

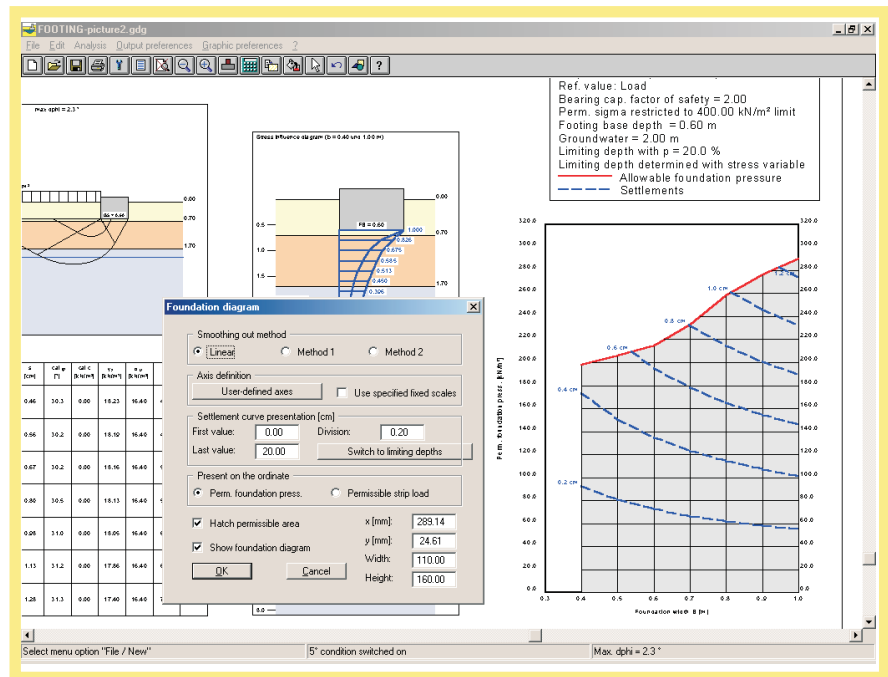
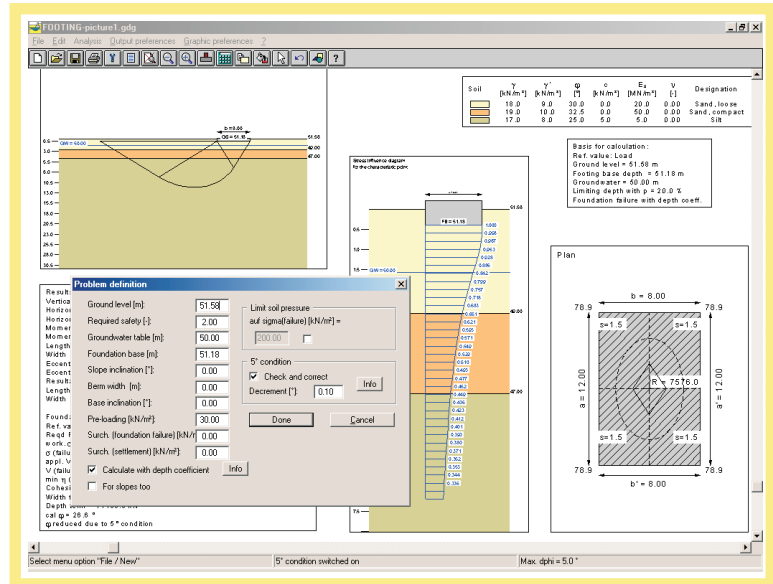
**Description**

*GGU-FOOTING - base failure and settlement calculations.*

*Calculation of base failure and settlement. The program system includes comfortable data input with permanent presentation of the system on the screen. Every change of data is shown on the screen, so that optimum control of data input is given. The many means of graphic presentation, to a high standard of quality, make it possible for you to show your calculation results exactly as you wish to.*

**Capabilities:**

- Foundation diagrams for strip footing and footing foundations
- Takes into account multiple horizons and gives a mean value of soil characteristics using a logarithmic spiral
- Tests the "5% condition", and corrects through iterative reduction of the angles of shear friction that are above the current mean
- Calculates settlement at the characterising point
- Takes into account bench and slope inclination, tilt of foundation floor, and pre-loading for settlement calculation
- Presentation of system geometry, calculation results as tables, stress distribution, soil characteristics and general information on your initial calculation data
- Creates a foundation diagram with permissible soil consolidation and a set of curves with the resulting subsidence
- Freely definable positioning and sizing of graphic elements and legends
- Mini-CAD system, allowing free use of text and other graphic elements in your forms

