geotesting®
STUDII GEOTEHNICE ȘI GEOFIZICE

Profilul Forajului ~~Santului~~ / Borehole ~~Pit~~ Profile Nr. S4-FP-11

REZULTATELE ANALIZELOR DE LABORATOR
LABORATORY TEST RESULTS

LUCRAREA / DESIGN: Studiu geotehnic pentru revizuirea Studiului de fezabilitate Autostrada Sibiu-Pitesti - Sectiunea 4 (Valeni-Curtea de Arges)

AMPLASAMENT / LOCATION: Autostrada Sibiu-Pitesti
X : 464845.06   Y: 413325.32

DATA / DATE: 13.08.2016

Cota fata de / Level vs: 0.00 Foraj / Borehole (pit)

Adancime / Depth (m)	Grosimea stratului / Stratum thickness (m)	Adancimea apei subterane / Underground water depth (m)	Formatiunea geologica / Geological formation	Denumirea stratului (conform Stas 1243-88 si SR EN ISO 14688/2-2005) / Stratum description (according to Stas 1243-88 and SR EN ISO 14688/2-2005)	Penetrarea dinamica standard / Standard penetration test (N/30 cm)
0.40	0.40			Pamant vegetal.	
4.00	3.60	3.18		Pietris cu nisip cafeniu - cenusiu si rar bolovanis, indesat.	2.00 / 25/R
6.00	2.00			Argila prafoasa cenusie - cafenie, plastic vartoasa, cu rar pietris mic si intercalatii de nisip fin, cenusiu.	6.15 / 40/R
10.00	4.00			Nisip argilos, cenusiu, indesat.	10.00 / 41/R
14.00	4.00			Praf argilos nisipos, cenusiu, plastic vartos.	14.00 / 45/R
				Argila prafoasa ... argila prafoasa nisipoasa, cenusie - galbuie, tare, cu intercalatii de nisip fin cenusiu.	

Probe: ☐ Borcan / Jar; ☒ Stut / Tube; ■ Carota / Core

Numarul probelor / Number and type of samples	Adancimea / Depth (m)	Argila / Clay <0.002	Praf / Silt 0.063	Nisip fin / Fine sand 0.2	Nisip mediu / Medium sand 0.63	Nisip mare / Coarse sand 2	Pietris mic / Small gravel 6.3	Pietris mediu / Medium gravel 20	Pietris mare / Coarse gravel 63	Bolovanis / Cobbles 200	Coeficientul de neuniformitate / Non-uniformity coefficient Un=d60/d10	Limita de curgere / Liquid limit W_L	Limita de plasticitate / Plastic limit W_P	Indicele de plasticitate / Plasticity index I_P	Umiditatea / Water content w %	Indicele de consistenta / Consistency index I_C	Densitatea scheletului mineral / Skeletal mineral density ρ_s	Greutatea volumica / Unit weight γ kN/m³	Greutatea volumica in stare uscata / Unit dry weight γ_d kN/m³	Porozitatea / Porosity n %	Indicele porilor / Void ratio e	Gradul de umiditate / Degree of saturation Sr
1*	4.15-4.42	30	53	6	6	4	1					50.1	15.7	34.5	20.2	0.87						
															20.6			20.4	16.9	37.79	0.61	0.92
2*	8.0-8.25	7	11	18	46	17	1				>15				13.1							
															12.6			20.2	19.1	27.86	0.39	0.86
3*	12.15-12.37	13	56	17	12	2						35.1	14.1	21.0	13.8 / 15.0	0.96		21.8	19.2	26.79	0.37	0.99
															15.6			21.6	18.7	28.43	0.40	1.00

Numarul probelor / Number of samples	Umflarea libera / Unconfined swelling U_L	Suctiunea 15 bari / Suction 15 bars w_{15}	Contractia volumica / Volume shrinkage C_v	Limita de contractie / Shrinkage limit w_s	Presiunea de umflare / Swelling pressure Pu kPa	Modulul de deformatie edometrica / Oedometer deformation modulus $M_{200-300}$ kPa	Tasare specifica la 200 kPa / Specific settlement at 200 kPa ε_{200} %	Coef. compresibilitate volumica / Coefficient of volume change m_v	Coeficientul de compresibilitate / Coefficient of compressibility $a_{v\,200-300}$ 1/kPa	Sensibilitatea la umezire / Susceptibility to wetting im_{300} %	Efort / Stress σ kPa	Indice de recompresiune / Recompression index RSC	Coeficientul de consolidare / Coefficient of consolidation c_v cm²/sec	Efort / Effective stress σ/τ 1	2	3	Unghiul de frecare int. / Angle of int. friction Φ °	Coeziunea / Cohesion c kPa	Felul determinarii / Type of test	Rezistenta la compresiune cu deformatie laterala libera / Unconfined compressive strength q_u kPa	Coeficient de permeabilitate / Permeability coefficient k cm/s	Continutul in materii organice / Organic matter content %
1*	115					11764.7	3.00		0.00014													
2*						19330.9	2.04		0.00007													
3*														200 / 115.3	300 / 162.3	400 / 208.7	25°1'	22.1	FCU i.			
						15540.9	2.45		0.00009													

