CONDITII GEOTEHNICE

Conform: **Forajе geotehnice FTE 36, FTE 37, FTE 38, FPR 1, FPR2, FPR 3, FPR 4, FPR 5, FPR 6, FR1, FR2-statia RACOS** (date tema : ASTALROM / ITALFER)

Forajele geotehnice au urmatoarea stratificatie :

- in toate forajele, la suprafata s-a intalnit un strat de umplutura (0.30 - 4.50 m), cu exceptia forajelor FPR 4 si FPR 2 unde s-a intalnit un strat de pamant vegetal (0.30 m)
- urmeaza un complex format dintr-o alternanta de pamanturi coezive si slab coezive (argila prafoasa, argila nisipoasa, praf argilos, praf nisipos argilos, nisip argilos, catenii, catenii-galbui, galbui-catenii, galbui, galbui-cenusii, cenusii-galbui, cenusii, plastic mol ... plastic vartoasa) cu pamanturi necoezive (nisip argilos cu pietris, nisip prafos cu pietre, pietris cu nisip prafos, pietris cu nisip, catenii, catenii-galbui, galbui, cu indesare medie ... indesata), pana la adancimi cuprinse intre 2.50 - 6.80 m. Exceptie fac forajele FR1, FTE 37, FPR 3 si FPR 5, in care acest complex este intalnit pana la baza forajelor (10.00 m)
- in continuare, pana la adancimea de investigare, care variaza intre 2.60 - 7.00 m a fost interceptat complexul de baza (marmocalcalcar si calcar marnos, verzui, tare)

Adancime nivel apa subterana : intre 1.50 - 4.80 m

Pentru orizontul coeziv - argile prafoase (ap) si prafuri nisipoase argiloase (pna), catenii si galbui-catenii - situat deasupra nivelului apei subterane, pamanturile intercepate se caracterizeaza astfel : cu plasticitate mijlocie

cu starea de consistenta plastic moale ... plastic vartoasa

cu gradul de umiditate practic saturat

cu compresibilitate mare

Pentru orizontul slab coeziv - nisipuri argiloase (na), galbui-catenii - situat deasupra nivelului apei subterane, pamanturile intercepate se caracterizeaza astfel :

cu plasticitate redusa ... mijlocie

cu starea de consistenta plastic moale ... plastic consistenta

cu gradul de umiditate practic saturat

cu compresibilitate mare ... foarte mare

Pentru orizontul coeziv - argile (a) si argile prafoase (ap), catenii-galbui, cenusii si cenusii-galbui - situat sub nivelul apei subterane, pamanturile intercepate se caracterizeaza astfel : cu plasticitate mijlocie ... foarte mare

cu starea de consistenta plastic consistent ... plastic vartoasa

cu gradul de umiditate foarte umed ... practic saturat

cu compresibilitate mare ... foarte mare

Se va realiza fundarea directa a COPERTINELOR (dupa caz); in stratul de umplutura sau in complexul format dintr-o alternanta de pamanturi coezive si slab coezive (argila prafoasa, argila nisipoasa, praf argilos, praf nisipos argilos ...) cu pamanturi necoezive (nisip argilos cu pietris, nisip prafos cu pietris...), pe o perna din balast compactat de 30 cm grosime (cu grad de compactare D > 98% si asigurarea unei q_{adm} =1,5 daN/cm^2).

Este absolut necesara confirmarea caracteristicilor terenului de fundare si a gradului de compactare de catre proiectantul geotehnician, dupa executarea sapaturilor / umpluturilor (dupa caz).

La executarea sapaturilor /umpluturilor, se va realiza un foraj suplimentar, de verificare, in amplasamentul copertinei pentru a se verifica daca informatiile provenite din forajele pentru proiectare sunt corecte. In cazul in care exista eventuale diferente, lucrarile proiectate se vor adapta conform rezultatului acestor studii geotehnice de verificare.

GEOTECHNICAL CONDITIONS

*According to: **Geo-technical drills FTE 36, FTE 37, FTE 38, FPR 1, FPR 2, FPR 3, FPR 4, FPR 5, FPR 6, FR1, FR2 - RACOS station** (subject data: ASTALROM / ITALFER)*

The geo-technical drills have the following ground stratification:

