Analysis of CPT pile

Input data

Project

Date : 11/9/2009

Soil parameters

Soil No. 1

Unit weight :	γ	=	20.00 kN/m^3
Angle of internal friction :	φ_{ef}	=	30.00 °
Saturated unit weight :	γ_{sat}	=	20.00 kN/m^3
Type of soil :			sand, gravel
Magnitude OCR :			2 < OCR < 4
Type of grains :			sand finer than 600 nm

Construction

Type of construction : pile group
Structure stiffness : non stiff
Design magnitude of load = 980.00 kN
Standard magnitude of load = 700.00 kN

Geometry

Type of pile : bored pile(drilling mud, uncased borehole)
Pile material : concrete

Pile length in soil = 8.00 m
Pile head offset above terrain = 0.50 m
Depth of finished grade = 0.00 m

Pile cross-section - circular
Pile diameter d = 0.90 m

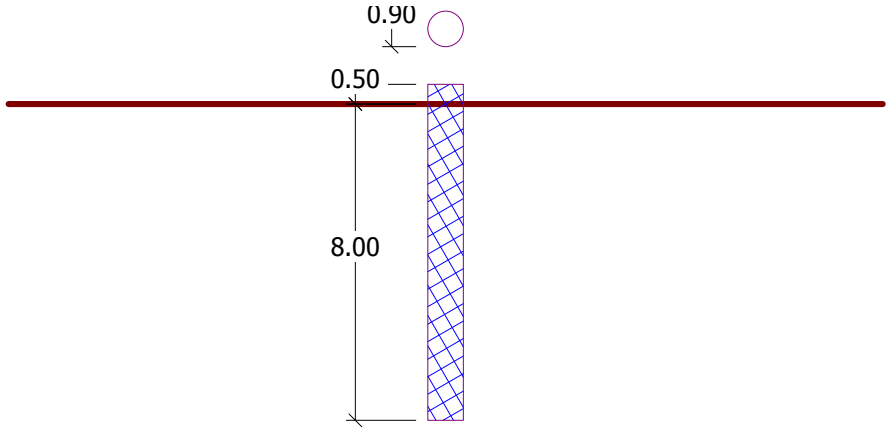
GWT

Ground water table GWT = 6.00 m

CPTs

Numbe	Name of CPT:	Origin h [m]	Modif. param.
1	DKM 27	0.00	NO

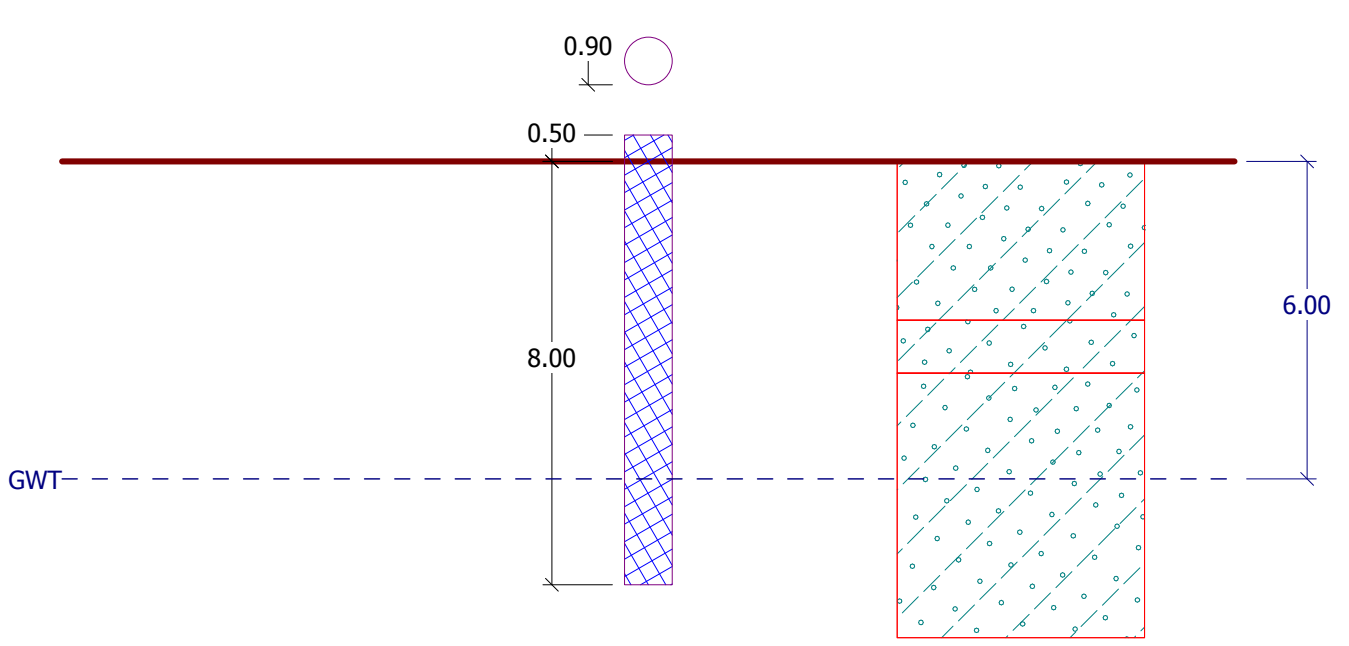
Name : CPTs **Stage : 1**



Geological profile and assigned soils

No.	Layer [m]	Assigned soil	Pattern
1	3.00	Soil No. 1	
2	1.00	Soil No. 1	
3	-	Soil No. 1	

