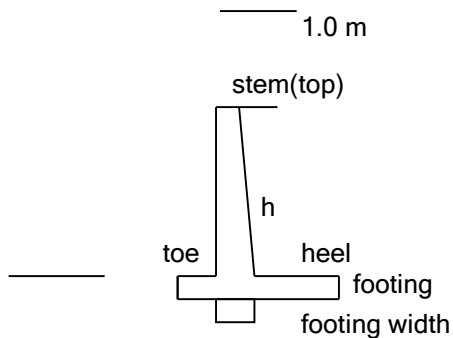


## addplanning software : cantilever retaining wall.

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### Input data

EC2, EC0, EC7, EC8

active earth pressure : Coulomb

passive earth pressure : Coulomb

### geometry - wall

retained height (m) =	2,20	slope inclination (deg) =	0,00
stem - top (m) =	0,30	wall unit weight (kN/m <sup>3</sup> ) =	25,00
stem - base (m) =	0,50	$\gamma_c$ =	1,50
heel (m) =	1,10	$\gamma_s$ =	1,15
toe (m) =	0,50	stem cover (m) =	0,025
footing (m) =	0,30	footing cover (m) =	0,050
key length (m) =	0,30	footing width (m) =	2,10
fck (MPa) =	25,00		
fyk (MPa) =	500,00		

### Soil Layers

Soil Layer 1

$\gamma$ - soil unit weight (kN/m <sup>3</sup> ) =	20,00
$\gamma_{sat}$ - soil unit weight / saturated (kN/m <sup>3</sup> ) =	22,00
cohesion (kN/m <sup>2</sup> ) =	8,00
soil friction $\phi$ (deg) =	20,00
angle of friction $\delta$ structure / soil (deg) =	0,00
cohesive soil	YES
soil layer thickness (m) =	2,00

Soil Layer 3

$\gamma$ - soil unit weight (kN/m <sup>3</sup> ) =	20,00
$\gamma_{sat}$ - soil unit weight / saturated (kN/m <sup>3</sup> ) =	22,00
cohesion (kN/m <sup>2</sup> ) =	8,00
soil friction $\phi$ (deg) =	20,00
angle of friction $\delta$ structure / soil (deg) =	0,00
cohesive soil	YES
soil layer thickness (m) =	2,00

Soil Layer 2

$\gamma$ - soil unit weight (kN/m <sup>3</sup> ) =	20,00
$\gamma_{sat}$ - soil unit weight / saturated (kN/m <sup>3</sup> ) =	22,00
cohesion (kN/m <sup>2</sup> ) =	8,00
soil friction $\phi$ (deg) =	20,00
angle of friction $\delta$ structure / soil (deg) =	0,00
cohesive soil	YES
soil layer thickness (m) =	2,00

Soil Layer 4

$\gamma$ - soil unit weight (kN/m <sup>3</sup> ) =	20,00
$\gamma_{sat}$ - soil unit weight / saturated (kN/m <sup>3</sup> ) =	22,00
cohesion (kN/m <sup>2</sup> ) =	8,00
soil friction $\phi$ (deg) =	20,00
angle of friction $\delta$ structure / soil (deg) =	0,00
cohesive soil	YES
soil layer thickness (m) =	3,00

## addplanning software : cantilever retaining wall.

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### passive side

soil unit weight $\gamma$ (kN/m <sup>3</sup> ) =	20,00	soil unit weight saturated $\gamma_{sat}$ (kN/m <sup>3</sup> ) =	20,00
cohesion $c$ (kN/m <sup>2</sup> ) =	8,00	soil friction $\phi$ (deg) =	20,00
angle of friction $\delta$ structure / soil (deg) =	0,00	passive earth pressure reduction factor =	0,50
embedment (m) =	0,30	passive earth pressure ON/OFF	YES
cohesion ON/OFF	YES	water table ON/OFF	NO

### earthquake

seismic acceleration  $g$  = 0,16

### loads

vertical variable load $N_q$ (kN/m) =	1,00	variable uniform load - surcharge - $q$ (kN/m <sup>2</sup> ) =	1,00
vertical permanent load $N_g$ (kN/m) =	1,00	permanent uniform load - surcharge - $g$ (kN/m <sup>2</sup> ) =	5,00
horizontal permanent load $H_g$ (kN/m) =	1,00	horizontal variable load $H_q$ (kN/m) =	1,00
eccentricity of vertical/horizontal loads : application of loads in the middle of the stem (top)			