- *in all the drills, a filling layer was found at the surface (0.30 - 4.50 m), except the drills FPR 4 and FPR 2 where a vegetal soil layer was found out (0.30 m)*
- *a complex made of alternating cohesive and slightly cohesive soils (silty clay, sandy clay; clayey silt; clayey sandy silt, clayey sand, brownish, brownish-yellowish, yellowish-brownish, yellowish, yellowish-grey, grey- yellowish, grey, soft ... heavy-bodied) with non-cohesive soils (clayey sand with gravel, silty sand with gravel, gravel with silty sand, gravel with sand, brownish, brownish-yellowish, yellowish, medium compacted) up to depths between 2.50 - 6.80 m. The drills FR1, FTE 37, FPR 3 and FPR 5 are an exception because this complex is detected up to the base of drills (10.00 m).*
- *the base complex (very hard greenish loamy limestone and marly limestone) was found out up to the investigation depth between 2.60 - 7.00 m*
- *depth of the underground water level: between 1.50 - 4.80 m*

For the cohesive horizon - brownish and yellowish-brownish silty clays (sp) and clayey sandy silts (pna) - placed above the underground water level, the soils are characterized as follows:

medium plasticity

soft ... hard consistency

saturated humidity degree

high compressibility

For the slightly cohesive horizon - brownish-yellowish clayey sands (na) - placed above the underground water level, the soils are characterized as follows:

low ... medium plasticity

soft ... heavy-bodied consistency

saturated humidity degree

high ... very high compressibility

For the cohesive horizon - brownish-yellowish, grey and grey-yellowish clays (a) and silty clays (sp) - placed under the underground water level, the soils are characterized as follows:

medium ... very high plasticity

heavy-bodied ... hard consistency

very humid ... saturated

high ... very high compressibility

The CANOPIES will be directly founded (depending on the case) in the filling layer or in the complex made of alternating cohesive and slightly cohesive soils (silty clay, sandy clay, clayey silt, clayey sandy silt ...) with non-cohesive soils (clayey sand with gravel, silty sand with gravel ...) on a 30cm thick compacted ballast cushion (compaction degree D > 98% with p_{adm} =1,5 daN/cm^2).

It is absolutely necessary that the geo-technician designer confirms the characteristics of the foundation ground and compaction degree, after carrying out the excavations / fillings (depending on the case).

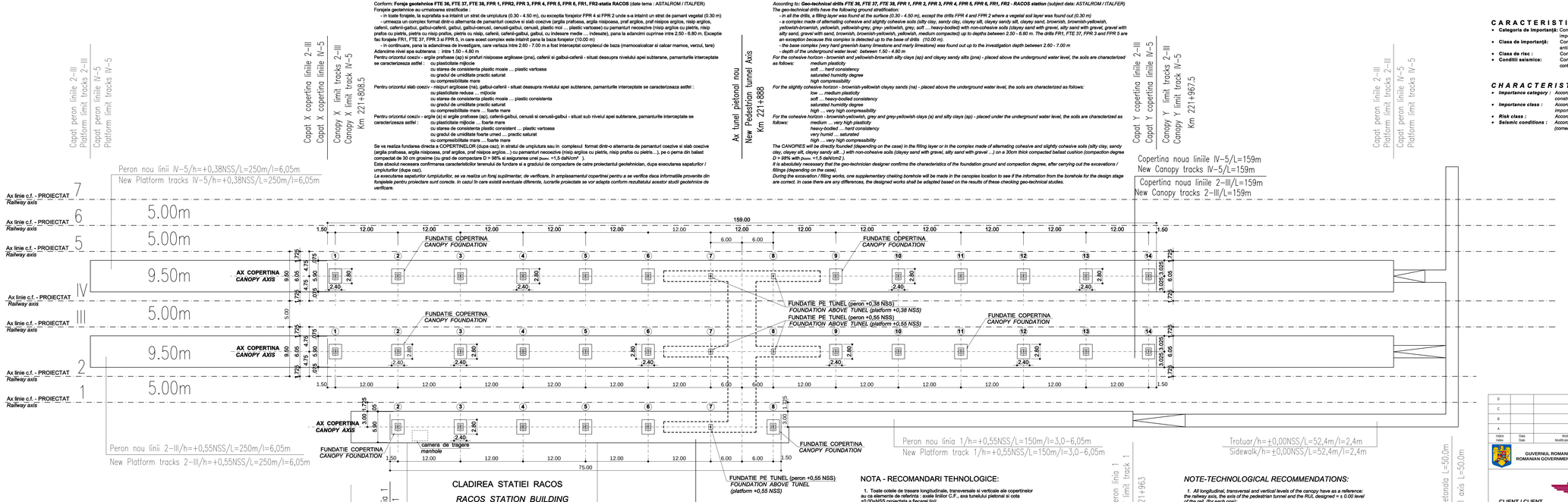
During the excavation / filling works, one supplementary checking borehole will be made in the canopies location to see if the information from the borehole for the design stage are correct. In case there are any differences, the designed works shall be adapted based on the results of these checking geo-technical studies.