Name : Profile and assignment **Stage : 1**



Global settings

Type of analysis - ENV 1997-3 (EC7)

Settings of the stage of construction

Verification analysis according to the factor of safety
Bearing capacity factor of safety = 1.50
Coefficient of reduction of limit load curve k = 1.00

Bearing capacity calculation - ENV 1997-3 (EC7)

Calculation of vertical pile bearing capacity - intermediate results

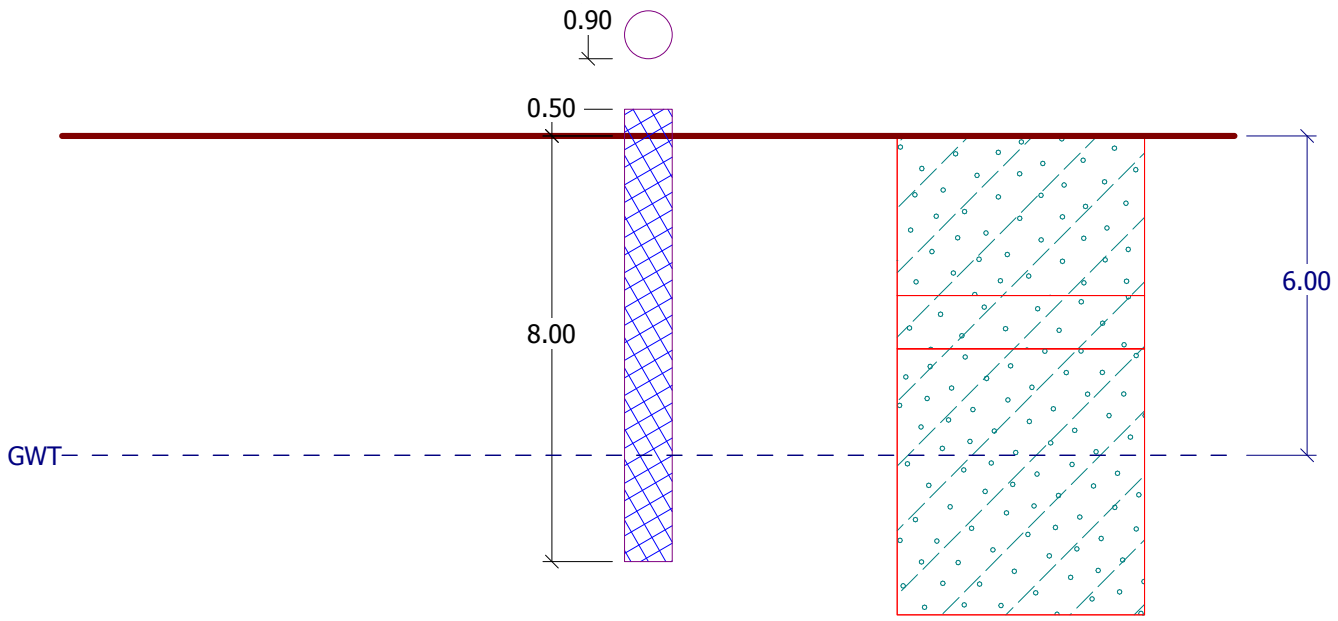
Overall pile bearing capacity	Fr_max_d	=	1514.95	kN
Pile diameter	d_eq	=	0.90	m
Pile diameter at heel	d_s_eq	=	0.90	m
Pile area at heel	A_h	=	0.64	m^2
Coeff. of reduc. of pile heel bear. capacity	α_p	=	0.50	-
Coeff. of influence of pile shape	β	=	1.00	-
Coeff. of influence of pile widened heel	s_koef	=	1.00	-

Calculation of vertical bearing capacity - results

Pile bearing capacity Fr_d = 1514.95 kN
Pile loading Fs_d = 980.00 kN

Safety factor = 1.55>1.50
Verification of pile for bearing capacity is SATISFACTORY

Name : Bearing capacity | **Stage : 1; Analysis**



Settlement calculation - ENV 1997-3 (EC7)

Settlement calculation:

Overall load	Fsd	=	700.00	kN
Skin bearing capacity	Fr_shaft_d	=	676.31	kN
Bearing capacity at heel	Fr_point_d	=	25.47	kN
Pile heel settlement	w_point	=	8.6	mm
Elastic deformation of pile	w_elast.	=	0.3	mm
Overall settlement	w1_d	=	8.9	mm

Pile settlement calculation - results

For loading Fs = 700.00 kN the pile settlement is = 8.9 mm

Name : Settlement | **Stage : 1; Analysis**