CE 468 GEOTECHNICAL DESIGN

DESIGN PROBLEM: SETTLEMENT OF FOUNDATİONS IN SAND

A machine foundation is going to be designed. A site investigation program has been undertaken, which includes several boreholes, laboratory tests and SPT and CPT. The typical borehole log and CPT data are attached. The foundation, is a strip foundation having 5.m. width (55m long), and the foundation depth is at 2m below the existing grade. The foundation level is at 2m elevation in SPT profile and 4m elevation in CPT profile. The estimated soil pressures due to the weight of the structure including the foundation weight is 1000 kN/m^2.

SPT were conducted with double turn on cat head and using donut hammer.

Propose an idealized soil profile for the site and assign characteristic parameters to the soil layers present in the site.

Compute the sttlement of the strip footing using Burland and Burbidge method and SPT data, as well as using Schmertmans Method using CPT data,and compare the settlement predictions. Assume that the entire soil profile is cohesionless.

CONSORTIUM
GEOTEKO - SGGW - GEOPROJEKT

BOREHOLE PROFILE

App. 5.3

II SUBWAY LINE
STATION S9 - RONDO ONZ

Borehole 8P/S9

level: 35.99 m a.'0'Vistula
date: 09.06.2003

drilling method: mechanized

1 Tools used	2 Casing diameter and depth	3 Water level and piezometer	4 Depth [m]	5 Lithologic profile	6 Thickness of layer [m]	MACROSCOPIC DESCRIPTION: 7 Type of soil and colour	8 Genesis and stratigraphy	9 Water content	10 State of the soil	11 Depth and type of sample and Other tests
			Scale 1 : 100							
1	2	3	4	5	6	7	8	9	10	11
			1	nN	1.7	Fill (Debris+Medium sand+ Sandy clay)				
			2	Gp	0.7	Sandy clay (brown-gray)		w		SPT 2.1-2.55m 3/8/9
		2.6		Pπ/Pd	0.8	Silty sand/Fine sand (gray-brown)		nw		
		3.10	3	Pd	0.5	Fine sand (yellow)		w		
				Pπ/Pd	0.5	Silty sand/Fine sand (brown-gray)		nw		SPT 4.0-4.45m
			4	π	0.2	Silt (brown-gray)		w		
				Gz/Gπz	1.6	Clay/Silty clay (brown-gray)		w		9/19/30
			5							NNS 6.0-6.6m
		6.4	6							SPT 6.6-7.05m 12/20/20
			7	Gp	12.3	Sandy clay (dark gray)	QUATERNARY Glacial and fluvioglacial deposits	w		
			8							NNS 8.2-8.4m
			9							SPT 8.9-9.35m 4/5/6
			10							
			11							SPT 11.1-11.55m 5/6/8
		11.6	12							
		12.51	13							SPT 13.2-13.65m NW 13.0m 3/8/11
			14							
			15							NNS 15.8-16.1m
			16							
			17							SPT 17.2-17.65m NW 17.0m 5/9/12
			18							
		18.3	19	Pπ/Pd	0.8	Silty sand/Fine sand (gray)		nw		
			20	Pd	5.9	Fine sand (gray)		nw		SPT 19.8-20.25m 31/49/-
			21							SPT 22.1-22.55m 18/51/-
			22							
			23							SPT 24.1-24.55m 22/62/-
			24							
			25							

