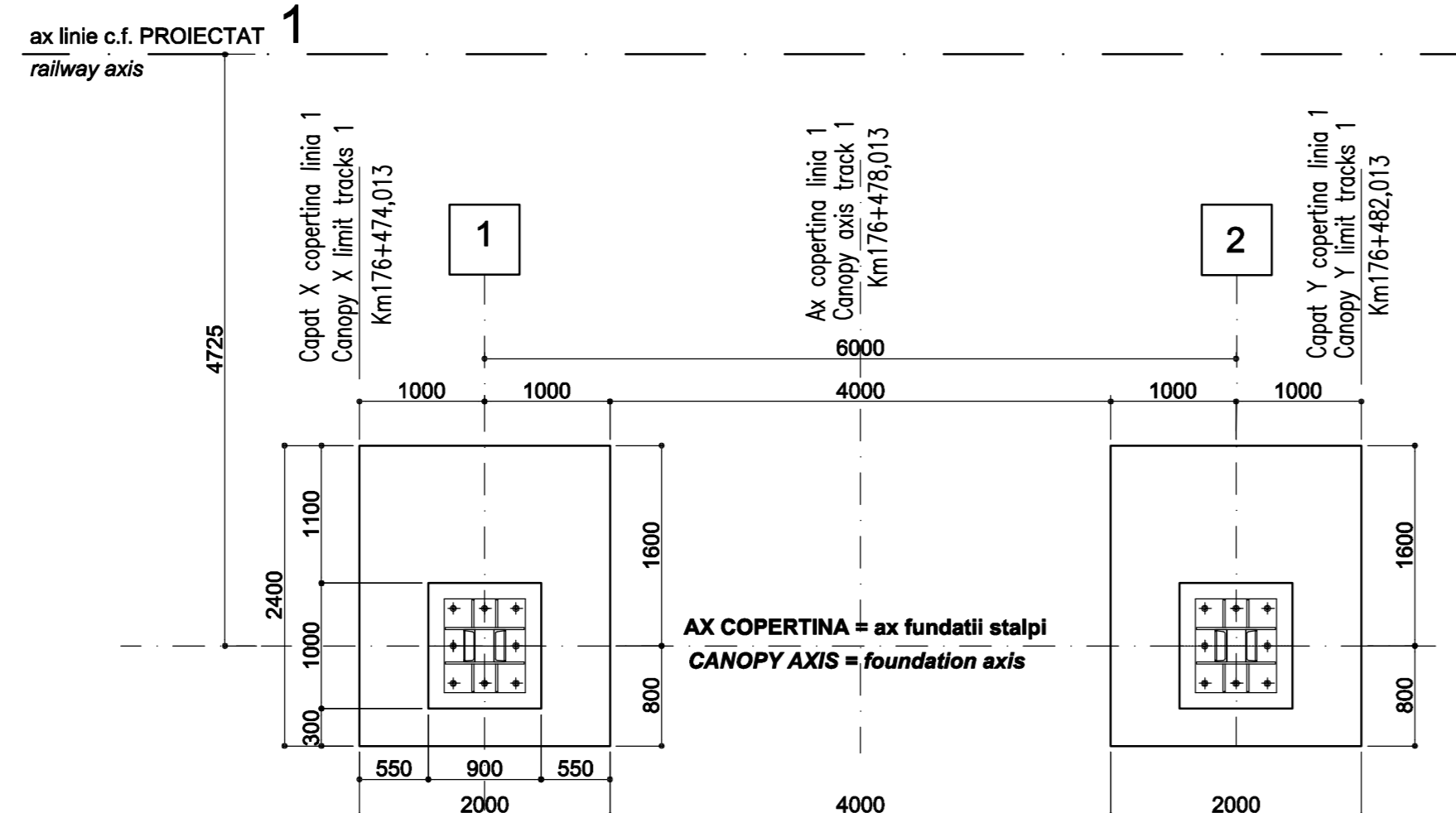


**PLAN FUNDATII**  
**FOUNDATION PLAN**



**NOTA - RECOMANDARI TEHNOLOGICE :**

- Totale cote de trasare longitudinale, transversale si verticale ale copertinei au ca elemente de referinta: axa liniei C.F., axa copertinei la cota ±0.00+NSS proiectata a liniei 1.
  - axa longitudinala ale fundatiilor staililor copertinei = AX COPERTINA se pozitioneaza conform plan fundatii / plan dispozitie generala, al statiei, respectiv la 4,725m fata de axa c.f. a liniei 1
  - transversal, trasarea axelor pentru fundatiile staililor copertinei se va face avand ca reper axa (proiectata) a copertinei, trasarea se va face la 3m stanga, 3m dreapta fata de aceasta axa.
  - cota de fundare (C.F.) este data fata de ±0.00+NSS proiectat al liniei 1, (din dreptul fundatiilor respective)
- Trebuie axei in vedere ca axa copertina (cu fundalie alese), ca si peronul nu proiectat, urmarese profilul longitudinal al liniei proiectate - cu varianta de cota de -5,25 % dintr-un capatul X spre capatul Y al statiei.
- Acest plan se va citi corelat cu: planurile copertinei (dispozitie generala, fundatii), planurile de suprainstructura c.f. ale statiei si planurile de structura ale peronului.
- Trebuie asigurata continuitatea la nivelul superior al grinzilor transversale si panoulor, cat si realizarea gabaritului pe intraga lungime a copertinei in conditiile precizate la punctul 2.
- Realizarea verticalitatii stailor pe cele doua directii (longitudinal si transversal) se va face folosind cele 4 piulite de reglaj pozitionate la colturile sub placa de baza a stailor.
- Pentru alinierea stailor, gurile din placile de baza ale stailor permit translatai in plan orizontal de ±10mm fata de axa buloanelor de ancorare.
- Dupa pozitionarea corecta a stailor (inclusiv cu grinzile transversale montate) se vor realiza urmatoarele:
  - se face verificarea cotelor de gabarit ale copertinei,
  - se strang piulitele,
  - se suddeza sabiele P2 cu sudura a=4mm,
  - se blocheaza piulitele cu contrapuiete,
  - se toarna mortarul de subumarea (de tip EUROGRUT-04 cu Rc=90N/mm<sup>2</sup>) respectand toate indicatiile din fia tehnica a producatorului. Grosimea mortarului de subumarea (pentru stail tip SA) este de -3,5cm. Ea poate varia intre 3- 9 cm permitand eventuale corectii pe verticale.
  - Suparatonarea cuzinetului pentru protectia bazei stailorului si a buloanelor de ancoraj se va face dupa asamblarea tirajilor structuri.
  - Proiectia subumarea a stailor pe aprox. 40 cm (intra fata suparatonarea cuzinetului si cota peronului) se va face cu banda autoadeziva foloata la conducte ingropate, si se va face peste cele trei straturi de protectie care se aplica la intraga structura metalica.
  - Este absolut necesara confirmarea caracteristicilor teramului de fundare si a gradului de compactare de catre proiectantului geotehnician, dupa executarea sapaturilor / umpluturilor (dupa caz).

**NOTE - TECHNOLOGICAL RECOMMENDATIONS:**

- All longitudinal, transversal and vertical levels of the canopy have as a reference: the railway axis, the position of canopy axis and the ±0.00 level = R.U.L. designed of the rail track 1.