Forajul continua

geotesting®
STUDII GEOTEHNICE ȘI GEOFIZICE

Profilul ~~Santului~~ Forajului Nr. S4-FP-11 continuare
Borehole ~~Pit~~ Profile continuare

REZULTATELE ANALIZELOR DE LABORATOR
LABORATORY TEST RESULTS

LUCRAREA / DESIGN	Studiu geotehnic pentru revizuirea Studiului de fezabilitate Autostrada Sibiu-Pitesti - Sectiunea 4 (Valeni-Curtea de Arges)
AMPLASAMENT / LOCATION	Autostrada Sibiu-Pitesti X : 464845.06 Y: 413325.32
DATA / DATE	13.08.2016

Cota fata de: 16.0 Foraj / Level vs: 16.0 Bore-hole (pit)

Borcan / Jar; Stut / Tube; Carota / Core

Stratificatie / Stratification

Cota (m)	Grosimea stratului / Stratum thickness (m)	Denumirea stratului / Stratum description (conform Stas 1243-88 si SR EN ISO 14688/2-2005)
21.00	7.00	Argila prafoasa ... argila prafoasa nisipoasa, cenusie - galbuie, tare, cu intercalatii de nisip fin cenusiu.
22.90	1.90	Nisip prafos, cenusiu, indesat.
26.50	3.60	Argila prafoasa nisipoasa, cenusie, tare.
		Nisip argilos, cenusiu.

Compozitie granulometrica, limite Atterberg, caracteristici fizice / Particle size distribution, Atterberg's limits, physical properties

Nr. proba / Sample	Adancimea / Depth (m)	Argila / Clay (<0.002)	Praf / Silt (0.063)	Nisip fin / Fine sand (0.2)	Nisip mediu / Medium sand (0.63)	Nisip mare / Coarse sand (2)	Pietris mic / Small gravel (6.3)	Pietris mediu / Medium gravel (20)	Pietris mare / Coarse gravel (63)	Bolovanis / Cobbles (200)	Un (d60/d10)	WL	WP	IP	w %	IC	ρs	γ kN/m³	γd kN/m³	n %	e	Sr
4*	16.05-16.35	36	61	3								66.1	20.3	45.8	16.4	>1						
															16.1			22.0	18.9	30.65	0.44	1.00
5*	20.1-20.3	18	58	16	7	1						35.0	13.2	21.8	12.2 12.2	>1		21.4	19.1	29.55	0.42	0.79
															13.7			21.4	18.8	30.55	0.44	0.85
6*	24.0-24.27	27	42	9	11	10	1					45.1	14.4	30.7	13.7	>1						
															13.4			21.6	19.0	30.01	0.43	0.85
7*#	28-28.19	2	30	19	38	11					>15	30.6	14.0	16.7	18.7	0.71	2.694					
8*#	32-32.3	1	37	45	17						>15	26.8	14.5	12.3	19.1	0.64	2.643					

Contractilitatea, compresibilitatea / Shrinkage-swelling, compressibility

Nr. proba / Sample	Umflarea libera UL	Suctiunea 15 bari w15	Contractia volumica Cv	Limita de contractie ws	Presiunea de umflare Pu kPa	Modulul de deformatie edometrica M200-300 kPa	Tasare specifica la 200 kPa ε200 %	Coef. compresibilitate volumica mv	Coeficientul de compresibilitate av200-300 1/kPa	Sensibilitatea la umezire im300 %	Efort σ kPa	Indice de recompresiune RSC	Coeficientul de consolidare cv cm²/sec
4*						15384.6	2.95		0.00009				
5* (13.7)					40	5555.6 6666.7 8695.7 10714.3	1.00 2.50 3.65 5.30		0.00026 0.00022 0.00017 0.00013		100 200 300 500	0.36	3.93*10^[illegible] 4.07*10^[illegible] 2.23*10^[illegible]
6* (13.4)						14285.7	3.30		0.00010				

Rezistenta la forfecare si alte caracteristici / Shear strength and other properties

Nr. proba / Sample	Efort / Effective stress σ/τ 1	2	3	Unghiul de frecare int. / Angle of int. friction Φ °	Coeziunea / Cohesion c kPa	Deformatia axiala specifica / Specific axial deformation εf %	Rezistenta la compresiune cu deformatie laterala libera / Unconfined compressive strength qu kPa	Coeficient de permeabilitate / Permeability coefficient k m/s	Continutul in CaCO3 / CaCO3 content %
5*	350 86.6	450 109.5	550 126.5	11°17'	17.7	FCU i.			2.22
5* (13.7)								$5.97 \cdot 10^{-9}$ $4.77 \cdot 10^{-9}$ $2.14 \cdot 10^{-9}$	
7*#						3.8	69.6		
8*#						5.4 4.1	143.1 136.9		

