geotesting®
STUDII GEOTEHNICE ȘI GEOFIZICE

Profilul ~~Forajului~~ ~~Santului~~ / ~~Pit~~ Borehole Profile — Nr. S4-FP-18

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 : 464716.98 Y: 412213.99

DATA / DATE: 23.08.2016

Cota fata de: 0.00 Foraj	Grosimea stratului	Adancimea apei subterane	Stratificatia	Formatiunea geologica	DENUMIREA STRATULUI (conform Stas 1243-88 si SR EN ISO 14688/2-2005)	Borcan / Stut / Carota — Numarul probelor	Adancimea	Compozitie granulometrica (d. in mm) SR EN ISO 14688/2-2005: Argila	Praf	Nisip fin	Nisip mediu	Nisip mare	Pietris mic	Pietris mediu	Pietris mare	Bolovanis	Coeficientul de neuniformitate	Limitele Atterberg: Limita de curgere	Limita de plasticitate	Indicele de plasticitate	Umiditatea	Indicele de consistenta	Densitatea scheletului mineral	Greutatea volumica	Greutatea volumica in stare uscata	Porozitatea	Indicele porilor	Gradul de umiditate	Contractilitatea: Umflarea libera	Sioptirea 10 bari	Contractia volumica: Tuta. / Netub.	Limita de contractie	Presiunea de umflare	Compresibilitatea: Modulul de deformatie edometrica	Tasare specifica la 200 kPa	Coef. compresibilitate volumica	Coeficientul de compresibilitate	Sensibilitatea la umezire	Efort	Indice de recompresiune	Coeficientul de consolidare	Rezistenta la forfecare: Efort σ/τ 1	2	3	Unghiul de frecare int.	Coeziunea	Felul determinarii	Rezistenta la compresiune cu deformatie laterala libera	Coeficient de permeabilitate	Continutul in materii organice	Penetrarea dinamica standard
	m	m					m	<0.002	0.063	0.2	0.63	2	6.3	20	63	mm	$C_u = \frac{d60}{d10}$	w_L	w_p	I_p	w %	I_c	ρ_s kN/m³	γ kN/m³	γ_s kN/m³	n %	e	Sr	U_L	w_{15}	C_v	w_s	Pu kPa	$M_{200-300}$ kPa	ε_{200} %	m_v 1/kPa	$a_{v\ 200-300}$ 1/kPa	im_{200} %	σ kPa	RSC	c_v cm²/sec	1	2	3	Φ °	c kPa		q_u kPa	$k = \frac{cm}{sec}$	%	$\frac{N}{30\ cm}$
Level /rs: 0.00 Bore-hole (plt)	Stratum inkl-ness	Underground water depth	Stratification	Geological formation	STRATUM DESCRIPTION (according to Stas 1243-88 and SR EN ISO 14688/2-2005)	Jar / Tube / Core — Number and type of samples	Depth	Particle size distribution SR EN ISO 14688/2-2005: Clay	Silt	Fine sand	Medium sand	Coarse sand	Small gravel	Medium gravel	Coarse gravel	Cobbles	Non-uniformity coefficient	Atterberg's limits: Liquid limit	Plastic limit	Plasticity index	Water content	Consistency index	Skeletal mineral density	Unit weight	Unit dry weight	Porosity	Void ratio	Degree of saturation	Shrinkage-swelling: Unconfined swelling	Suction 15 bars	Volume shrinkage	Dist. / Undist.	Shrinkage limit	Swelling pressure	Compressibility: Oedometer deformation modulus	Specific settlement at 200 kPa	Coefficient of volume change	Coefficient of compressibility	Susceptibility to wetting	Stress	Recompression index	Coefficient of consolidation	Shear strength — Effective stress σ/τ 1	2	3	Angle of int. friction	Cohesion	Type of test	Unconfined compressive strength	Permeability coefficient	Organic matter content	Standard penetration test
0.10	0.10				Pamant vegetal.																																													
1.75	1.65	1.40			Pietris cu nisip cenusiu si rar bolovanis.																																													
						1	3.0-4.23	4	17	12	19	15	18	15		>15				8.40																																
8.00	6.25				Nisip prafos, galbui - catenliu, cu pietris, indesat.																																													
						2	7-7.22	3	13	6	10	13	32	23		>15				5.91																																
						2bis	9.8-10	7	16	10	13	14	17	23		>15				8.24																																
					Nisip argilos, cenusiu, cu pietris, indesat.																																												
15.45	7.45					3	12-12.2	3	18	11	13	16	18	16		>15				8.93																																
					Argila cenusie, tare.																																												

Forajul continua

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STUDII GEOTEHNICE ŞI GEOFIZICE

Profilul Forajului ~~Santului~~ Nr. S4-FP-18 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 : 464716.98 Y: 412213.99
DATA / DATE	23.08.2016

Cota fata de / Level vs: 16.0 Foraj / Borehole (pit)

Adancime / Depth (m)	Grosimea stratului / Stratum thickness (m)	Adancimea apei subterane / Underground water depth (m)	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)
19.00	3.55		Argila cenusie, tare, cu intercalatii subtiri de nisip fin.
21.30	2.30		Argila marnoasa, cenusie, tare, cu intercalatii subtiri de nisip fin.
26.00	4.70		Argila prafoasa nisipoasa, cenusie, plastic vartoasa.
			Nisip argilos, cenusiu, indesat.