  - the longitudinal axis of the canopy pole foundations = CANOPY AXIS, will be positioned according to the foundation plan (general assembly plan of the station, respectively at 4,725 m as compared to the axis of designed track 1
  - the canopy axis shall be used as a guide mark when lining the transversal axis of the canopy poles. The lining shall be made from 3 m left and 3 m to right given the above-mentioned position.
  - the foundation level refers to ±0.00=R.U.L. designed level (nearly the respective foundation) for the track (line) adjacent to the canopy, respectively railway track 1
- It is important that both the new designed canopy (with corresponding foundations) as well as new platform, follow the longitudinal profile of the new designed lines (with downward slope - 5,25 % from the X end towards the Y end of the station).
- This plan shall be read in correlation with: the canopy drawings (general assembly plan, foundation plan), the drawings for railway station superstructure, and the structural drawings of the platforms.
- It will be ensured the continued level of transversal beams and purlins, and the clearance for the entire canopy in conditions mentioned at point 2.
- To place the pole in the vertical position on the two directions (both longitudinal and transversal), the 4 adjusting bolt nuts shall be positioned at the corners, under the base plate.
- To place the poles on the same line, the holes in the base plates of the poles allow displacements in the horizontal plan of ±10mm from the axis of the anchoring bolts.
- After placing the poles in the correct position (including the cross beams mounted on the poles), the following steps shall be carried out:
  - verify all the dimensions of the canopy clearance,
  - lightening the bolt nuts,
  - welding the washers P2 with a=4mm,
  - blocking the bolt nuts using counter nuts,
  - casting the mortar (EUROGRUT-04 type with Rc=90N/mm<sup>2</sup>) under the base plate, complying with all the indications in the technical sheet of the producer. The under-casting mortar (for poles type SA) shall be -3.5 cm thick. The thickness can vary between 3-9 cm enabling possible vertical corrections.
  - The bolster concrete topping for the protection of the pole base and the anchoring bolts, shall be made after assembling the whole structure.
  - The underground protection of the poles on about 40 cm (between upper face of the bolster concrete topping and the platform level) shall be made using protection adhesive tape used to underground pipes, and shall be carried out over the three protection layers to the entire steel structure.
  - 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).

**CARACTERISTICI**

- Categoria de importanta:** Conform H.G. 766-oct 1997 - constructie de importanta normala (C).
- Clasa de importanta:** Conform Normativului P100 (proiectarea antisismica), clasa de importanta este III
- Clasa de risc:** Conform Normativului P100-1/2006 : clasa de risc 1A
- Conditii seismice:** Conform OTM 76-01/2006 : perioada de control (tc)=0,7s si ag=0,20g;

**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 OTM 76-01/2006 : risk class 1A
- Seismic conditions :** According to Norm P100-1/2006: control period (corner) Tc=0,7s and ag=0,20g;