CARACTERISTICI

- **Categoria de importanta:** Conform H.G. 766-oct 1997 - construcţie de importanţă normală (C).
- **Clasa de importanţă:** Conform Normativului P100 (proiectarea antiseismică), clasa de importanţă este III
- **Clasa de risc :** Conform OMT 290/2000 : clasa de risc 1A
- **Conditii seismice:** Conform Normativul P100-1/2006 : perioada de control (colţ) Tc=0,7s şi ag=0,16g

CHARACTERISTICS

- ***Importance category :*** *According to H.G. 766-oct 1997 : normal importance construction (C).*
- ***Importance class :*** *According to Norm P100 (anti-seismic design) : importance class III*
- ***Risk class :*** *According to OMT 290/2000 : risk class 1A*
- ***Seismic conditions :*** *According to Norm P100-1/2006: control period (corner) Tc=0,7s and ag=0,16g*



NOTA - RECOMANDARI TEHNOLOGICE:

1. Toate cotele de trasare longitudinale, transversale si verticale ale copertinelor au ca elemente de referinta : axele liniilor C.F., axa tunelului pietonal si cota ±0.00=NSS proiectata a fiecarei linii:
   a. axele longitudinale ale fundatiilor stalpilor copertinelor sunt la jumatatea distantei dintre axele de cale ferata ale liniilor 2 - III respectiv IV - 5 proiectate,
   b. transversal, trasarea axelor pentru fundatiile stalpilor copertinelor se va face avand ca reper axa tunelului pietonal; trasarea se va face 6 m stanga, 6 m dreapta fata de aceasta axa,
   c. cota de fundare, este data fata de ±0.00=NSS proiectat si fiecarei linii in parte , respectiv : pentru copertina la linia 1 cota de referinta este ±0.00=NSS linia 1, pentru copertina la liniile 2-III cota de referinta este ±0.00=NSS linia III, pentru copertina la liniile IV-5 cota de referinta este ±0.00=NSS linia IV .
2. Trebuie avut in vedere ca atit copertinele (cu fundatiile aferente), cit si peronele nou proiectate , urmaresc profilul longitudinal al liniilor proiectate .
3. Acest plan se va citi corelat cu; planul de situatie (amplasament), planurile de suprastructura c.f. ale statiei si planurile de structura ale tunelului si ale peroanelor.
4. Este importanta corelarea cotelor verticale intre stalpii care se pozitioneaza pe grinzile tunelului (din axele 7 si 8) si stalpii si fundatiile aducerile ale copertinei; astfel incat sa se asigure continuitatea la nivelul superior al grinzilor transversale si panelor, cat si realizarea gabaritului pe intreaga lungime a copertinei .
5. Nu se vor prinde de elementele structurale ale copertinei alte echipamente sau dispozitive in afara celor prevazute in proiect (pentru orice modificare se va cere avizul proiectantului).
6. Pentru pozitionare si detalii stalpi linia de contact , vezi : PLAN DE SITUATIE MONTARI LC, aferent statiei.
7. Stalpii liniei de contact strapung copertina in zona invelitorii de policarbonat (se va face decuparea si etansarea policarbonatului dupa sectiunea stalpului LC).

MATERIALE

Beton de egalizare : C4/5 - T2/T3 - I 32,5 R/0 - 31
Beton simplu : C8/10 - T2/T3 - I 32,5 R/0 - 31
Beton armat : C18/22.5 , C16/20- T3/T4 - I 32,5 R/0 - 16
Otel beton : PC 52 , OB 37
Laminate : S235J2G3 (OL 37.2n), S275J2G3 (OL44.2n)
Buloane de ancorare M30-grupa 6.6

NOTE-TECHNOLOGICAL RECOMMENDATIONS:

1. All longitudinal, transversal and vertical levels of the canopy have as a reference: the railway axis, the axis of the pedestrian tunnel and the RUL designed ± ±0.00 level of the rail (for each one):
   a. the longitudinal axis of the canopy poles is at the half distance between the railway axis of designed lines 2 - III , respectively IV - 5
   b. the axis of the passengers tunnel shall be used as a guide mark when lining the transversal axis of the canopy poles. The lining shall be made from 6 m left and 6 m to right given the above-mentioned axis.
   c. the foundation level refers to ±0.00=RUL designed for each one, respectively : for canopy to line 1, the reference level is ±0.00=RUL line 1, for canopy to lines 2-III, the reference level is ±0.00=RUL line III, for canopy to lines IV-5, the reference level is ±0.00=RUL line IV .
2. It is important that both the three canopies (with corresponding foundations) as well as new platforms , follow the longitudinal profile of the new designed lines.
3. This plan shall be read in correlation with: site layout plan , the drawings for railway station superstructure , and the structural drawings of the tunnel , and of the platforms.
4. It is important to ensure the compliance of the vertical levels between the canopy poles resting on the tunnel beams (axis 7 and 8) and the adjacent poles (and corresponding foundations) of the canopy. So, it will be ensured the continued level of transversal beams and purlins , and of the clearance for the entire canopy.
5. No other equipment or device, apart those foreseen in the project, shall be attached to the structural elements of the canopy .
6. For positioning and details of contact line poles, see : LAYOUT MOUNTING PLAN LC afferent to the station.
7. The contact line poles pierce through the canopy in the central area of the polycarbonate covering (the polycarbonate will be cut off and sealed around the LC pole section).

MATERIALS

Leveling concrete : C4/5 - T2/T3 - I 32,5 R / 0 - 31
Plain concrete : C8/10 - T2/T3 - I 32,5 R / 0 - 31
Reinforced concrete : C18/22.5 , C16/20- T3/T4 - I 32,5 R / 0 - 16
Steel concrete : PC 52 , OB 37
Laminated : S235J2G3 (OL 37.2n), S275J2G3 (OL44.2n)
Anchoring bolts M30 , resistance group 6.6

LEGENDA

N.S.S. = cota nivel superior sina proiectat
C.S.F. = cota superioara fundatie
C.F. = cota de fundare
C.S.S. = cota superioara stalp

LEGEND

R.U.L. = designed rail upper level = N.S.S.
C.S.F. = foundation upper level
C.F. = foundation level
C.S.S. = pole upper level

OBSERVATIE

Poziionarea copertinelor in amplasamentul statiei se va face conform PLAN DE SITUATIE PROPUS statia RACOS, avand ca reper kilometrajul firului I proiectat.

OBSERVATION

The canopies will be positioned in the station location according to PROPOSED LAYOUT PLAN station RACOS, having the kilometer positions of designed track I as reference

PLAN FUNDATII COPERTINE
CANOPY FOUNDATION PLAN

scara 1:250

scale 1:250

D						
C						
B						
A						
Indice Index	Data Date	Modificare Modification	Proiectant Designer	Aprobat Consultant Approved Consultant	Aprobat CFR Approved CFR	

GUVERNUL ROMANIEI
ROMANIAN GOVERNMENT

PROIECT FINANTAT DE UNUNIEA EUROPEANĂ
EUROPEAN UNION FINANCED PROJECT

CLIENT / CLIENT

C.N.C.F. "C.F.R." - S.A.

ITALFERR GRUPPO FERROVIE DELLO STATO *Joint Venture leader* | Scott Wilson | OBERMEYER PLANEN + BERATEN GmbH | TECNIC Consulting Engineers

CONSULTANT / CONSULTANT

			Data Date	Semnatura Signature
Aprobat Approved	Şef proiect Project manager	R. Liuzza	12.2011	
Aprobat Approved	Coordonator Sectiune 1 Section 1 Coordinator	C. Gambelli	12.2011	
Verificat Checked	Verificator Verifier	Giuseppe Fioravanti	12.2011	

SUBCONTRACTANT / SUBCONTRACTOR

Aprobat Approved	Responsabil Subconsultant Subconsultant Responsible	A.Stanciu - Dinulescu	12.2011	
Inscris/ Elaborat	Proiectant Designer	ing. / eng. Tudor ALMALEH	12.2011	

Reabilitarea liniei de cale ferata Brasov - Simeria, parte componentă a coridorului IV Pan European, pentru circulaţia trenurilor cu viteza maximă de 160 km/h,
Tronsonul : Brasov - Sighişoara
Rehabilitation of the railway line Brasov - Simeria, component Part of the IV Pan-European Corridor, for the trains circulation with maximum speed of 160 km/h,
Section : Brasov - Sighisoara

Proiect/Project
2004/RO/16/P/PA/003

Faza / Phase: P Th. / T.D.

Denumire desen / Drawing Title :

COPERTINE STATIA RACOS - PLAN FUNDATII COPERTINE
CANOPY RACOS STATION - FOUNDATION PLAN

Codificare / Codification System													Scara / Scale 1 : 250	LOT / LOT	Nr. / No. 03 / 05
E	A	5	1	0	1	C	1	1	P	Z	C	C	0 0 6 3 0 0 3 1		

3 ¼ A2 594 x 1365 = 0.81 m²

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