### water table

NO Water Table

### foundation soil

soil unit weight $\gamma$ (kN/m <sup>3</sup> ) =	20,00	soil unit weight saturated $\gamma_{sat}$ (kN/m <sup>3</sup> ) =	22,00
cohesion $c$ (kN/m <sup>2</sup> ) =	8,00	soil friction $\phi$ (deg) =	20,00
water table	YES	bearing capacity $p_u$ (MPa) =	150,00
bearing capacity =	bearing capacity = $p_u$		

### slope stability

analysis according Fellenius & BISHOP mod

## code design - partial factors - SLIDING

actions	ASD	SEISMIC	EQU	STR/GEO [A1+M1]
active earth pressure $P_a$ (kN/m)	1,00	1,00	1,10	1,35
wall weight $W$ (kN/m)	1,00	1,00	0,90	1,00
passive earth pressure $P_p$ (kN/m)	1,00	1,00	0,90	1,00
backfill weight $W_{bf}$ (kN/m)	1,00	1,00	0,90	1,00
water pressure -active side- $W_p$ (kN/m)	1,00	1,00	1,10	1,35
permanent uniform load $G$ (kN/m)	1,00	1,00	1,10	1,35
variable uniform load $Q$ (kN/m)	1,00	0,30	1,50	1,50
vertical permanent load $N_g$ (kN/m)	1,00	1,00	0,90	1,00
vertical variable load $N_q$ (kN/m)	1,00	0,30	0,00	1,00
horizontal permanent load $H_g$ (kN/m)	1,00	1,00	1,10	1,35
horizontal variable load $H_q$ (kN/m)	1,00	0,30	1,50	1,50
permanent uniform load -heel- $G_h$ (kN/m)	1,00	1,00	0,90	1,00
active earth pressure -seismic- $P_{as}$ (kN/m)	0,00	1,00	0,00	0,00
wall weight -seismic- $W_s$ (kN/m)	0,00	1,00	0,00	0,00
backfill weight -seismic- $W_{bfs}$ (kN/m)	0,00	0,00	0,00	0,00
<b>soil parameters</b>				
soil friction	1,00	1,00	1,25	1,00
soil cohesion	1,00	1,00	1,25	1,00
soil unit weight	1,00	1,00	1,00	1,00

## addplanning software : cantilever retaining wall.

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### code design - partial factors - OVERTURNING

actions	ASD	SEISMIC	EQU	STR/GEO [A1+M1]
active earth pressure Pa (kN/m)	1,00	1,00	1,10	1,35
wall weight W (kN/m)	1,00	1,00	0,90	1,00
passive earth pressure Pp (kN/m)	1,00	1,00	1,00	1,00
backfill weight Wbf (kN/m)	1,00	1,00	0,90	1,00
water pressure -active side- Wp (kN/m)	1,00	1,00	1,10	1,35
permanent uniform load G (kN/m)	1,00	1,00	1,10	1,35
variable uniform load Q (kN/m)	1,00	0,30	1,50	1,50
vertical permanent load Ng (kN/m)	1,00	1,00	0,90	1,00
vertical variable load Nq (kN/m)	1,00	0,30	0,00	0,00
horizontal permanent load Hg (kN/m)	1,00	1,00	1,10	1,35
horizontal variable load Hq (kN/m)	1,00	0,30	1,50	1,50
permanent uniform load -heel- Gh (kN/m)	1,00	1,00	0,90	1,00
active earth pressure -seismic- Pas (kN/m)	0,00	1,00	0,00	0,00
wall weight -seismic- Ws (kN/m)	0,00	1,00	0,00	0,00
backfill weight -seismic- Wbfs (kN/m)	0,00	0,00	0,00	0,00
<b>soil parameters</b>				
soil friction	1,00	1,00	1,25	1,00
soil cohesion	1,00	1,00	1,25	1,00
soil unit weight	1,00	1,00	1,00	1,00