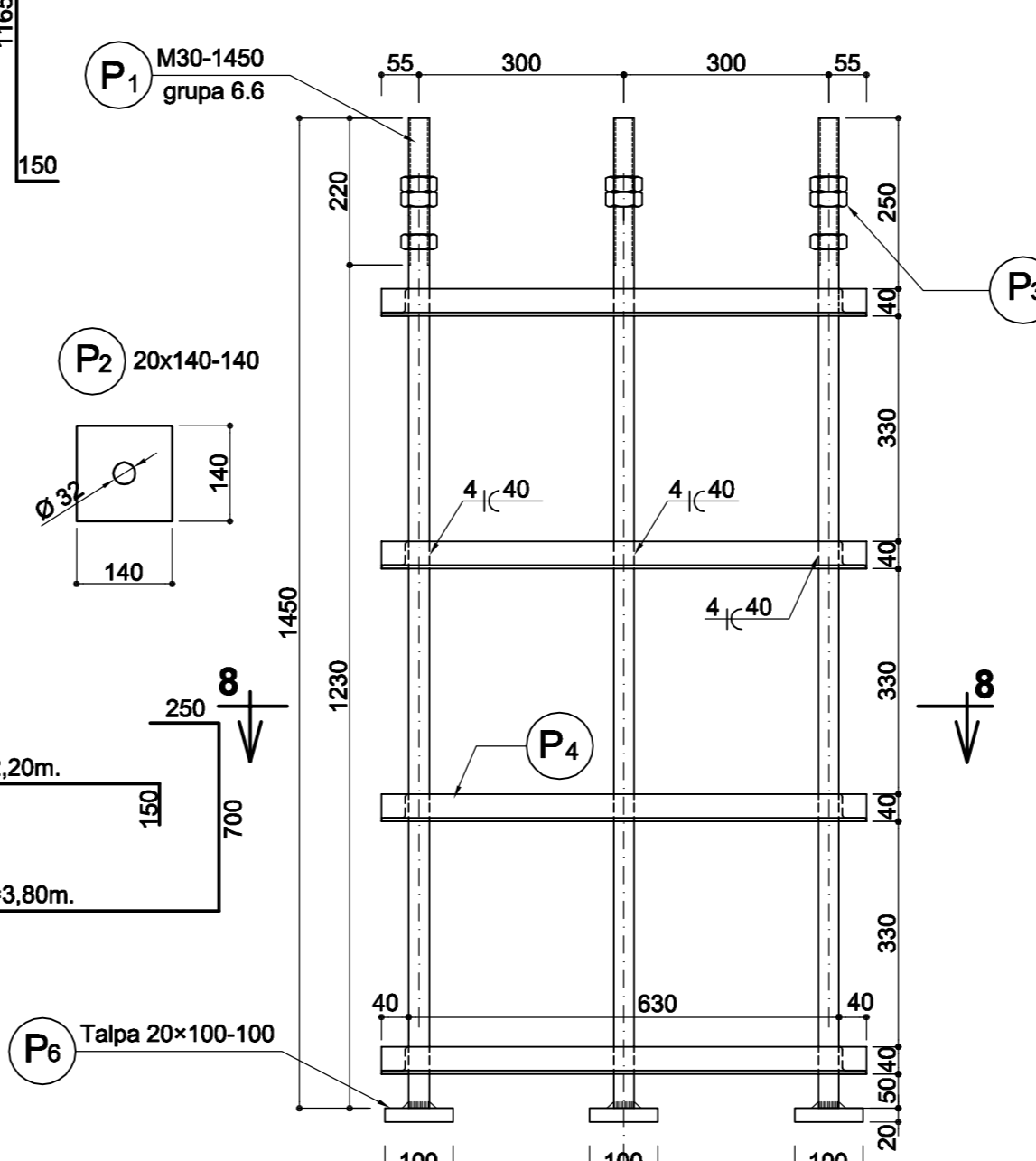
**CONDITII GEOTEHNICE**

Conform: Forajul geotehnic FTE 5 - statia STUPINI (data tema : ASTALROM / ITALFER)  
Forajul geotehnic FTE 5 are urmatoarea stratificatie :  
- la suprafata s-a intalnit un strat de pamant vegetal (0.10 m)  
- urmatoarea, pana la adancime de 3.20 m, un strat de argila profusasa, carente  
- in continuare, pana la adancimea de investigatie (10.00 m), a fost interceptat un orizont necoeziv format din nisip prafos cu pietris, cenusiu, cu indesare medie ... indzat  
- adancime nivel apa subterana : - 1.50 m  
Pamantul este caracterizat astfel :  
- cu plasticitate mare  
- cu starea de consistenta plastic consistenta  
- cu gradul de umiditate practic saturat  
- cu compresibilitate mare