Numarul probelor / Number and type of samples: ☐ Borcan / Jar; ☒ Stut / Tube; ■ Carota / Core

Nr. proba / Sample	Adancime / 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	Coef. 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
4 ☒	16.4-16.7	40	56	4								63.3	20.0	43.3	15.6 17.3 15.8 15.8	>1	
5 ☒	20.0-20.25	58	42									95.0	28.4	66.6	22.4 21.9	>1	
6 ☒	24.0-24.30	12	45	26	9	3	5					34.6	14.8	19.8	16.9	0.89	
7# ☒	28.0-28.3	3	44	29	23	1					>15	30.1	15.8	14.3	16.1	0.99	2.67
8# ☒	32.0-32.28	4	31	11	47	7					>15	24.8	13.8	11.0	17.7	0.65	

Nr. proba / Sample	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 C_v (Tulb./Netulb. – Dist./Undist.)	Limita de contractie / Shrinkage limit w_s	Presiunea de umflare / Swelling pressure Pu kPa
4	21.7 21.7 21.9	18.5 18.7 18.9	31.88 31.29 30.39	0.47 0.46 0.44	1.00 0.94 0.99					
5	20.8	17.1	33.99	0.52	1.00					93
6										
7#										
8#										

Compresibilitatea / Compressibility

Nr. proba / Sample	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
4	11954.0	3.31		0.00012				
5	5420.1 6968.6 8438.8	2.02 3.46 5.58		0.00018 0.00022 0.00018		200 300 500	0.39	1.87*10[illegible] 1.46*10[illegible] 7.97*10[illegible]

Rezistenta la forfecare / Shear strength

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 ε_1 %	Rezistenta la compresiune cu deformatie laterala libera / Unconfined compressive strength q_u kPa	Coeficient de permeabilitate / Permeability coefficient k	Continutul in CaCO3 / CaCO3 content %	Penetrarea dinamica standard / Standard penetration test N/30 cm
4	250 136.2 102.7	350 144.1 156.0	450 193.6 173.2	11°1' 19°25'	57.5 20.6	FCU FCU i.				18.00 R
5								3.50*10[illegible] 2.15*10[illegible] 9.91*10[illegible]	5.17	22.00 R
6										26.00 R
7#						2.4 2.6	189.2 175.9			
8#						3.6 2.9	100.2 104.4			

Forajul continua

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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 : 464716.98 Y: 412213.99

DATA / DATE: 23.08.2016

Cota tata de: 32.0 Foraj / Bore-hole (plt)

Level vs:

Borcan / Stut / Carota / Jar / Tube / Core

Grosimea stratului / Stratum thickness	Adancimea apei subterane / Underground water depth	Stratificatia / Stratification	Formatiunea geologica / Geological formation	DENUMIREA STRATULUI (conform Stas 1243-88 si SR EN ISC 14688/2-2005) / STRATUM DESCRIPTION (accorcing to Stas 1243-88 and SR EN ISO 14688/2-2005)	Numarul probelor / Number and type of samples	Adancimea / Depth
m	m					m
35.00 - 9.00				Nisip argilos, cenusiu, indesat.		

Compozitie granulometrica (d. in mm) SR EN ISO 14688/2-2005 / Particle size distribution SR EN ISO 14688/2-2005

Argila / Clay	Praf / Silt	Nisip fin / Fine sand	Nisip mediu / Medium sand	Nisip mare / Coarse sand	Pietris mic / Small gravel	Pietris mediu / Medium gravel	Pietris mare / Coarse gravel	Bolovanis / Cobbles	Coeficientul de neuniformitate / Non-uniformity coefficient	Limitele Atterberg / Atterberg's limits: Limita de curgere / Liquid limit	Limita de plasticitate / Plastic limit	Indicele de plasticitate / Plasticity index	Umiditatea / Water content	Indicele de consistenta / Consistency index	Densitatea scheletului mineral / Skeletal mineral density	Greutatea volumica / Unit weight	Greutatea volumica in stare uscata / Unit dry weight	Porozitatea / Porosity	Indicele porilor / Void ratio	Gradul de umiditate / Degree of saturation
<0.002	0.063	0.2	0.63	2	6.3	20	63	200	$U=\frac{d60}{d10}$	W_L	W_p	I_p	w %	I_C	ρ_s	kN/m³ γ	kN/m³ γ_d	n %	e	Sr

Contractilitatea / Shrinkage-swelling

Umflarea libera / Unconfined swelling	Succiunea 15 bari / Suction 15 bars	Contractia volumica / Volume shrinkage: Tub. / Netub.	Limita de contractie / Shrinkage limit	Presiunea de umflare / Swelling pressure
U_L	w_{15}	C_v	w_s	Pu kPa

Compresibilitatea / Compressibility

Modulul de deformatie edometrica / Oedometer deformation modulus	Tasare specifica la 200 kPa / Specific settlement at 200 kPa	Coef. compresibilitate volumica / Coefficient of volume change	Coeficient de compresibilitate / Coefficient of compressibility	Sensibilitatea la umezire / Susceptibility to wetting: Efort / Stress	Indice de recompresiune / Recompression index	Coeficientul de consolidare / Coefficient of consolidation
$M_{200-400}$ kPa	$\varepsilon_{s\,200}$ %	m_v 1/kPa	$a_{1\,200-300}$ 1/kPa	$i_{m\,300}$ %	σ kPa	RSC	c cm²/sec

Rezistenta la forfecare / Shear strength

Efort σ/τ / 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 m/s	Continutul in materii organice / Organic matter content %	Penetrarea dinamica standard / Standard penetration test N/30 cm

Nota:
FCU = Forfecare consolidata nedrenata
FCU I. = Forfecare consolidata nedrenata inundata
(#) - Probe executate in laboratorul UTCB

Intocmit: ing. V. Marin

Verificat: ing. A. Diaconu