### code design - partial factors - BEARING CAPACITY

actions	ASD	SEISMIC	EQU	STR/GEO [A1+M1]
active earth pressure Pa (kN/m)	1,00	1,00	1,10	1,35
wall weight W (kN/m)	1,00	1,00	1,10	1,35
passive earth pressure Pp (kN/m)	1,00	0,00	0,00	0,00
backfill weight Wbf (kN/m)	1,00	1,00	1,10	1,35
water pressure -active side- Wp (kN/m)	1,00	1,00	1,10	1,35
permanent uniform load G (kN/m)	1,00	1,00	1,10	1,35
variable uniform load Q (kN/m)	1,00	0,30	1,50	1,50
vertical permanent load Ng (kN/m)	1,00	1,00	1,10	1,35
vertical variable load Nq (kN/m)	1,00	0,30	1,50	1,35
horizontal permanent load Hg (kN/m)	1,00	1,00	1,10	1,35
horizontal variable load Hq (kN/m)	1,00	0,30	1,50	1,50
permanent uniform load -heel- Gh (kN/m)	1,00	1,00	1,10	1,35
active earth pressure -seismic- Pas (kN/m)	0,00	1,00	0,00	0,00
wall weight -seismic- Ws (kN/m)	0,00	1,00	0,00	0,00
backfill weight -seismic- Wbfs (kN/m)	0,00	0,00	0,00	0,00
<b>soil parameters</b>				
soil friction	1,00	1,00	1,25	1,00
soil cohesion	1,00	1,00	1,25	0,00
soil unit weight	1,00	1,00	1,00	1,00

## addplanning software : cantilever retaining wall.

PROJECT : project

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### code design - partial factors - STRUCTURAL DESIGN

actions	ASD	SEISMIC	EC2
active earth pressure Pa (kN/m)	1,00	1,00	1,35
wall weight W (kN/m)	1,00	1,00	1,35
passive earth pressure Pp (kN/m)	0,00	0,00	0,00
backfill weight Wbf (kN/m)	1,00	1,00	1,35
water pressure -active side- Wp (kN/m)	1,00	1,00	1,35
permanent uniform load G (kN/m)	1,00	1,00	1,35
variable uniform load Q (kN/m)	1,00	1,00	1,50
vertical permanent load Ng (kN/m)	1,00	1,00	1,35
vertical variable load Nq (kN/m)	1,00	1,00	1,50
horizontal permanent load Hg (kN/m)	1,00	1,00	1,35
horizontal variable load Hq (kN/m)	1,00	1,00	1,50
permanent uniform load -heel- Gh (kN/m)	1,00	1,00	1,35
active earth pressure -seismic- Pas (kN/m)	0,00	1,00	0,00
wall weight -seismic- Ws (kN/m)	0,00	1,00	0,00
backfill weight -seismic- Wbfs (kN/m)	0,00	0,00	0,00
<b>soil parameters</b>			
soil friction	1,00	1,00	1,00
soil cohesion	1,00	1,00	1,00
soil unit weight	1,00	1,00	1,00

### code design - partial factors - CUSTOM CODE

actions	SLIDING	OVER.	B.C.	STRUCTURAL
active earth pressure Pa (kN/m)	1,00	1,00	1,00	1,00
wall weight W (kN/m)	1,00	1,00	1,00	1,00
passive earth pressure Pp (kN/m)	1,00	1,00	0,00	0,00
backfill weight Wbf (kN/m)	1,00	1,00	1,00	1,00
water pressure -active side- Wp (kN/m)	1,00	1,00	1,00	1,00
permanent uniform load G (kN/m)	1,00	1,00	1,00	1,00
variable uniform load Q (kN/m)	1,00	1,00	1,00	1,00
vertical permanent load Ng (kN/m)	1,00	1,00	1,00	1,00
vertical variable load Nq (kN/m)	1,00	1,00	1,00	1,00
horizontal permanent load Hg (kN/m)	1,00	1,00	1,00	1,00
horizontal variable load Hq (kN/m)	1,00	1,00	1,00	1,00
permanent uniform load -heel- Gh (kN/m)	1,00	1,00	1,00	1,00
active earth pressure -seismic- Pas (kN/m)	0,00	0,00	0,00	0,00
wall weight -seismic- Ws (kN/m)	0,00	0,00	0,00	0,00
backfill weight -seismic- Wbfs (kN/m)	0,00	0,00	0,00	0,00
<b>soil parameters</b>				
soil friction	1,00	1,00	1,00	1,00
soil cohesion	1,00	1,00	1,00	1,00
soil unit weight	1,00	1,00	1,00	1,00

## addplanning software : cantilever retaining wall.

PROJECT : project

AUTHOR : author

DATE :

