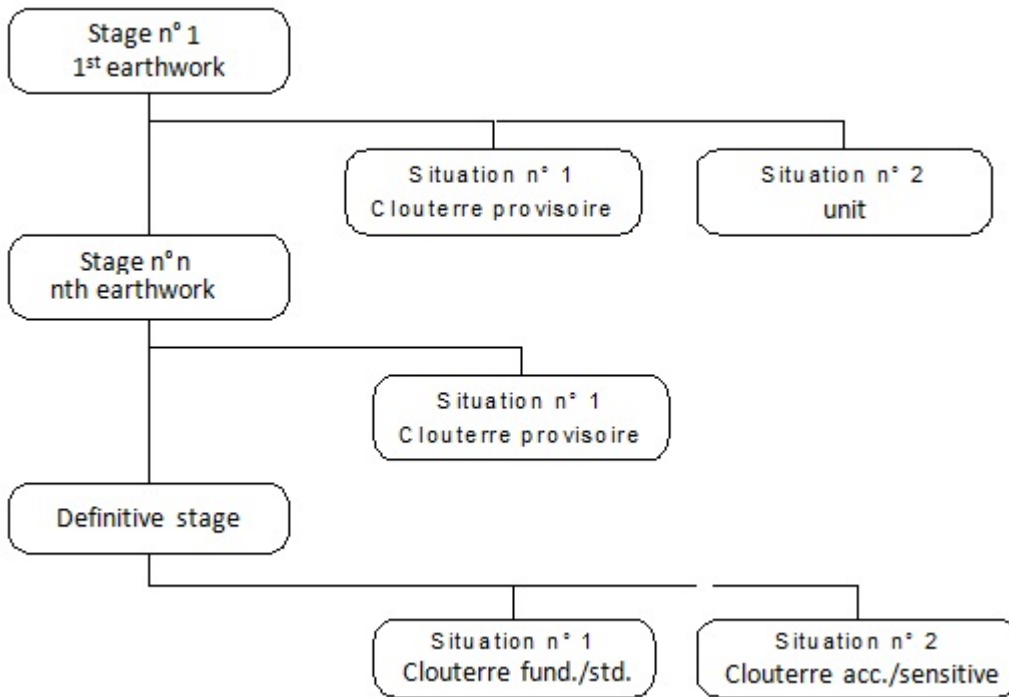
Partial safety factors

- Several sets of predefined partial safety factors are available
- However these sets of partial safety factors are incomplete because for example Clouterre don't provide coefficients related to strips or struts.
- Before using them, it is necessary to import them in your project and complete the missing coefficients

EC7 Design Approach 1/1
EC7 Design Approach 1/2
Unit
Clouterre fundamental/standard
Clouterre fundamental/sensitive
Clouterre accidental/standard
Clouterre accidental/sensitive
XP P 94-240 accidental 1-2a
XP P 94-240 accidental 2b
XP P 94-220 fundamental/standard
XP P 94-220 fundamental/sensitive
XP P 94-220 accidental/standard
XP P 94-220 accidental/sensitive
Traditional/Provisional
Traditional/Permanent
Eurocode (French standard) - Fundamental - Standard
Eurocode (French standard) - Fundamental - Sensitive
Eurocode (French standard) - Seismic

Stages: principle

- A stage corresponds to a construction phase
- A situation defines for a stage the calculation method



It is possible to add, insert and delete stages

Definition of situations: It is possible to add, copy/past and delete situations.

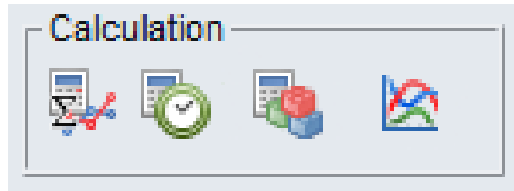
The calculation of a situation is independent of all other calculations carried on for other situations of the same project.

Stages and calculations



Run of calculations

Calculate all the situations of the current stage



Calculate the current situation

Calculate all the situations of all stages

Display of results

Calculation achievement follow up

Tasks finished

Informations

Critical surface :

- Surface type :
Circular failure surface
- Surface number :
N° = 531
- Abscissa of the circle center :
 $X_0 = 4,00$ m
- Level of the circle centre :
 $Y_0 = 28,00$ m
- Circle radius :
R = 21,86 m
- Driving moment
 $M_{MOT} = 9980$ kN
- Minimum calculated safety factor:
 $F_{min} = 1,6621$
- Forces in reinforcements :

Name	Useful length	Compressive/tens strength
Nail 1	6,850	202,100

Calculation :

- Number of calculated surface(s) :
640
- Size of results on the disk :
3,7 MB

Stage "1" / Situation "1.2"

Initialization...