Penetrarea dinamica standard / Standard penetration test (N/30 cm)

Adancimea (m)	N
18.00	R
22.00	49/R
26.00	R

Forajul continua

geotesting® STUDII GEOTEHNICE ŞI GEOFIZICE

Profilul ~~Forajului~~ Forajului / ~~Santului~~ Nr. S4-FP-11 continuare
Borehole / ~~Pit~~ Profile

REZULTATELE ANALIZELOR DE LABORATOR
LABORATORY TEST RESULTS

LUCRAREA / DESIGN: Studiu geotehnic pentru revizuirea Studiului de fezabilitate Autostrada Sibiu-Pitesti - Sectiunea 4 (Valeni-Curtea de Arges)

AMPLASAMENT / LOCATION: Autostrada Sibiu-Pitesti
X : 464845.06 Y: 413325.32

DATA / DATE: 13.08.2016

Cota fata de: 32.0 Foraj / Level vs: 32.0 Bore-hole (pit)

Samples: ☐ Borcan / Jar; ☒ Stut / Tube; ■ Carota / Core

Cota / Level (Foraj / Borehole)	Grosimea stratului / Stratum thickness (m)	Adancimea apei subterane / Underground water depth (m)	Stratificatia / Stratification	Formatiunea geologica / Geological formation	DENUMIREA STRATULUI (conform Stas 1243-88 si SR EN ISO 14688/2-2005) / STRATUM DESCRIPTION (according to Stas 1243-88 and SR EN ISO 14688/2-2005)	Numarul probelor / Number and type of samples	Adancimea / Depth (m)	Argila / Clay <0.002	Praf / Silt 0.063	Nisip fin / Fine sand 0.2	Nisip mediu / Medium sand 0.63	Nisip mare / Coarse sand 2	Pietris mic / Small gravel 6.3	Pietris mediu / Medium gravel 20	Pietris mare / Coarse gravel 63	Bolovanis / Cobbles 200	Coeficientul de neuniformitate / Non-uniformity coefficient Un=d60/d10	Limita de curgere / Liquid limit W_L	Limita de plasticitate / Plastic limit W_P	Indicele de plasticitate / Plasticity index I_P	Umiditatea / Water content w %	Indicele de consistenta / Consistency index I_C	Densitatea scheletului mineral / Skeletal mineral density ρ_s	Greutatea volumica / Unit weight γ kN/m³	Greutatea volumica in stare uscata / Unit dry weight γ_d kN/m³	Porozitatea / Porosity n %	Indicele porilor / Void ratio e	Gradul de umiditate / Degree of saturation Sr	Umflarea libera / Unconfined swelling U_L	Suctiunea 15 bari / Suction 15 bars w_{15}	Contractia volumica / Volume shrinkage (Tulb./Netulb. – Dist./Undist.) C_v	Limita de contractie / Shrinkage limit w_s	Presiunea de umflare / Swelling pressure Pu kPa	Modulul de deformatie edometrica / Oedometer deformation modulus $M_{200-300}$ kPa	Tasare specifica la 200 kPa / Specific settlement at 200 kPa ε_{200} %	Coef. compresibilitate volumica / Coefficient of volume change m_v	Coeficientul de compresibilitate / Coefficient of compressibility $a_{v\,200-300}$ 1/kPa	Sensibilitatea la umezire / Susceptibility to wetting im_{300} %	Efort / Stress σ kPa	Indice de recompresiune / Recompression index RSC	Coeficientul de consolidare / Coefficient of consolidation c cm²/sec	Efort / Effective stress σ/τ 1	σ/τ 2	σ/τ 3	Unghiul de frecare int. / Angle of int. friction Φ °	Coeziunea / Cohesion c kPa	Felul determinarii / Type of test	Rezistenta la compresiune cu deformatie laterala libera / Unconfined compressive strength q_u kPa	Coeficient de permeabilitate / Permeability coefficient k	Continutul in materii organice / Organic matter content %	Penetrarea dinamica standard / Standard penetration test N/30 cm
35.00	8.50				Nisip argilos, cenusiu.																																														

Rezistenta la forfecare / Shear strength; Compresibilitatea / Compressibility; Contractilitatea / Shrinkage-swelling; Limitele Atterberg / Atterberg's limits; Compozitie granulometrica (d. in mm) SR EN ISO 14688/2-2005 / Particle size distribution SR EN ISO 14688/2-2005

Nota:
FCU I. = Forfecare consolidata necrenata inundata
(*) - Esantion comparabil PNT (proba netulburata) - rezultat informativ
(#) - Probe executate in laboratorul UTCB

Intocmit: ing. V. Marin

Verificat: ing. A. Diaconu