### Wall Design - OVERTURNING - ASD

action	partial f.	magnitude	arm [m]	moment [kNm/m]
active earth pressure Pa (kN/m)	1,00	10,13	0,46	4,71
wall weight W (kN/m)	1,00	37,75	0,85	32,03
passive earth pressure Pp (kN/m)	1,00	10,54	0,20	2,11
backfill weight Wbf (kN/m)	1,00	55,00	1,55	85,25
water pressure -active side- Wp (kN/m)	1,00	0,00	0,83	0,00
permanent uniform load G (kN/m)	1,00	6,54	1,25	8,18
variable uniform load Q (kN/m)	1,00	1,31	1,25	1,64
vertical permanent load Ng (kN/m)	1,00	1,00	0,65	0,65
vertical variable load Nq (kN/m)	1,00	1,00	0,65	0,65
horizontal permanent load Hg (kN/m)	1,00	1,00	1,25	1,25
horizontal variable load Hq (kN/m)	1,00	1,00	1,25	1,25
permanent uniform load -heel- Gh (kN/m)	1,00	5,50	1,55	8,52
active total moment (kNm/m)		17,03		
passive total moment (kNm/m)		129,21		
<b>S.F. - OVERTURNING</b>		<b>7,59</b>		

## addplanning software : cantilever retaining wall.

PROJECT : project

AUTHOR : author

DATE :

### Wall Design - SDLIDING - ASD

action	partial f.	magnitude	arm [m]	moment [kNm/m]
active earth pressure Pa (kN/m)	1,00	10,13	0,46	
wall weight W (kN/m)	1,00	37,75	0,85	
passive earth pressure Pp (kN/m)	1,00	10,54	0,20	
backfill weight Wbf (kN/m)	1,00	55,00	1,55	
water pressure -active side- Wp (kN/m)	1,00	0,00	0,83	
permanent uniform load G (kN/m)	1,00	6,54	1,25	
variable uniform load Q (kN/m)	1,00	1,31	1,25	
vertical permanent load Ng (kN/m)	1,00	1,00	0,65	
vertical variable load Nq (kN/m)	1,00	1,00	0,65	
horizontal permanent load Hg (kN/m)	1,00	1,00	1,25	
horizontal variable load Hq (kN/m)	1,00	1,00	1,25	
permanent uniform load -heel- Gh (kN/m)	1,00	5,50	1,55	
active actions (kN/m)	47,13			
passive actions (kN/m)	19,99			
<b>S.F. - SLIDING</b>	<b>2,36</b>			

## addplanning software : cantilever retaining wall.

PROJECT : project

AUTHOR : author

DATE :

### Wall Design - STRUCTURAL - ASD

action	partial f.	magnitude	arm [m]	moment [kNm/m]
active earth pressure Pa (kN/m)	1,00	10,13	0,46	
wall weight W (kN/m)	1,00	37,75	0,85	
passive earth pressure Pp (kN/m)	0,00	0,00	0,20	
backfill weight Wbf (kN/m)	1,00	55,00	1,55	
water pressure -active side- Wp (kN/m)	1,00	0,00	0,83	
permanent uniform load G (kN/m)	1,00	6,54	1,25	
variable uniform load Q (kN/m)	1,00	1,31	1,25	
vertical permanent load Ng (kN/m)	1,00	1,00	0,65	
vertical variable load Nq (kN/m)	1,00	1,00	0,65	
horizontal permanent load Hg (kN/m)	1,00	1,00	1,25	
horizontal variable load Hq (kN/m)	1,00	1,00	1,25	
permanent uniform load -heel- Gh (kN/m)	1,00	5,50	1,55	
eccentricity (m)	-0,05			
max pressure (kN/m <sup>2</sup> )	41,19			
min pressure (kN/m <sup>2</sup> )	54,29			
stem As reinforcment (cm <sup>2</sup> )	85,68			
stem As minimum reinforcment (cm <sup>2</sup> )	650,00			
stem base reinforcment - steel bars	Φ12/15			
stem top reinforcment - steel bars	Φ12/30			
stem minimum reinforcment - steel bars	Φ12/15			
heel As reinforcment (cm <sup>2</sup> )	38,42			
heel As minimum reinforcment (cm <sup>2</sup> )	650,00			
heel reinforcment - steel bars	Φ12/15			
heel minimum reinforcment - steel bars	Φ12/15			
toe As reinforcment (cm <sup>2</sup> )	13,77			
toe As minimum reinforcment (cm <sup>2</sup> )	650,00			
toe reinforcment - steel bars	Φ12/15			
toe minimum reinforcment - steel bars	Φ12/15			

addplanning software : cantilever retaining wall.