Warning(s) :

- Couche 2 : pl (limit pressure) should be superior to zero
- Couche 2 : KsB (horizontal soil modulus) should be superior to zero

Calculation... 100,0%

Reading results and preparing shadings... 100,0%

Fmin=1,6621

Stage "2" / Situation "2.1"

Initialization...

Warning(s) :

- Couche 2 : pl (limit pressure) should be superior to zero
- Couche 2 : KsB (horizontal soil modulus) should be superior to zero

Calculation... 100,0%

Reading results and preparing shadings... 100,0%

Fmin=1,4597

Stage "3" / Situation "3.1"

Initialization...

Warning(s) :

- Couche 2 : pl (limit pressure) should be superior to zero
- Couche 2 : KsB (horizontal soil modulus) should be superior to zero

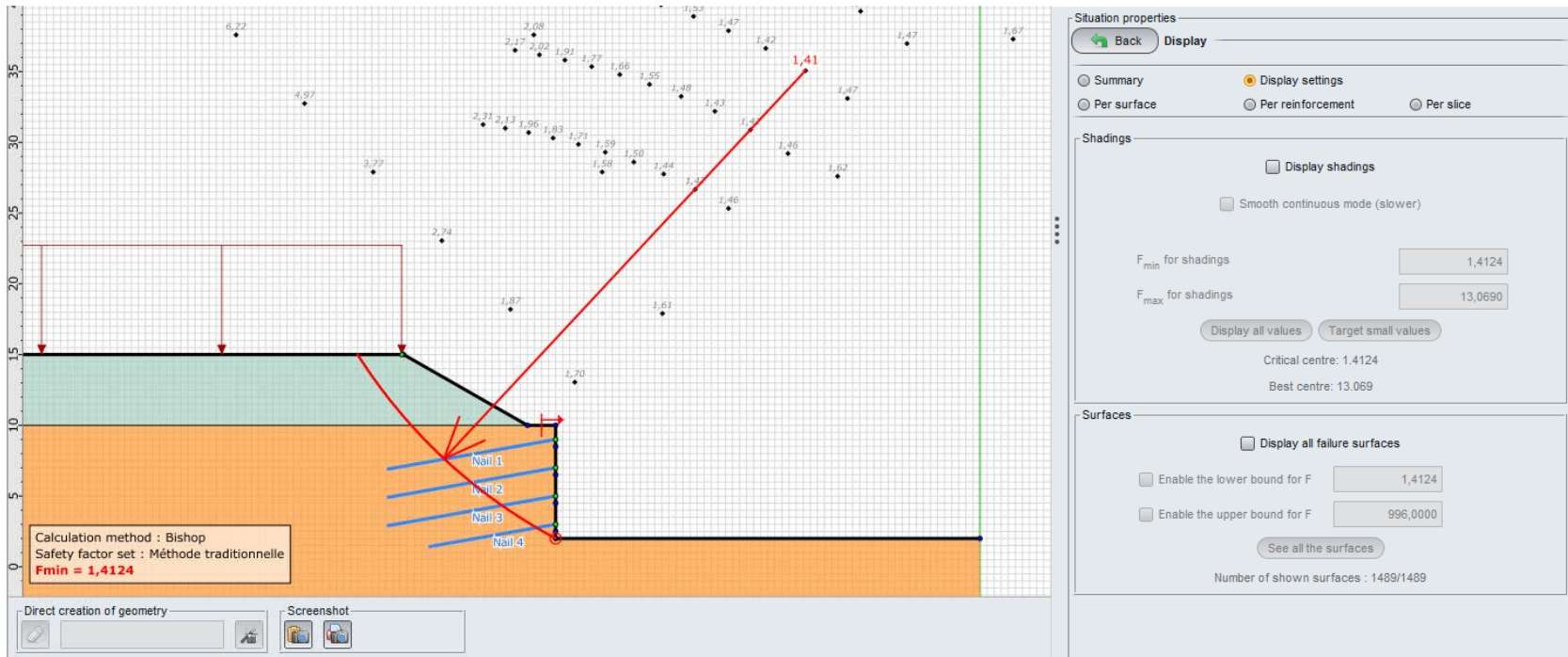
Stop Close

Stages and calculations



Default output

- Most critical failure surface and corresponding FoS in red
- Summary table of the most critical surface

