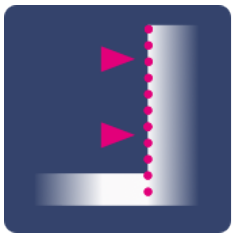

K-Réa

K-Réa v5 Manual – Partie B - §B.6.6

B.1.1. B.1.1. Export of results in text file format

K-Réa can export the results presented in the tables and graphs as a text file (.txt). This feature allows the coupling of K-Réa with other post-calculation tools. The generated files are exported in the directory selected by the user.

The set of generated text files are summarized in the following table:

File	Description
01-KR_ELS_Wall	SLS Results
02-KR_ELS_Reactions	SLS Results: forces in the supports
03-KR_ELU_MISS_Wall	ULS Results – MISS
04-KR_ELU_Reactions	ULS Results: forces in the supports
05-KR_ELU_MEL_F_Wall	ULS Result – MEL F
06-KR_ELU_MEL_D_Wall	ULS Results – MEL D
07-KR_ELU_MISS_Synthesis.txt	Main results of the passive earth pressure and vertical balance checks at ULS
08-KR-KRANZ-Results.txt	Kranz verification results for plane surfaces
09-KR-Phase_And_Combinations.txt	Relationship between the successive calculation phases calculated by the calculation kernel, the combination to which they belong and the index of the calculation phase on the interface

B.1.1.1. Reading the file 01-KR_ELS_Wall

This file contains the values of displacements, internal forces and various pressures of the soil at every level of the wall (2 values per element) resulting from SLS calculation.

Header of the file (only once at the beginning of the file)

Pour k=1, nEcr loop on the walls
- **nLignes(k)** number of lines in the result block of each wall

Rest of file:

For k=1, nEcr loop on the walls
For i=1, nEl(k) loop on the elements of each wall
For j=1,2 two nodes of each element (top and bottom)

1)	iPhase	index of the phase
2)	k	wall index
3)	I	element index
4)	j	=1 top node / =2 bottom node
5)	Z	node level
6)	ry	rotation
7)	wx	displacement
8)	M	bending moment
9)	V	shear effort
10)	EtatG	soil status on the left (-2=exc. / -1= detach. / 0=active / 1=elastic / 2=passive)
11)	EtatD	soil status on the right (-2=exc. / -1= detach. / 0=active / 1=elastic / 2=passive)
12)	phG	horizontal pressure mobilized on the left side
13)	phD	horizontal pressure mobilized on the right side
14)	pwG	hydrostatic water pressure on the left side
15)	pwD	hydrostatic water pressure on the right side
16)	sigG	effective vertical stress on the left side
17)	sigD	effective vertical stress on the right side
18)	paG	active soil pressure on the left side
19)	paD	active soil pressure on the right side
20)	pbG	passive soil pressure on the left side
21)	pbD	passive soil pressure on the right side
22)	Nvte	arch effort
23)	poG	initial pressure on the left side
24)	poD	initial pressure on the right side
25)	pvG	vertical component of the soil reaction on the left side
26)	pvD	vertical component of the soil reaction on the right side
27)	N	effort axial
28)	fiG	friction angle on the left side
29)	fiD	friction angle on the right side
30)	coG	cohesion on the left side
31)	coD	cohesion on the right side
32)	dcG	cohesion increment on the left side
33)	dcD	cohesion increment on the right side
34)	kaG	horizontal active pressure coefficient on the left side
35)	kaD	horizontal active pressure coefficient on the right side
36)	kpG	horizontal passive pressure coefficient on the left side
37)	kpD	horizontal passive pressure coefficient on the left side
38)	kacG	active pressure coefficient on the cohesion on the left side
39)	kacD	active pressure coefficient on the cohesion on the right side
40)	kpcG	passive pressure coefficient on the cohesion on the left side

41) kpcD passive pressure coefficient on the cohesion on the right side
42) daG obliquity of the active stress on the left side
43) daD obliquity of the active stress on the right side
44) dpG obliquity of the passive stress on the left side
45) dpD obliquity of the passive stress on the right side

B.1.1.2. Reading the file 02-KR_ELS_Reactions

This file contains the reactions in the supports from an SLS calculation.