PROJECT : project

AUTHOR : author

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**Wall Design - BEARING CAPACITY ESTIMATION - TERZAGHI - ASD**

Nc	17,69
Nq	7,44
Ng	3,64
Ncb	11,85
Nqb	3,88
Ngb	1,12
<b>qu - Terzaghi (kN/m<sup>2</sup>)</b>	<b>221,46</b>

**Wall Design - BEARING CAPACITY ESTIMATION - MEYRHOF - ASD**

sq	1,45
sc	1,90
sg	1,45
ic	1,00
iq	1,00
ig	1,00
dq	1,00
dc	1,00
dg	1,00
<b>qu - Meyrhof (kN/m<sup>2</sup>)</b>	<b>317,73</b>



## addplanning software : cantilever retaining wall.

PROJECT : project

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### Wall Design - OVERTURNING - SEISMIC

action	partial f.	magnitude	arm [m]	moment [kNm/m]
active earth pressure Pa (kN/m)	1,00	10,13	0,46	4,71
wall weight W (kN/m)	1,00	37,75	0,85	32,03
passive earth pressure Pp (kN/m)	1,00	10,54	0,20	2,11
backfill weight Wbf (kN/m)	1,00	55,00	1,55	85,25
water pressure -active side- Wp (kN/m)	1,00	0,00	0,83	0,00
permanent uniform load G (kN/m)	1,00	6,54	1,25	8,18
variable uniform load Q (kN/m)	0,30	0,39	1,25	0,49
vertical permanent load Ng (kN/m)	1,00	1,00	0,65	0,65
vertical variable load Nq (kN/m)	0,30	0,30	0,65	0,20
horizontal permanent load Hg (kN/m)	1,00	1,00	1,25	1,25
horizontal variable load Hq (kN/m)	0,30	0,30	1,25	0,38
permanent uniform load -heel- Gh (kN/m)	1,00	5,50	1,55	8,52
active earth pressure -seismic- Pas (kN/m)	1,00	0,00	1,75	0,00
wall weight -seismic- Ws (kN/m)	1,00	4,03	0,83	3,32
backfill weight -seismic- Wbfs (kN/m)	0,00	0,00	1,40	0,00
active total moment (kNm/m)	18,33			
passive total moment (kNm/m)	128,76			
<b>S.F. - OVERTURNING</b>	<b>7,03</b>			

## addplanning software : cantilever retaining wall.

PROJECT : project

AUTHOR : author

DATE :

### Wall Design - SDLIDING - SEISMIC

action	partial f.	magnitude	arm [m]	moment [kNm/m]
active earth pressure Pa (kN/m)	1,00	10,13	0,46	
wall weight W (kN/m)	1,00	37,75	0,85	
passive earth pressure Pp (kN/m)	1,00	10,54	0,20	
backfill weight Wbf (kN/m)	1,00	55,00	1,55	
water pressure -active side- Wp (kN/m)	1,00	0,00	0,83	
permanent uniform load G (kN/m)	1,00	6,54	1,25	
variable uniform load Q (kN/m)	0,30	0,39	1,25	
vertical permanent load Ng (kN/m)	1,00	1,00	0,65	
vertical variable load Nq (kN/m)	0,30	0,30	0,65	
horizontal permanent load Hg (kN/m)	1,00	1,00	1,25	
horizontal variable load Hq (kN/m)	0,30	0,30	1,25	
permanent uniform load -heel- Gh (kN/m)	1,00	5,50	1,55	
active earth pressure -seismic- Pas (kN/m)	1,00	0,00	1,75	
wall weight -seismic- Ws (kN/m)	1,00	4,03	0,83	
backfill weight -seismic- Wbfs (kN/m)	0,00	0,00	1,40	
<del>passive earth pressure (kN/m)</del>	<del>27,03</del>			
<b>S.F. - SLIDING</b>	<b>1,95</b>			

## addplanning software : cantilever retaining wall.

PROJECT : project

AUTHOR : author

DATE :