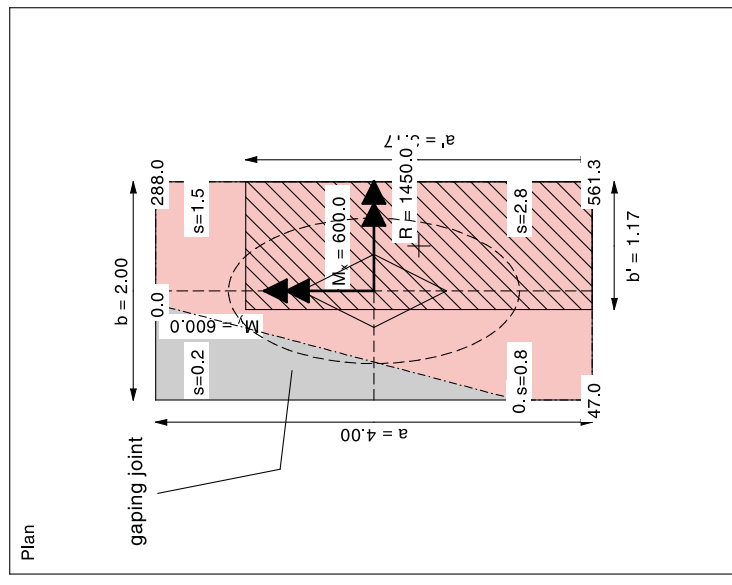
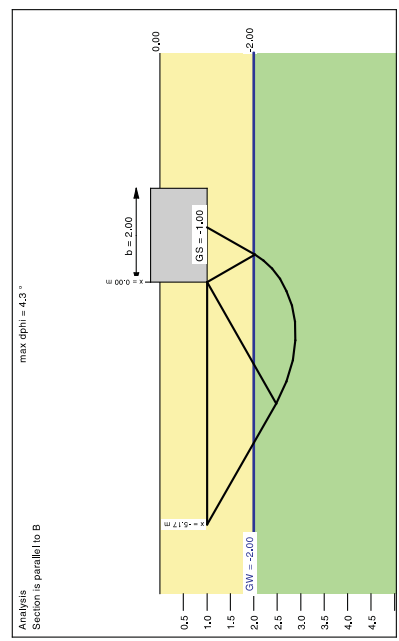
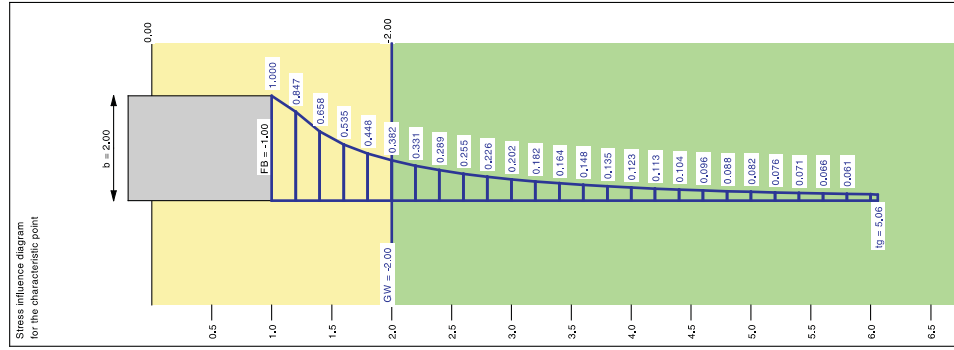


GGU-Software www.ggu-software.com Germany	Report no.: 9999 / 03
	Attachment no.: 1

GGU-FOOTING

Basis for calculation:  
 Ref. value: Load  
 Ground level = 0.00 m  
 Footing base depth = -1.00 m  
 Groundwater = -2.00 m  
 Limiting depth with  $p = 20.0 \%$

Soil	$\gamma$ [kN/m <sup>3</sup> ]	$\gamma'$ [kN/m <sup>3</sup> ]	$\phi$ [°]	c [kN/m <sup>2</sup> ]	$E_s$ [MN/m <sup>2</sup> ]	V [-]	Designation
	20.0	11.0	27.5	5.0	12.0	0.00	Silt
	19.0	10.0	32.5	0.0	80.0	0.00	Sand



Results pad footing  
 Vertical load  $V = 1450.00$  kN  
 Self-weight component =  $200.00$  kN  
 $\gamma$  (concr.) =  $25.00$  kN/m<sup>3</sup>  
 Horizontal force  $H_x = 0.00$  kN  
 Horizontal force  $H_y = 0.00$  kN  
 Moment  $M_x = 600.00$  kN \* m  
 Moment  $M_y = 600.00$  kN \* m  
 Length  $L = 4.00$  m  
 Width  $B = 2.00$  m  
 Eccentricity  $e_x = 0.414$  m  
 Eccentricity  $e_y = -0.414$  m  
 Resultant is in 2nd core dimen.  
 Length  $L' = 3.17$  m  
 Width  $B' = 1.17$  m

Foundation failure:  
 Ref. value: Load  
 Reqd FOS = 2.00  
 work.  $\sigma = 389.8$  kN/m<sup>2</sup>  
 $\sigma$  (failure) =  $731.4$  kN/m<sup>2</sup>  
 appl.  $V = 1450.0$  kN  
 $V$  (failure) =  $2720.4$  kN  
 min  $\eta$  (parallel zu b) = 1.88  
 cal.  $\phi = 30.5^\circ$

Slide safety:  
 work.  $\eta = 999.99$   
 Reqd FOS = 1.50

Settlement:  
 Limiting depth  $t_g = 6.06$  m u. GOK  
 Pre-loading =  $30.0$  kN/m<sup>2</sup>  
 Settlement (mean of CPs) =  $1.31$  cm  
 Settlement of CPs:  
 top left =  $0.18$  cm  
 top right =  $1.50$  cm  
 bottom left =  $0.79$  cm  
 bottom right =  $2.78$  cm  
 Torsion (X) (CP) =  $1 : 313.5$   
 Torsion (Y) (CP) =  $1 : 89.1$

cal c =  $2.06$  kN/m<sup>2</sup>  
 cal  $\gamma/2 = 16.84$  kN/m<sup>3</sup>  
 cal  $G_{1/2} = 20.00$  kN/m<sup>2</sup>  
 Bearing capacity coeff. (x):  
 $N_c = 31.4$ ;  $N_{d1} = 19.5$ ;  $N_{d2} = 10.9$   
 Shape coeff. (x):  
 $V_c = 1.198$ ;  $V_d = 1.188$ ;  $V_b = 0.889$