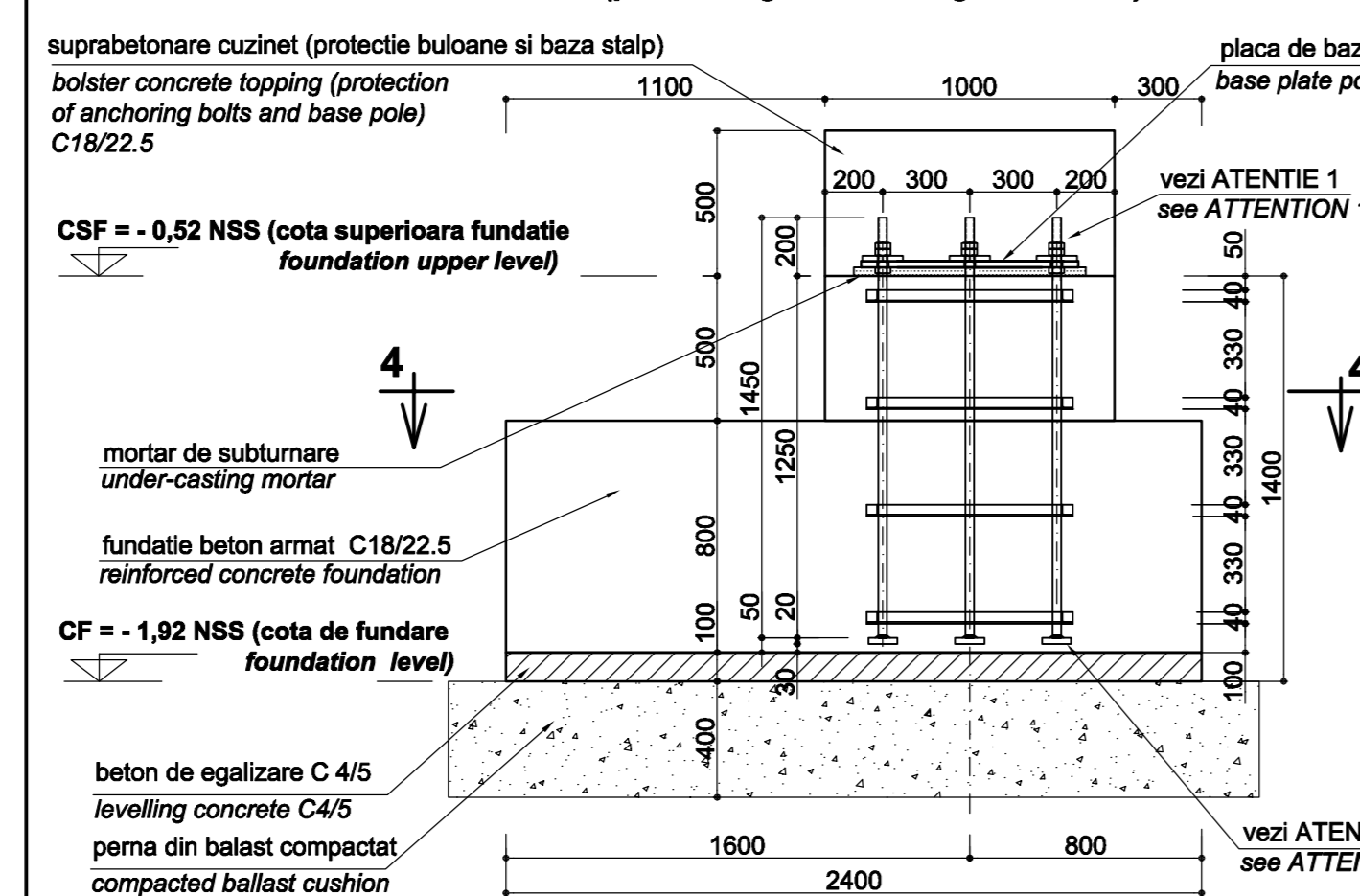
**GEOTECHNICAL CONDITIONS**

According to: Geotechnical Drilling FTE 5 - STUPINI station (name ASTALROM / ITALFER)  
The Geotechnical Drilling FTE 5 has the following stratification:  
- there is a layer of vegetal earth at the surface (0.10 m)  
- next, until the depth of 3.20 m, there is a layer of brown, dusty clay  
- next, till the investigation depth (10.00m), a not cohesive horizon made from dusty sand with gray gravel was intercepted, with medium tamping, ...settled  
- depth level underground water : - 1.50m  
The intercepted ground are classified as following:  
- with high plasticity  
- with consistency state plastic consistent  
- with humidity degree practical saturated  
- with high compressibility

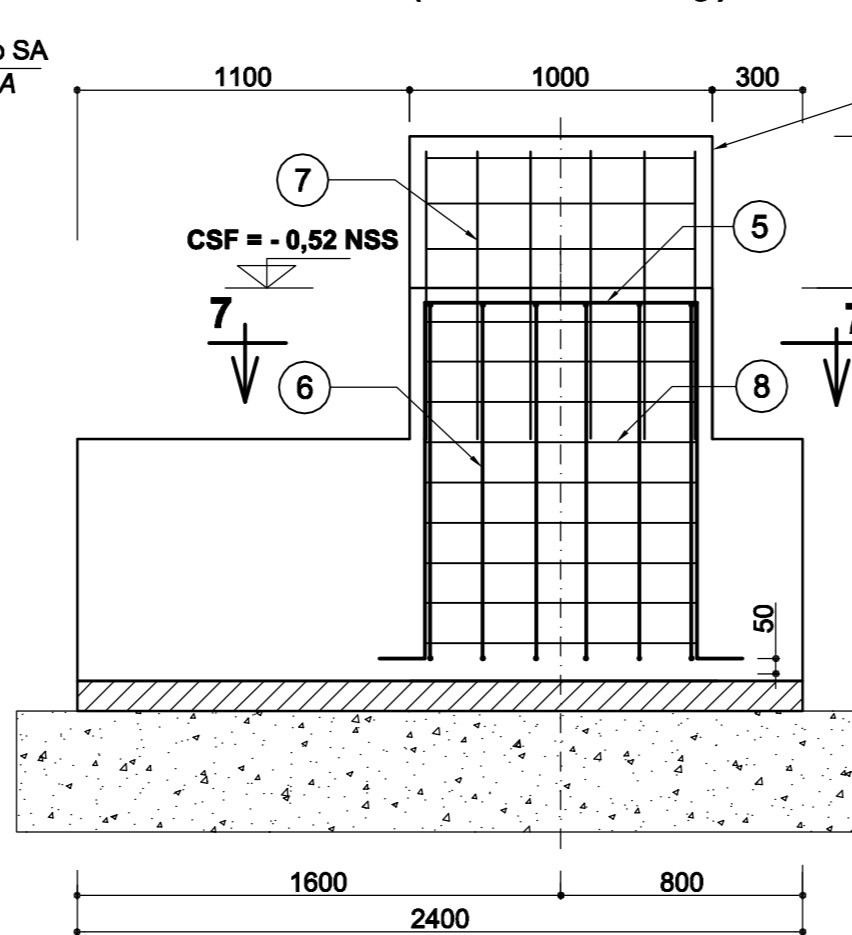
**DETALIU CARCASA BULOANE ANCORAJ**  
**DETAIL OF ANCHORING BOLTS CASE**