### Wall Design - STRUCTURAL - SEISMIC

action	partial f.	magnitude	arm [m]	moment [kNm/m]
active earth pressure Pa (kN/m)	1,00	10,13	0,46	
wall weight W (kN/m)	1,00	37,75	0,85	
passive earth pressure Pp (kN/m)	0,00	0,00	0,20	
backfill weight Wbf (kN/m)	1,00	55,00	1,55	
water pressure -active side- Wp (kN/m)	1,00	0,00	0,83	
permanent uniform load G (kN/m)	1,00	6,54	1,25	
variable uniform load Q (kN/m)	1,00	1,31	1,25	
vertical permanent load Ng (kN/m)	1,00	1,00	0,65	
vertical variable load Nq (kN/m)	1,00	1,00	0,65	
horizontal permanent load Hg (kN/m)	1,00	1,00	1,25	
horizontal variable load Hq (kN/m)	1,00	1,00	1,25	
permanent uniform load -heel- Gh (kN/m)	1,00	5,50	1,55	
active earth pressure -seismic- Pas (kN/m)	1,00	0,00	1,75	
wall weight -seismic- Ws (kN/m)	1,00	4,03	0,83	
backfill weight -seismic- Wbfs (kN/m)	0,00	0,00	1,40	
eccentricity (m)	-0,02			
max pressure (kN/m <sup>2</sup> )	44,37			
min pressure (kN/m <sup>2</sup> )	50,44			
stem As reinforcement (cm <sup>2</sup> )	102,49			
stem As minimum reinforcement (cm <sup>2</sup> )	650,00			
stem base reinforcement - steel bars	Φ12/15			
stem top reinforcement - steel bars	Φ12/30			
stem minimum reinforcement - steel bars	Φ12/15			
heel As reinforcement (cm <sup>2</sup> )	40,23			
heel As minimum reinforcement (cm <sup>2</sup> )	650,00			
heel reinforcement - steel bars	Φ12/15			
heel minimum reinforcement - steel bars	Φ12/15			
toe As reinforcement (cm <sup>2</sup> )	14,65			
toe As minimum reinforcement (cm <sup>2</sup> )	650,00			
toe reinforcement - steel bars	Φ12/15			
toe minimum reinforcement - steel bars	Φ12/15			

## addplanning software : cantilever retaining wall.

PROJECT : project

AUTHOR : author

DATE :

### Wall Design - OVERTURNING - EC7-EQU

action	partial f.	magnitude	arm [m]	moment [kNm/m]
active earth pressure Pa (kN/m)	1,10	18,13	0,56	10,09
wall weight W (kN/m)	0,90	33,97	0,85	28,83
passive earth pressure Pp (kN/m)	1,00	8,32	0,20	1,66
backfill weight Wbf (kN/m)	0,90	49,50	1,55	76,72
water pressure -active side- Wp (kN/m)	1,10	0,00	0,83	0,00
permanent uniform load G (kN/m)	1,10	8,17	1,25	10,21
variable uniform load Q (kN/m)	1,50	2,23	1,25	2,78
vertical permanent load Ng (kN/m)	0,90	0,90	0,65	0,58
vertical variable load Nq (kN/m)	0,00	0,00	0,65	0,00
horizontal permanent load Hg (kN/m)	1,10	1,10	1,25	1,38
horizontal variable load Hq (kN/m)	1,50	1,50	1,25	1,88
permanent uniform load -heel- Gh (kN/m)	0,90	4,95	1,55	7,67
active total moment (kNm/m)		26,33		
passive total moment (kNm/m)		115,47		
<b>S.F. - OVERTURNING</b>		4,39		

## addplanning software : cantilever retaining wall.

PROJECT : project

AUTHOR : author

DATE :

### Wall Design - SDLIDING - EC7-EQU

action	partial f.	magnitude	arm [m]	moment [kNm/m]
active earth pressure Pa (kN/m)	1,10	18,13	0,56	
wall weight W (kN/m)	0,90	33,97	0,85	
passive earth pressure Pp (kN/m)	0,90	7,49	0,20	
backfill weight Wbf (kN/m)	0,90	49,50	1,55	
water pressure -active side- Wp (kN/m)	1,10	0,00	0,83	
permanent uniform load G (kN/m)	1,10	8,17	1,25	
variable uniform load Q (kN/m)	1,50	2,23	1,25	
vertical permanent load Ng (kN/m)	0,90	0,90	0,65	
vertical variable load Nq (kN/m)	0,00	0,00	0,65	
horizontal permanent load Hg (kN/m)	1,10	1,10	1,25	
horizontal variable load Hq (kN/m)	1,50	1,50	1,25	
permanent uniform load -heel- Gh (kN/m)	0,90	4,95	1,55	
active actions (kN/m)	33,58			
passive actions (kN/m)	31,12			
<b>S.F. - SLIDING</b>	<b>1,08</b>			

## addplanning software : cantilever retaining wall.

PROJECT : project

AUTHOR : author

DATE :