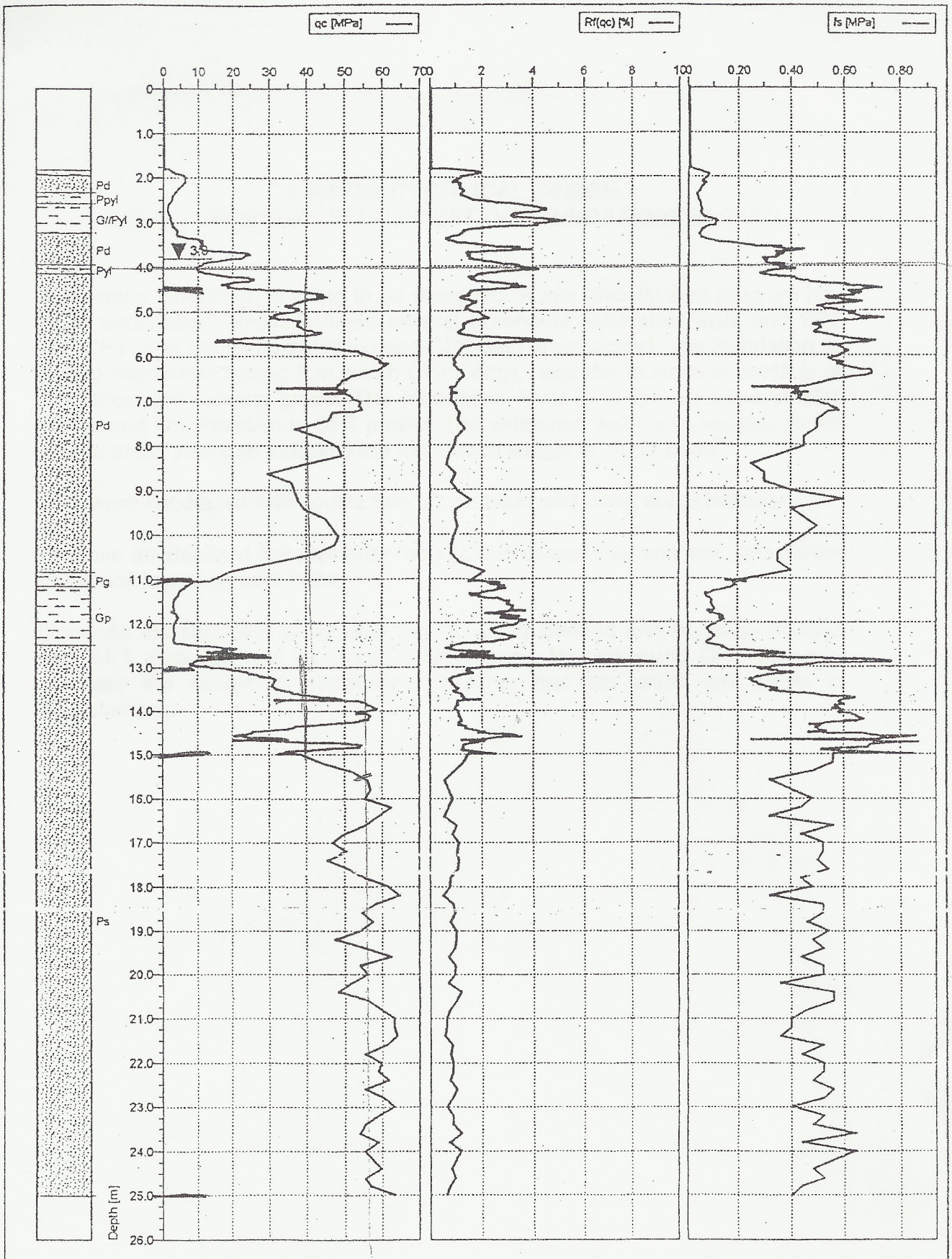
LEGEND

Water content:
- nw - of low moisture
- w - moist
- n - wet
- nw - saturated

Ground water in boreholes:
- ▽▼ - free ground water table
- ▼ - stabilised ground water table
- ▽ - indentifited ground water table

Type of samples:
- NNS - undisturbed sample
- NW,NU - disturbed sample

Other marks:
- + - additions
- // - laminations
- / - mixed



geoteko

Cone No: 0
Tip area [cm2]: 10
Sleeve area [cm2]: 150

Location: Rondo ONZ	Position:	Ground level: 35.47	Test no: CPT1/S9
Project ID:	Client: Metro	Date: 03-06-04	Scale:
Project: Dokumentacja hydrogeol. i geolog.-inżynierska		Page: 1/2	Fig: 6.1.a
Od glebokosci 15.1 stożek mechaniczny		File: cpt1_wyniki.cpd	