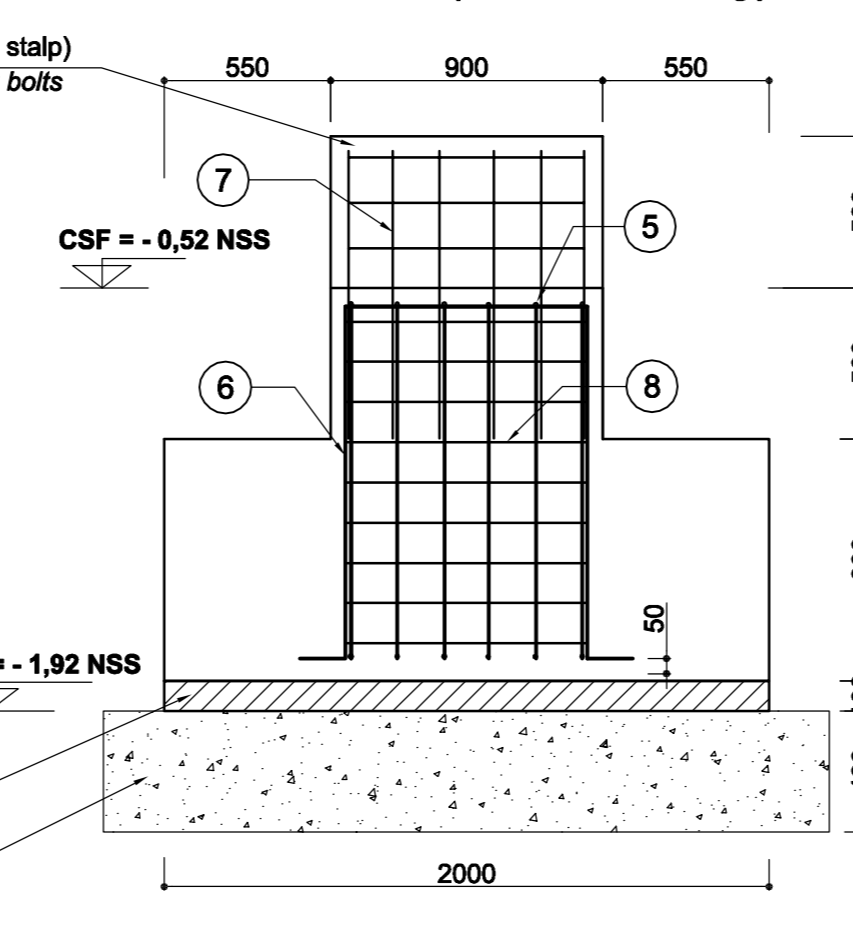
**SECTIUNEA 1 - 1 (pozitionare carcasa cu buloane de ancoraj)**  
**SECTION 1 - 1 (positioning of anchoring bolts case)**



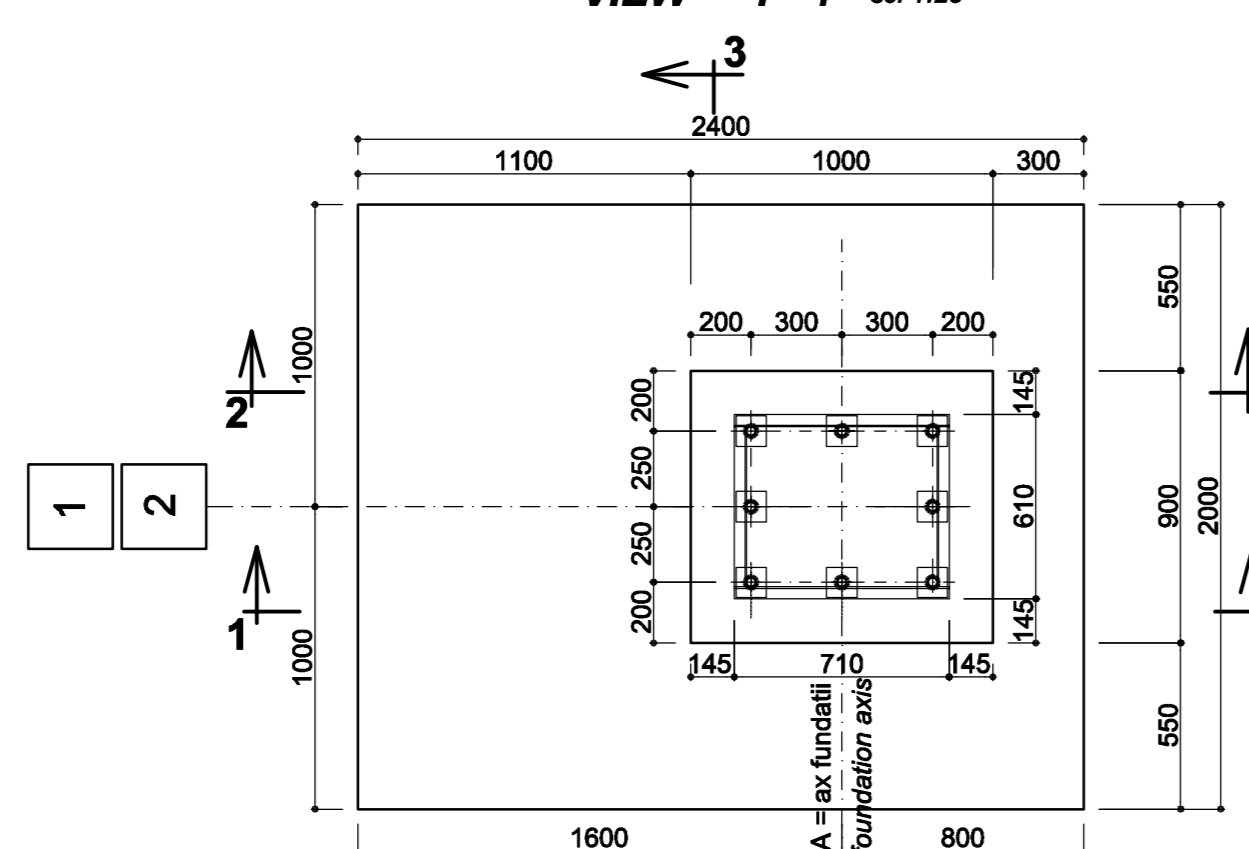
**SECTIUNEA 2 - 2 (armare cuzinet)**  
**SECTION 2 - 2 (bolster reinforcing)**