For k=1, 7 *loop the types of supports*
For i=1, nAnc *loop on the number of anchors per type*
iPhase k i Fanc

1) iPhase index of the phase
2) k anchor type index
   - 1: anchor
   - 2: strut
   - 3: circular waling
   - 4: linking anchor
   - 5: rotational stiffness
   - 6: surface support
   - 7: slab
3) i anchor number (is initialized for each type)
4) Fanc axial effort
5) Manc embedding torque

B.1.1.3. Reading the file 03-KR_ELU_MISS_Wall

This file contains the values of displacements, internal forces and various pressures of the soil at every level of the wall (2 values per element) resulting from a ULS calculation.

Header of the file (only once at the beginning of the file):

For k=1, nEcr loop on the walls
- **nLignes(k)** number of lines in the result block of each wall

Suite du fichier:

For k=1, nEcr loop on the walls
For i=1, nEl(k) loop on the elements of each wall
For j=1,2 deux nœuds de chaque élément (sup et inf)

1) iPhase index of the phase
2) k wall index
3) i element index
4) j =1 top node / =2 bottom node
5) Z node level
6) Md bending moment (design value)
7) Vd shear effort (design value)
8) ph,k(G/D) characteristic value of the mobilized horizontal pressure (2 columns)
9) u,k(G/D) characteristic value of the water pressure (2 columns)
10) pa,k(G/D) characteristic value of the effective pressure in active side (2 columns)

11) pb,k(G/D) characteristic value of the effective pressure in passive side (2 columns)
12) pd_eff characteristic value of the effective differential pressure
13) σ'v(G/D) characteristic value of the effective vertical stress (2 columns)
14) Nvte design value of the arch force
15) pvG vertical pressure on the left side
16) pvD vertical pressure on the right side
17) Nd design value of axial force
18) fiG friction angle on the left side
19) fiD friction angle on the right side
20) coG cohesion on the left side
21) coD cohesion on the right side
22) dcG cohesion increment on the left side
23) dcD cohesion increment on the right side
24) kaG horizontal active pressure coefficient on the left side
25) kaD horizontal active pressure coefficient on the right side
26) kpG horizontal passive pressure coefficient on the left side
27) kpD horizontal passive pressure coefficient on the right side
28) kacG horizontal active pressure coefficient on the cohesion on the left side
29) kacD horizontal active pressure coefficient on the cohesion on the right side
30) kpcG horizontal passive pressure coefficient on the cohesion on the left side
31) kpcD horizontal passive pressure coefficient on the cohesion on the right side
32) daG obliquity of the active stress on the left side
33) daD obliquity of the active stress on the right side
34) dpG obliquity of the passive stress on the left side
35) dpD obliquity of the passive stress on the right side

Attention: pvG and pvD are characteristic values (if approach 2)

B.1.1.4. Reading the file 04-KR_ELU_Reactions

This file contains the reactions of the linear supports (tie rods / struts / links / rotational stiffness) resulting from an ULS calculation.

For k=1, 7 loop on the types of supports
For i=1, nAnc loop on the number of anchors per type
iPhase k i Fanc,d

1) iPhase index of the phase
2) k anchor type index
   - 1: anchor
   - 2: strut
   - 3: circular waling
   - 4: linking anchor
   - 5: rotational stiffness
   - 6: surface support
   - 7: slab
3) i anchor number (is initialized for each type)
4) Fanc axial effort (design value)
5) Manc embedding torque (design value)

B.1.1.5. Reading the file 05-KR_ELU_MEL_F_Wall

This file contains the values of the vertical and horizontal forces and pressures of the soil at every level of the wall (2 values per element) resulting from a calculation with the ULS of type MEL F.

Header of the file (only once at the beginning of the file):

For k=1, nEcr loop on the walls
- **nLignes(k)** number of lines in the result block of each wall

For k=1, nEcr loop on the walls
For i=1, nEl(k)+4 loop on the elements of each wall
For j=1,2 two nodes of each element (top and bottom)

iPhase k i j Z Md Vd ph,k(G/D) u,k(G/D) pa,k(G/D) pb,k(G/D) pd_eff σ'v(G/D) Nvte pvG pvD Nd
fiG fiD coG coD dcG dcD kaG kaD kpG kpD
kacG kacD kpcG kpcD daG daD dpG dpD

Attention: pvG, pvD and Nd are design values

B.1.1.6. Reading the file 06-KR_ELU_MEL_D_Wall

This file contains the values of the vertical and horizontal forces and pressures of the soil at every level of the wall (2 values per element) resulting from a calculation with the ULS of type MEL D.