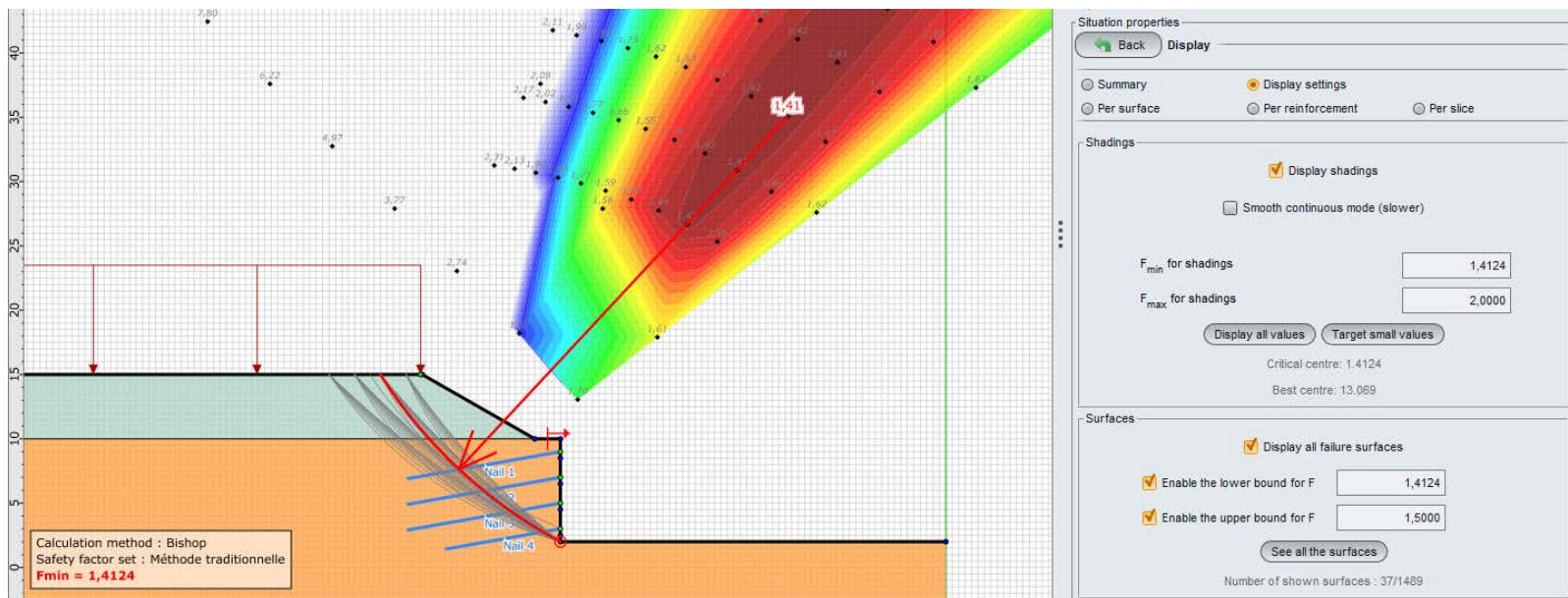


Stages and calculations



Graphical options

- Shadings to display the FoS values
- Display of all calculated failure surfaces



Stages and calculations





Output tables

- Detailed output
 - Per failure surface

Per surface Per reinforcement Per slice

N°	X ₀	Y ₀	R	M _{MOT}	F-SOL	F-SURCH	F-TOTAL
800	13,770	30,880	30,990	22476,86...	0,9728	0,9652	1,5295
801	13,770	30,880	30,490	18909,98...	0,9924	0,9863	1,8189
802	13,770	30,880	29,990	15570,74...	1,0166	1,0122	2,3614
803	13,770	30,880	29,490	12454,09...	1,0552	1,0533	3,7813
804	17,660	35,070	37,490	34914,29...	0,9228	0,9150	1,4124
805	17,660	35,070	36,990	30180,63...	0,9353	0,9277	1,6307
806	17,660	35,070	36,490	25719,52...	0,9529	0,9460	1,5488
807	17,660	35,070	35,990	21526,34...	0,9740	0,9681	1,8692
808	17,660	35,070	35,490	17596,02...	1,0028	0,9988	2,5006
809	17,660	35,070	34,990	13923,75...	1,0447	1,0438	4,3359
810	21,560	39,270	43,050	39515,98...	0,9071	0,8999	1,4149
811	21,560	39,270	42,550	34078,01...	0,9209	0,9138	1,6443
812	21,560	39,270	42,050	28948,98...	0,9402	0,9319	1,5655
813	21,560	39,270	41,550	24123,51...	0,9631	0,9576	1,9171
814	21,560	39,270	41,050	19597,90...	0,9948	0,9911	2,6318
815	21,560	39,270	40,550	15366,44...	1,0396	1,0391	4,9209
816	25,450	43,460	48,650	44117,92...	0,8961	0,8894	1,4189
817	25,450	43,460	48,150	37970,75...	0,9108	0,9042	1,6577
818	25,450	43,460	47,650	32169,42...	0,9297	0,9235	1,5836
819	25,450	43,460	47,150	26708,87...	0,9558	0,9507	1,9611
820	25,450	43,460	46,650	21584,62...	0,9899	0,9866	2,7541