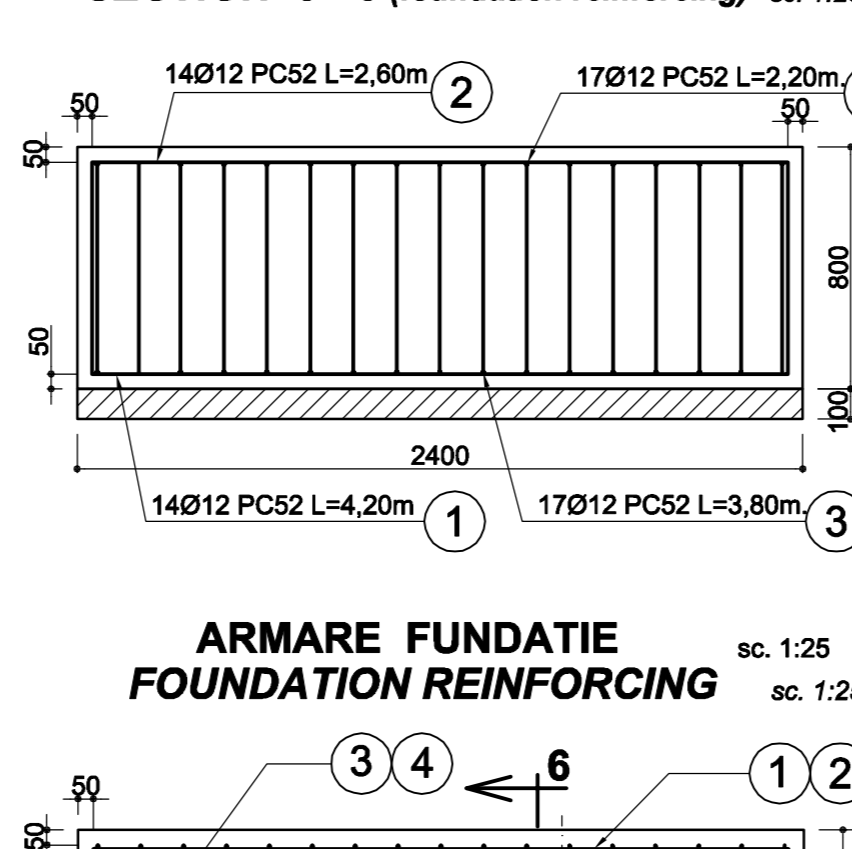
**SECTIUNEA 3 - 3 (armare cuzinet)**  
**SECTION 3 - 3 (bolster reinforcing)**