Header of the file (only once at the beginning of the file):

For k=1, nEcr loop on the walls
- **nLignes(k)** number of lines in the result block of each wall

For k=1, nEcr loop on the walls
For i=1, nEl(k)+4 loop on the elements of each wall
For j=1,2 two nodes of each element (top and bottom)

iPhase k i j Z Md Vd ph,k(G/D) u,k(G/D) pa,k(G/D) pb,k(G/D) pd_eff σ'v(G/D) Nvte pvG pvD Nd
fiG fiD coG coD dcG dcD kaG kaD kpG kpD
kacG kacD kpcG kpcD daG daD dpG dpD

Attention: pvG, pvD and Nd are design values

B.1.1.7. Reading the file 07-KR_ELU_MISS_Synthesis.txt

This file contains the main results of the passive pressure and vertical balance checks at ULS.

For each phase, the following block is repeated as many times as there are walls:

iPhase	iEcr	BM_G,d	BM_D,d	BL_G,d	BL_D,d	Rapp_G	Rapp_D
iPhase	iEcr	Pvd	Fvd_Anc	Fvd_Ecr	Fvd_pds	Rvd	

Parameter description:

- iPhase phase index
- iEcr wall index
- BM_G mobilized passive earth soil pressure on the left side
- BM_D mobilized passive earth soil pressure on the right side
- BL_G mobilizable passive earth soil pressure on the left side
- BL_D mobilizable passive earth soil pressure on the right side
- Rapp_G ratio of mobilizable and mobilized passive earth soil pressures on the left side
- Rapp_D ratio of mobilizable and mobilized passive earth soil pressures on the right side
- Pvd resultant of the vertical components of the soil pressures
- Fvd_Anc resultant of the vertical components of the anchor reactions
- Fvd_Ecr resultant of the vertical components of the loads applied on the wall
- Fvd_pds weight of the wall
- Rvd resultant force of vertical balance

B.1.1.8. Reading the file 08-KR-KRANZ-Results.txt

This file contains the results of the Kranz checks for plane surfaces.

For k = 1, nEcr (loop on the walls)

iPhase k iCote nSit

For i = 1, nSit(k) → number of situations on the retained side

iPhase	**k**	**iCote**	**i**	**Nta**	**Nb**	**theta**	**Zd**	**Xb**	**Zb**
Zc	**αref**	**Wtot**	**P1H**	**P1V**	**P2H**	**P2V**	**RH**	**RV**	
Tdsb,k	**Tref,k**	**Tdsb,d**	**Tref,d**						

- iPhase phase index
- k wall index
- iCote index of the retained side for the wall k (1: left side / 2: right side)
- nSit number of situations
- I situation number
- Nta number of tie rods taken into account
- Nb number of subdivisions into sub-blocks
- Theta angle of the spiral
- Zd zero shear level
- Xb abscissa of the point « B »
- Zb level of the point « B »
- Zc level of the "equivalent" anchor point for the examined massif
- αref inclination of the reference anchor force
- Wtot total weight of the massif taking into account the external loads
- P1H horizontal component of the downstream soil pressure
- P1V vertical component of the downstream soil pressure

- P2H horizontal component of the upstream soil pressure
- P2V vertical component of the upstream soil pressure
- RH horizontal component of the reaction under the massif
- RV vertical component of the reaction under the massif
- Tdsb,k destabilizing anchor force (characteristic value)
- Tref,k reference anchor force (characteristic value)
- Tdsb,d destabilizing anchor force (design value)
- Tref,d reference anchor force (design value)

B.1.1.9. Reading the file 09-KR-Phase_And_Combinations.txt

This file contains the relation between the successive calculation phases calculated by the calculation kernel, the combination to which they belong and the index of the calculation phase on the user interface.

For each phase calculated by the kernel, a line appears in this file:

iPhaseKernel iCombination iPhaseUser identifierPhase

- iPhaseKernel index of the calculation phase generated by the kernel
- iCombination index of the calculation combination to which the phase belongs
- iPhaseUser index of the calculation phase within the staged construction defined by the user on the interface
- identifierPhase phase identifier as it appears in the interface