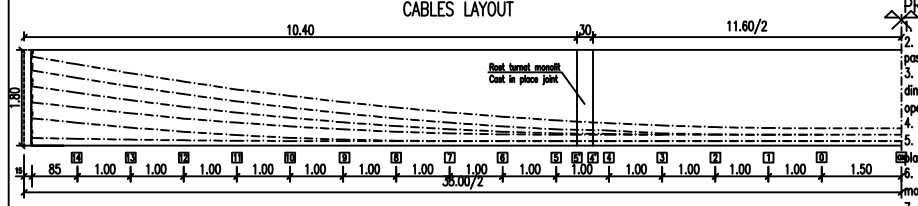
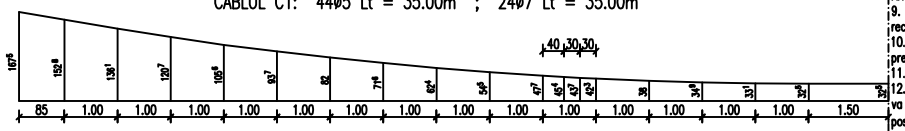
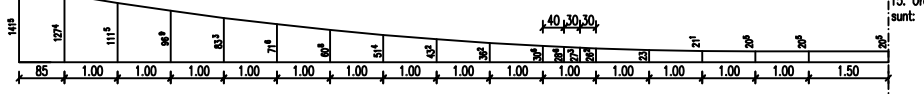
T R A S A R E A C A B L E L O R
CABLES LAYOUT



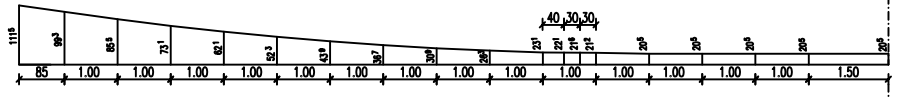
CABLUL C1: 44ø5 Lt = 35.00m ; 24ø7 Lt = 35.00m



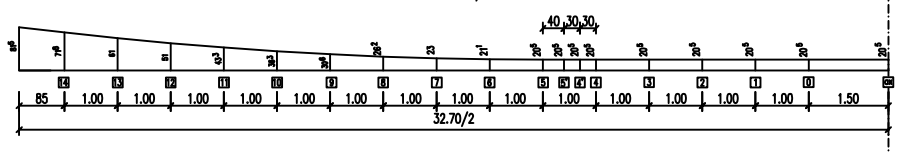
CABLUL C2: 44ø5 Lt = 35.00m ; 24ø7 Lt = 35.00m



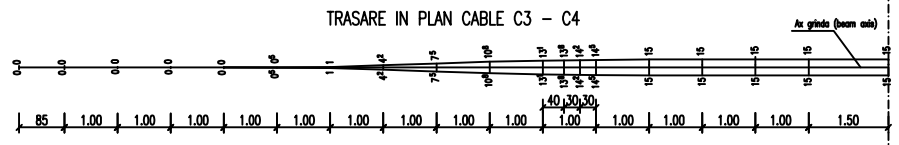
CABLUL C3: 44ø5 Lt = 34.90m ; 24ø7 Lt = 34.90m



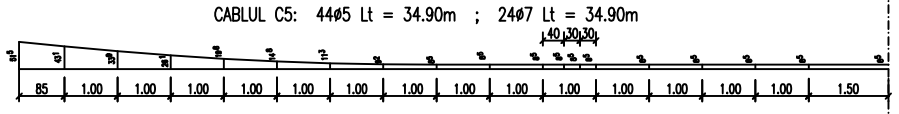
CABLUL C4: 44ø5 Lt = 34.90m ; 24ø7 Lt = 34.90m



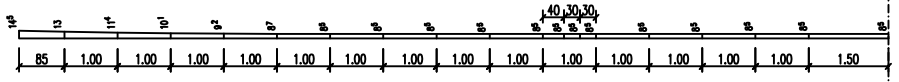
TRASARE IN PLAN CABLE C3 – C4



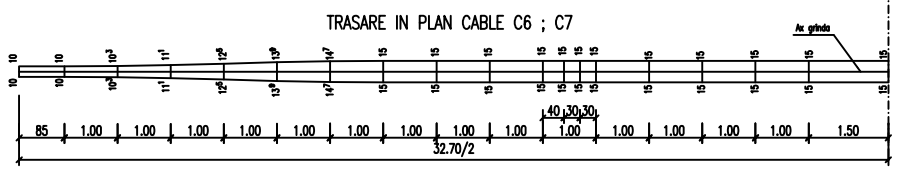
CABLUL C5: 44ø5 Lt = 34.90m ; 24ø7 Lt = 34.90m