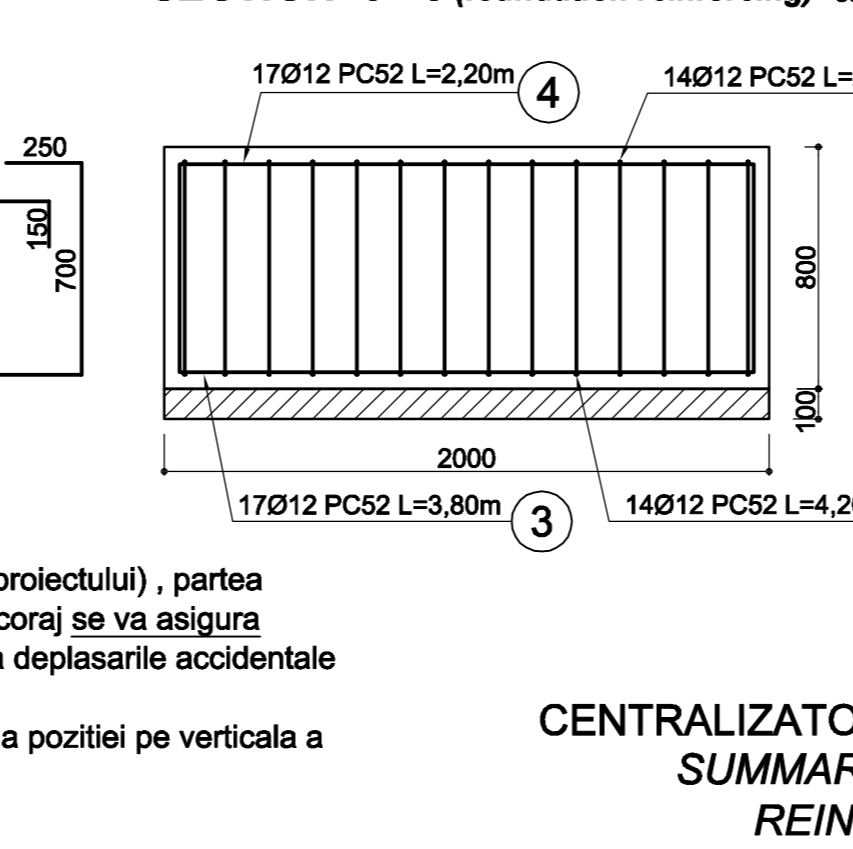
**VEDERE 4 - 4**  
**VIEW 4 - 4**



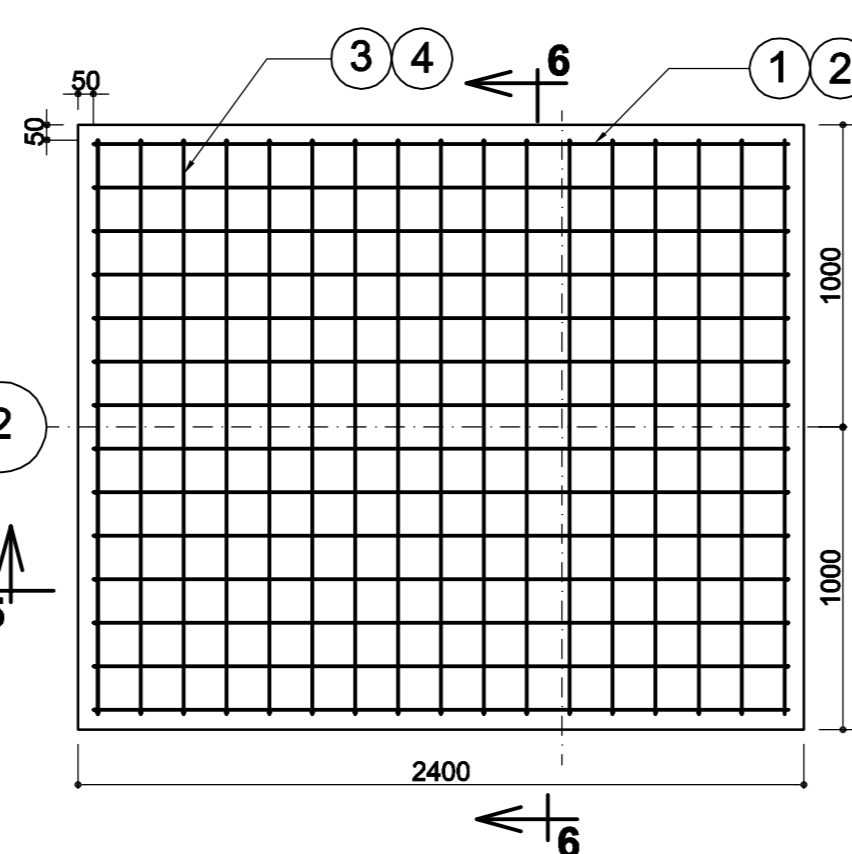
**SECTIUNEA 5 - 5 (armare talpa fundatie)**  
**SECTION 5 - 5 (foundation reinforcing)**



**SECTIUNEA 6 - 6 (armare talpa fundatie)**  
**SECTION 6 - 6 (foundation reinforcing)**



**ARMARE FUNDATIE**  
**FOUNDATION REINFORCING**



**ATENTIE**

- Dupa pozitionarea corecta (conform proiectului), partea superioara a carcasi buloanelor de ancoraj se va asigura obligatoriu intr-un lipar pentru a se evita deplasari accidentale la turnarea betonului.
- Spatiu pentru reglarea verticalitatii si a pozitiei pe verticale a carcasi buloanelor de ancoraj.

**ATTENTION**

- After the correct positioning (according to the project), the upper part of the anchoring bolt case will be compulsorily secured with a frame to avoid accidental shifting during concrete casting.
- Space to adjust the verticality and the vertical position of the anchoring bolt case.

**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

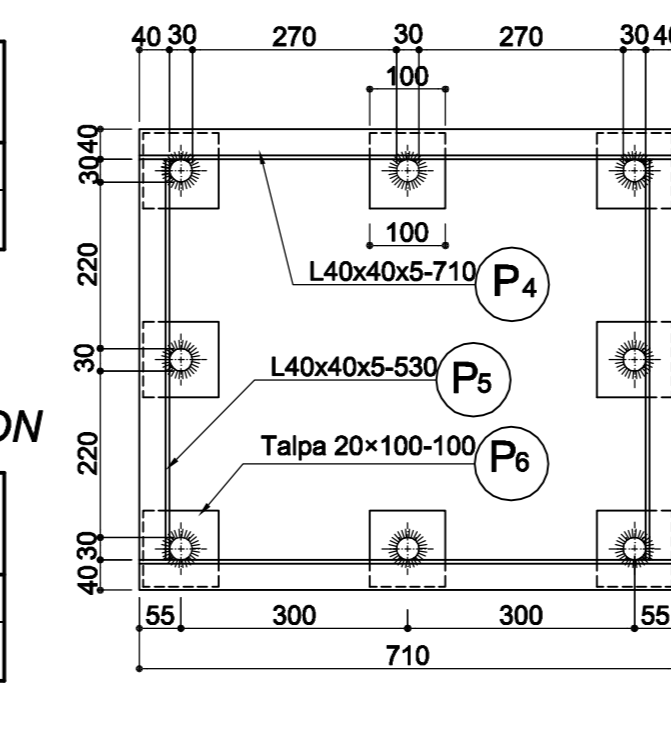
**CENTRALIZATOR ARMATURA FUNDATIE / STATIE**  
**SUMMARY TABLE FOR FOUNDATION REINFORCEMENT / STATION**

statie / station	greutate : kg / buc. / weight : kg / pcs.	nr. bucati / statie / no. pieces / station	TOTAL Kg. / TOTAL Kg.
STUPINI	310,00	2	620,00
<b>TOTAL GENERAL: / CARCASE ANCORAJ / ANCHORING CASES</b>			<b>620,00</b>