### Wall Design - STRUCTURAL - EC7-EQU

action	partial f.	magnitude	arm [m]	moment [kNm/m]
active earth pressure Pa (kN/m)	1,35	13,68	0,46	
wall weight W (kN/m)	1,35	50,96	0,85	
passive earth pressure Pp (kN/m)	0,00	0,00	0,20	
backfill weight Wbf (kN/m)	1,35	74,25	1,55	
water pressure -active side- Wp (kN/m)	1,35	0,00	0,83	
permanent uniform load G (kN/m)	1,35	8,83	1,25	
variable uniform load Q (kN/m)	1,50	1,96	1,25	
vertical permanent load Ng (kN/m)	1,35	1,35	0,65	
vertical variable load Nq (kN/m)	1,50	1,50	0,65	
horizontal permanent load Hg (kN/m)	1,35	1,35	1,25	
horizontal variable load Hq (kN/m)	1,50	1,50	1,25	
permanent uniform load -heel- Gh (kN/m)	1,35	7,43	1,55	
eccentricity (m)	-0,61			
max pressure (kN/m <sup>2</sup> )	-31,59			
min pressure (kN/m <sup>2</sup> )	116,66			
stem As reinforcment (cm <sup>2</sup> )	118,04			
stem As minimum reinforcment (cm <sup>2</sup> )	650,00			
stem base reinforcment - steel bars	Φ12/15			
stem top reinforcment - steel bars	Φ12/30			
stem minimum reinforcment - steel bars	Φ12/15			
heel As reinforcment (cm <sup>2</sup> )	37,72			
heel As minimum reinforcment (cm <sup>2</sup> )	650,00			
heel reinforcment - steel bars	Φ12/15			
heel minimum reinforcment - steel bars	Φ12/15			
toe As reinforcment (cm <sup>2</sup> )	-7,25			
toe As minimum reinforcment (cm <sup>2</sup> )	650,00			
toe reinforcment - steel bars	Φ12/15			
toe minimum reinforcment - steel bars	Φ12/15			

## addplanning software : cantilever retaining wall.

PROJECT : project

AUTHOR : author

DATE :

### Wall Design - OVERTURNING - EC7-STR-GEO

action	partial f.	magnitude	arm [m]	moment [kNm/m]
active earth pressure Pa (kN/m)	1,35	13,68	0,46	6,36
wall weight W (kN/m)	1,00	37,75	0,85	32,03
passive earth pressure Pp (kN/m)	1,00	10,54	0,20	2,11
backfill weight Wbf (kN/m)	1,00	55,00	1,55	85,25
water pressure -active side- Wp (kN/m)	1,35	0,00	0,83	0,00
permanent uniform load G (kN/m)	1,35	8,83	1,25	11,04
variable uniform load Q (kN/m)	1,50	1,96	1,25	2,45
vertical permanent load Ng (kN/m)	1,00	1,00	0,65	0,65
vertical variable load Nq (kN/m)	0,00	0,00	0,65	0,00
horizontal permanent load Hg (kN/m)	1,35	1,35	1,25	1,69
horizontal variable load Hq (kN/m)	1,50	1,50	1,25	1,88
permanent uniform load -heel- Gh (kN/m)	1,00	5,50	1,55	8,52
active total moment (kNm/m)				23,42
passive total moment (kNm/m)				128,56
<b>S.F. - OVERTURNING</b>				<b>5,49</b>

## addplanning software : cantilever retaining wall.

PROJECT : project

AUTHOR : author

DATE :

### Wall Design - SDLIDING - EC7-STR-GEO

action	partial f.	magnitude	arm [m]	moment [kNm/m]
active earth pressure Pa (kN/m)	1,35	13,68	0,46	
wall weight W (kN/m)	1,00	37,75	0,85	
passive earth pressure Pp (kN/m)	1,00	10,54	0,20	
backfill weight Wbf (kN/m)	1,00	55,00	1,55	
water pressure -active side- Wp (kN/m)	1,35	0,00	0,83	
permanent uniform load G (kN/m)	1,35	8,83	1,25	
variable uniform load Q (kN/m)	1,50	1,96	1,25	
vertical permanent load Ng (kN/m)	1,00	1,00	0,65	
vertical variable load Nq (kN/m)	1,00	1,00	0,65	
horizontal permanent load Hg (kN/m)	1,35	1,35	1,25	
horizontal variable load Hq (kN/m)	1,50	1,50	1,25	
permanent uniform load -heel- Gh (kN/m)	1,00	5,50	1,55	
active actions (kN/m)	47,13			
passive actions (kN/m)	27,33			
<b>S.F. - SLIDING</b>	1,72			



## addplanning software : cantilever retaining wall.

PROJECT : project

AUTHOR : author

DATE :