CABLE C6 ; C7: 44ø5 Lt = 33.90m ; 24ø7 Lt = 33.90m



TRASARE IN PLAN CABLE C6 ; C7



PROCES TEHNOLOGIC DE PRECOMPRIMARE A GRINZILOR

1. Cablele sunt alcatuite din sarme paralele ø 7mm, SBP cal. I, R_p^0=1600N/mm^2 sau ø5, SBP cal. I, R_p^0=1700N/mm^2.
2. Ancorajele active folosite sunt ancoraje metalice tip inel-con 24 ø7, respectiv inel-con dublu tip 36ø5, iar cele pasive sunt ancoraje cu dorn, pentru cablele trase de la un singur capat.
3. Detaliile pentru cable si ancoraje se vor lua din „Normativul pentru executarea si receptionarea lucrarilor din beton precomprimat C21-85", Cap.3-Armaturi, ce cuprinde date asupra armaturilor, pregatirii si punerii in opera a armaturii pretensionate si „Cap. 4 Ancoraje, blocaje".
4. Abaterea maxima admisa fata de proiect a pozitiei cablelor la executia grinzilor este +3mm.
5. Tecile se vor fixa cu ajutorul unor stelaje metalice din otel beton ø 12 poziionate din metru in metru (conform planselor de armare a transoanelor).
6. Cablele se vor tensiona in etapa I, adica pe platforma de turnare, cu conditia atingerii clasei betonului armat de monolitizare din rosturi C35/45.
7. Rosturile de monolitizare vor fi tratate conform prescriptiilor „Normativului C21-85".
8. Tensionarea cablelor se va face conform prescriptiilor din „Normativului C21-85 Cap. 6. Pretensionarea armaturilor. Armaturi postintinse".
9. Rezultatele tensionarii cablelor vor fi trecute in fisele de tensionare, care vor fi prezentate in mod obligatoriu la receptia lucrarii.
10. Pentru a se asigura intrarea in lucru a greutatii proprii dupa tensionarea cablelor, la capetele grinzilor se vor prevedea reazeme netasabile.
11. Dupa tensionarea tuturor cablelor, contrasageata grinzii este de 6.1cm.
12. Dupa blocarea tuturor cablelor, pentru realizarea aderentei acestora cu betonul si protectia impotriva coroziunii se va face injectarea lor conform datelor cuprinse in „ Normativul C21-85. Cap. 9. Realizarea aderentei armaturilor postintinse si protectia lor impotriva coroziunii. Injectare pe timp friguros".
13. La executia grinzilor se vor respecta toate prescriptiile din „Normativul pentru executarea si receptionarea lucrarilor din beton precomprimat C21-85" si STAS 10111/2-77.
14. Pana la tensionarea cablelor, capetele acestora se vor proteja impotriva ruginirii si patrunderii apei in teci cu ajutorul unor capisoane din tabla galvanizata, etansata cu mortar de ipsos, la contactul cu grinda.
15. Ordinea de intindere, alcatuirea cablelor si fortele de control pentru grinzile dimensionate la clasa „E" de incarcare sunt:

BEAM PRESTRESSING METHODOLOGY

1. The cables are made of ø7mm, SBP, I-st. quality parallel wires, R_p^0=1600N/mm^2 or ø5, SBP cal. I, R_p^0=1700N/mm^2.
2. The active anchorages used in the process are 24 ø7 ring-cone type metallic anchorage, respectively 36ø5 duble ring-cone type, and the passive are anchored with bolt, cables tensioned at one end.
3. The details for cables and anchors are to be taken from the „Code of practice for execution of concrete, reinforced concrete, prestressed concrete works" ind. N.E. 012-99 Part B-Prestressed concrete, Chapter 3-„Reinforcements" including information about reinforcements, preparation for manufacturing and erection of prestressed reinforcements and Chapter 4-„Anchorage and Blocking".
4. The maximum allowable deviation for the cable location during the beams manufacturing is +3mm as related to the project requirements.
5. The cable ducts are to be fastened by some structural steel frames made of ø12 bars placed at 1mm distance (according to the reinforcing detail drawing for beam sections).
6. The cables shall be tensioned in the first stage, on the pouring platform, taking care that the concrete
class for the monolith parts between beams is reached.
7. The cast joints are to be treated according to the instructions in the C21-85 Norm.
8. The cables are to be tensioned according to the requirements in the „Norm C21-85 Cap. 6. „Pretensioning of Reinforcements. Posttensioned reinforcements".
9. The results of cables tensioning will be recorded in the tensioning sheets that will be mandatorily submitted during the work acceptance.
10. To ensure the self-weight of concrete operation after completing the cable tensioning, unsettleable rigid bearings are to be installed at both ends of the beams.
11. After all cables tensioning, the countersag of all beams should be of 6.1cm.
12. After blocking all the cables, in order to achieve the bondage between them and the concrete, the corrosion protection is to be ensured by the cable grouting according to the requirements of the Normativul C21-85. Cap. 9. „Achievement
of Posttensioned Reinforcement bondage and Corrosion Protection by Grouting during Cold Periods".
13. During the beams manufacturing all the requirements specified in the „Norm for execution and reception of prestressed concrete works C21-85" and STAS 10111/2-77.
14. Until the cables are prestressed, their ends will be protected against rust and water leakage into their sheet by some caps made of galvanized metal sheet sealed with mortar on the surface in contact with the beam.
15. The sequence of cables tensioning, the cable structure and the control forces necessary for the cable beams included in class „E" of loading are the following:

Cable SBP cal. I ø7
Cables SBP qual. I ø7

Ord. tens. Tension order	Cable Cable	Alcatuire Formation	Forta de tens. Tensioning force	Tip de ancoraje Anchorage type
1	C_1	24ø7	112.30	inel-con la ambele capete (ring-cone on both ends)
2	C_2	24ø7	112.30	inel-con la ambele capete (ring-cone on both ends)
3	C_3	24ø7	112.30	inel-con la ambele capete (ring-cone on both ends)
4	C_4	24ø7	112.30	inel-con la ambele capete (ring-cone on both ends)
5	C_5	24ø7	112.30	inel-con la ambele capete (ring-cone on both ends)
6	C_6;C_7	24ø7	112.30	inel-con la un capat si dorn la celalalt (ring cone to one end and bolt at the other end)

Cable SBP cal. I ø5
Cables SBP qual. I ø5

Ord. tens. Tension order	Cable Cable	Alcatuire Formation	Forta de tens. Tensioning force	Tip de ancoraje Anchorage type
1	C_1	44ø5	111.80	inel-con dublu la ambele capete
2	C_2	44ø5	111.80	inel-con dublu la ambele capete
3	C_3	44ø5	111.80	inel-con dublu la ambele capete
4	C_4	44ø5	111.80	inel-con dublu la ambele capete
5	C_5	44ø5	111.80	inel-con dublu la ambele capete
6	C_6;C_7	44ø5	111.80	inel-con dublu la un capat si dorn la celalalt

pozitie / cable	cap grinda	14	13	12	11	10	9	8	7	6	5	5'	4'	4	3	2	1	0	ax
C_1	167^5	152^8	136^1	120^7	105^6	93^7	82	71^6	62^4	54^5	47^7	45^4	43^7	42^3	38	34^9	33^1	32^5	32^5
C_2	141^5	127^4	111^5	96^9	83^6	71^6	60^8	51^4	43^2	36^2	30^6	28^8	27^3	26^2	26^2	21^1	20^5	20^5	20^5
C_3	111^5	99^3	85^5	73^1	62^1	52^3	43^9	36^7	30^9	26^3	23^1	22^1	21^6	21^2	21^2	20^5	20^5	20^5	20^5
C_4	81^5	71^8	61	51^5	43^3	36^3	30^6	26^2	23	21^1	20^5	20^5	20^5	20^5	20^5	20^5	20^5	20^5	20^5
C_5	51^5	43^1	33^9	28^1	19^8	14^6	11^3	9^2	8^5	8^5	8^5	8^5	8^5	8^5	8^5	8^5	8^5	8^5	8^5
C_6 ; C_7	14^5	13	11^4	10^4	9^2	8^7	8^5	8^5	8^5	8^5	8^5	8^5	8^5	8^5	8^5	8^5	8^5	8^5	8^5

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Indice Index	Data Date	Modificare Modification/Revision	Proiectant Designer	Aprobat Consultant Approved Consultant	Aprobat CFR Approved CFR
D					
C					
B					
A	11.2011	Revizia 1	Ionela Ungureanu		

GUVERNUL ROMANIEI
ROMANIAN GOVERNMENT

PROIECT FINANŢAT DE UNIUNEA EURO
EUROPEAN UNION FINANCED PR

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

CLIENT / CLIENT

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

CONSULTANT / CONSULTANT

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SUBCONTRACTANT / SUBCONTRACTOR

AREX

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Întocmit Elaborated	Proiectant Designer	Ionela Ungureanu	11.2011	

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

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

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

Denumire desen / Drawing Title :

INTERVAL RACOS - CATA
PASAJ SUPERIOR / OVER PASS - KM 225+068.122 L=116.20m
PROCES TEHNOLOGIC DE PRECOMPRIMARE GRINDA /
TECHNOLOGICAL PROCESS OF PRESTRESSING THE GIRDER

Codificare / Codification System	Scara / Scale 1:50	LOT / LOT	Nr. / No 01 / 01
E A 5 1 0 1 C 1 2 D X P A 0 0 3 1 0 0 9 1			