**CENTRALIZATOR CONFECTII METALICE / STATIE**  
**SUMMARY TABLE FOR METALLIC ELEMENTS / STATION**

statie / station	greutate : kg / buc. / weight : kg / pcs.	nr. bucati / statie / no. pieces / station	TOTAL Kg. / TOTAL Kg.
STUPINI	138,00	2	276,00
<b>TOTAL GENERAL: / CARCASE ANCORAJ / ANCHORING CASES</b>			<b>276,00</b>

**SECTIUNEA 8 - 8**  
**SECTION 8 - 8**



**EXTRAS ARMATURA FUNDATIE - 1 buc.**  
**FOUNDATION REINFORCEMENT TABLE - 1 pcs.**

Mara / Mark	Ø	Bucati / Pieces	Lungime / Lengths (m)	PC 52			
				Lungimi totale in metri / Ø / Total lengths in meters / Ø	Ø 10	Ø 20	
1	12	14	4,20	58,80			
2	12	14	2,60	36,40			
3	12	17	3,80	64,60			
4	12	17	2,20	37,40			
5	20	6	3,55	21,30			
6	20	6	3,45	20,70			
7	10	20	1,05	21,00			
8	8	12	3,70	44,40			
Lungimi totale in metri / Ø / Total lengths in meters / Ø				44,40	21,00	197,20	42,00
Gradulata / m. / Ø				0,395	0,817	0,888	2,468
Gruata / Ø				17,54	12,96	175,11	103,57
TOTAL kg / 1buc. / TOTAL kg / 1pcs.						310,00	

**EXTRAS LAMINATE - CARCASA BULOANE DE ANCORAJ**  
**LAMINATED ELEMENTS TABLE - ANCHORING BOLTS CASE**

Poz. / Position	Denumirea / Denomination	Dimensiuni / Dimensions (mm)	Lungime / Length (mm)	Bucati / Pieces	Greutate kg / Weight / 1 buc / 1 pcs.	TOTAL
P1	Bulon fundatie / Anchoring bolt	M 30-	1450	8	5,55	8,05
P2	Sabla / Washer	20x140-	140	8	22,00	3,08
P3	Piula / Bolt nut	M 30-	20	-	0,198	3,96
P4	Carcasa buloane / Case element	L40x40x5-	710	8	2,97	2,11
P5	Carcasa buloane / Case element	L40x40x5-	530	8	2,97	1,58
P6	Talpa bulon / Anchoring stand base	20 x 100 -	100	8	15,70	1,57
<b>TOTAL LAMINATE / TOTAL LAMINATED ELEMENTS</b>						<b>135,08</b>
<b>ELECTROZI + GRUND 3%</b>						<b>3,92</b>
<b>ELECTRODES + WELDING 3%</b>						<b>139,00</b>

**MATERIALE**

- Beton de egalizare : C4/5 - 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
- Laminata : S235J2G3 (OL 37.3n), S275J2G3 (OL44.3n)
- Buloane de ancorare : M30-grupa 6.6

**MATERIALS**

- Leveling concrete : C4/5 - 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 37.3n), S275J2G3 (OL44.3n)
- Anchoring bolts : M30 , resistance group 6.6

D					
C					
B					
A					
Index	Date	Modificari / Modification/Revision	Proiectant / Designer	Aprobat / Approved	Consemnat / Approved CFR
		PROIECT FINANAT DE UNIUNEA EUROPEANA / EUROPEAN UNION FINANCED PROJECT			
		C.N.C.F. "C.F.R." - S.A.			
<b>CLIENT / CLIENT</b>					
<b>CONSULTANT / CONSULTANT</b>					
Aprobat / Approved	Ing. proiect / Project manager		R. Lukizza	12.2011	
Aprobat / Approved	Coordonator Sectiune 1 / Section 1 Coordinator		C. Gambelli	12.2011	
Verificat / Checked	Verificator / Verifier		Giuseppe Fioravanti	12.2011	
<b>SUBCONTRACTANT / SUBCONTRACTOR</b>					
Aprobat / Approved	Responsabil Subcontractant / Subcontractant Responsible		A. Stancliu - Dimulescu	12.2011	
Tehnici / Elaborator	Designer		ing. / eng. Tudor ALMALEH	12.2011	
Reabilitarea liniei de cale ferata Brasov - Simeria, parte componenta a coridorului IV Pan European, pentru circulatia trenurilor cu viteza maxima de 160 km/h, Tronsonul : Brasov - Sighisara Corridor, for the trains circulation with maximum speed of 160 km/h, Section : Brasov - Sighisara					
Denumire desen / Drawing Title :					
COPERTINE - STATIA STUPINI : FUNDATII - DETALII DE EXECUTIE CANOPY - STUPINI STATION : FOUNDATION - DETAILS					
Codificare / Codification System		Scara / Scale		Nr. / No	
E   A   5   1		1:50; 1:25; 1:10		LOT / LOT	
0   1   E		0   3   B   Z		C   C   0   0   2   3   0   0   4   1	