### Wall Design - OVERTURNING - CUSTOM

action	partial f.	magnitude	arm [m]	moment [kNm/m]
active earth pressure Pa (kN/m)	1,00	10,13	0,46	4,71
wall weight W (kN/m)	1,00	37,75	0,85	32,03
passive earth pressure Pp (kN/m)	1,00	10,54	0,20	2,11
backfill weight Wbf (kN/m)	1,00	55,00	1,55	85,25
water pressure -active side- Wp (kN/m)	1,00	0,00	0,83	0,00
permanent uniform load G (kN/m)	1,00	6,54	1,25	8,18
variable uniform load Q (kN/m)	1,00	1,31	1,25	1,64
vertical permanent load Ng (kN/m)	1,00	1,00	0,65	0,65
vertical variable load Nq (kN/m)	1,00	1,00	0,65	0,65
horizontal permanent load Hg (kN/m)	1,00	1,00	1,25	1,25
horizontal variable load Hq (kN/m)	1,00	1,00	1,25	1,25
permanent uniform load -heel- Gh (kN/m)	1,00	5,50	1,55	8,52
active total moment (kNm/m)		17,03		
passive total moment (kNm/m)				
<b>S.F. - OVERTURNING</b>		7,59		

## addplanning software : cantilever retaining wall.

PROJECT : project

AUTHOR : author

DATE :

### Wall Design - SDLIDING - CUSTOM

action	partial f.	magnitude	arm [m]	moment [kNm/m]
active earth pressure Pa (kN/m)	1,00	10,13	0,46	
wall weight W (kN/m)	1,00	37,75	0,85	
passive earth pressure Pp (kN/m)	1,00	10,54	0,20	
backfill weight Wbf (kN/m)	1,00	55,00	1,55	
water pressure -active side- Wp (kN/m)	1,00	0,00	0,83	
permanent uniform load G (kN/m)	1,00	6,54	1,25	
variable uniform load Q (kN/m)	1,00	1,31	1,25	
vertical permanent load Ng (kN/m)	1,00	1,00	0,65	
vertical variable load Nq (kN/m)	1,00	1,00	0,65	
horizontal permanent load Hg (kN/m)	1,00	1,00	1,25	
horizontal variable load Hq (kN/m)	1,00	1,00	1,25	
permanent uniform load -heel- Gh (kN/m)	1,00	5,50	1,55	
active actions (kN/m)	47,13			
passive actions (kN/m)	19,99			
<b>S.F. - SLIDING</b>	<b>2,36</b>			

## addplanning software : cantilever retaining wall.

PROJECT : project

AUTHOR : author

DATE :

### Wall Design - STRUCTURAL - CUSTOM

action	partial f.	magnitude	arm [m]	moment [kNm/m]
active earth pressure Pa (kN/m)	1,00	10,13	0,46	
wall weight W (kN/m)	1,00	37,75	0,85	
passive earth pressure Pp (kN/m)	0,00	0,00	0,20	
backfill weight Wbf (kN/m)	1,00	55,00	1,55	
water pressure -active side- Wp (kN/m)	1,00	0,00	0,83	
permanent uniform load G (kN/m)	1,00	6,54	1,25	
variable uniform load Q (kN/m)	1,00	1,31	1,25	
vertical permanent load Ng (kN/m)	1,00	1,00	0,65	
vertical variable load Nq (kN/m)	1,00	1,00	0,65	
horizontal permanent load Hg (kN/m)	1,00	1,00	1,25	
horizontal variable load Hq (kN/m)	1,00	1,00	1,25	
permanent uniform load -heel- Gh (kN/m)	1,00	5,50	1,55	
eccentricity (m)	-0,05			
max pressure (kN/m <sup>2</sup> )	41,19			
min pressure (kN/m <sup>2</sup> )	54,29			
stem As reinforcment (cm <sup>2</sup> )	85,68			
stem As minimum reinforcment (cm <sup>2</sup> )	650,00			
stem base reinforcment - steel bars	Φ12/15			
stem top reinforcment - steel bars	Φ12/30			
stem minimum reinforcment - steel bars	Φ12/15			
heel As reinforcment (cm <sup>2</sup> )	38,42			
heel As minimum reinforcment (cm <sup>2</sup> )	650,00			
heel reinforcment - steel bars	Φ12/15			
heel minimum reinforcment - steel bars	Φ12/15			
toe As reinforcment (cm <sup>2</sup> )	13,77			
toe As minimum reinforcment (cm <sup>2</sup> )	650,00			
toe reinforcment - steel bars	Φ12/15			
toe minimum reinforcment - steel bars	Φ12/15			