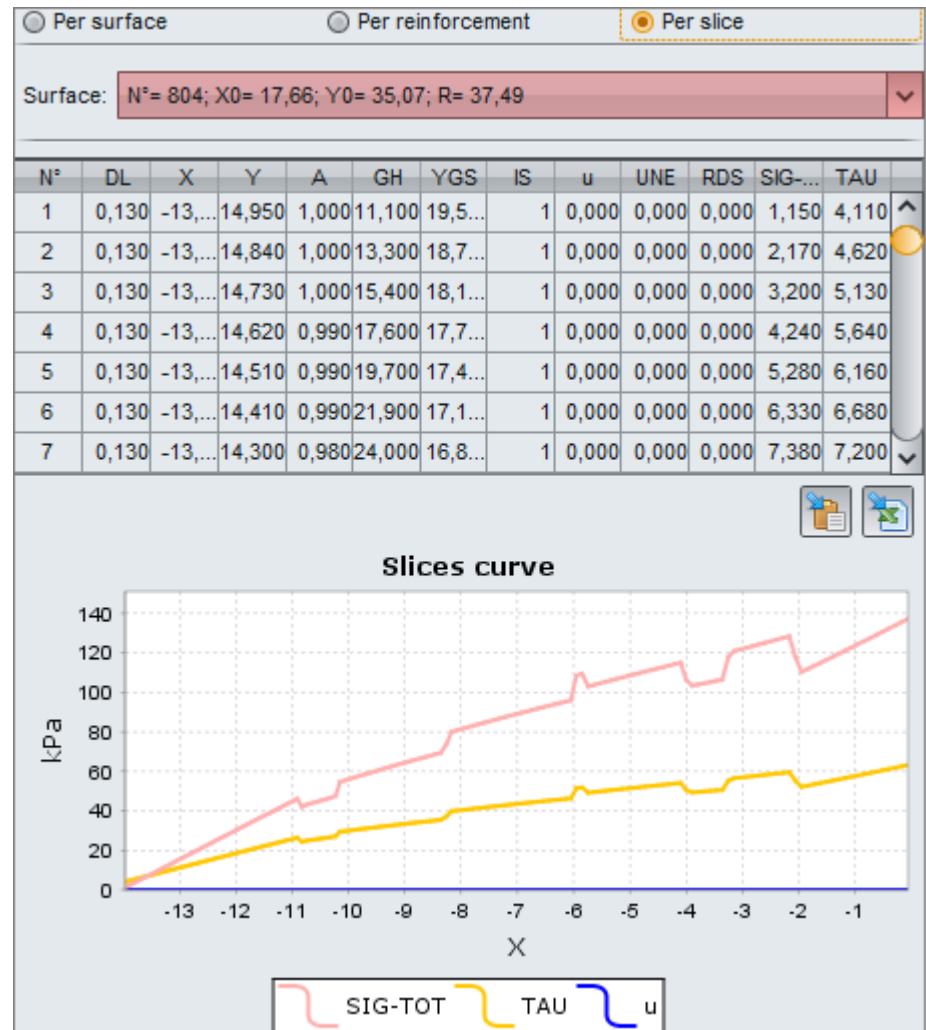
 

Stages and calculations



Output tables

- Detailed output
 - Per slices



Stages and calculations



Output tables

- Detailed output
 - Per reinforcements

Per surface Per reinforcement Per slice

Surface: N°= 804; X0= 17,66; Y0= 35,07; R= 37,49

Nail

Name	LU	TR	ITR	IPTR	Tc	ICIS	IPCI
Nail 1	4,020	106,660	2	1	0,000	0	0
Nail 2	5,960	158,260	2	1	0,000	0	0
Nail 3	8,150	216,280	2	1	0,000	0	0
Nail 4	7,630	202,540	2	1	0,000	0	0