## NOTA

Numar de elemente prefabricate
- Cadre C2 : 17buc
- Aripi prefabricate A2. 2buc.
- Timpane prefabricate T2 2buc

## NOTE

Number of precast section
- Prefabricated frames C2 17pcs.
- Prefabricated wings A2 2pcs.
- Head-wall T2 2pcs.

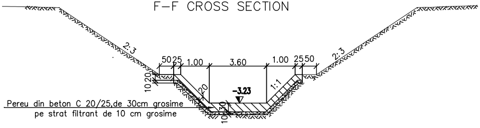
## DATE HIDRAULICE:

- Inaltimea de apa: h=0,96m
- Perimetrul udat: P=3,92m
- Aria udata: A=1,92m²
- Viteza de curgere a apei V=3,07m/s

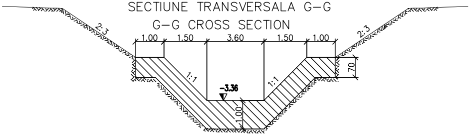
## HIDRAULIC DATA:

- Hydraulic height: h=0,96m
- Perimeter: P=3,92m
- surface: A=1,92m²
- Water flow speed: V=3,07m/s

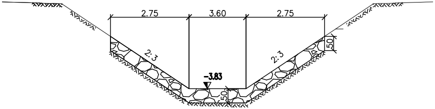
## SECTIUNE TRANSVERSALA F-F
## F-F CROSS SECTION


2:3
50
25
1.00
3.60
1.00
25
50
2:3
10
20
20
1:1
-3.23
Pereu din beton C 20/25,de 30cm grosime
pe strat filtrant de 10 cm grosime
30
10

## SECTIUNE TRANSVERSALA G-G
## G-G CROSS SECTION


2:3
1.00
1.50
3.60
1.50
1.00
2:3
70
1:1
1:1
-3.36
1.00

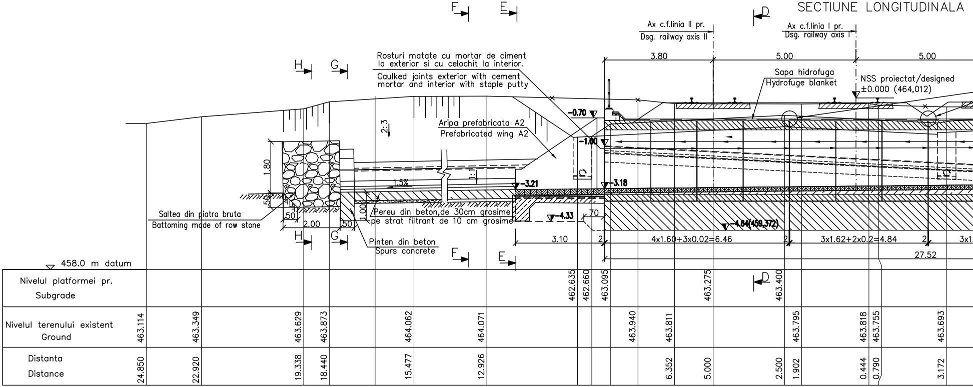
## SECTIUNE TRANSVERSALA H-H
## H-H CROSS SECTION


2.75
3.60
2.75
50
2:3
2:3
-3.83
50

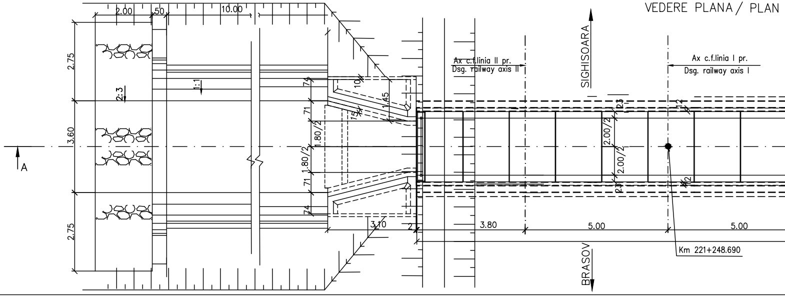
## LEGENDA BETOANELOR
## CONCRETE LIST

| | |
|---|---|
| ▧ | -Beton în elemente prefabricate în general (cadre, aripi, timpane,):<br>-Concrete for prefabricated elements generally (frames,wings, tympana,<br>C 35/45 - CEM II/A - S 32,5 - (XC4+XF3+XA1) - A/C = 0,50 - Dmax22 - Cl 0,20 |
| ▧ | Beton in fundatia podetelor, a elementelor de racordare (aripi, pinteni), in pereu<br>Concrete for the foundations of culverts, of connecting elements<br>(wings, breakwaters), in pitching<br>C25/30-CEM II/A-S 32,5-(XF1)-A/C=0,50-Dmax32-Cl0.20 |
| ▨ | -Beton în rigola drenurilor, fundatiile sferturilor de con si pentru realizarea stratului suport pentru pereu:<br>-Concrete for the drain gutters, for the foundations of cone quarters and for the support layer of revetment:<br>C 25/30 - CEM II/A - S 32,5 - (XC4+XF3+XA1) - A/C = 0,50 - Dmax32 - Cl 0,20 |
| ▩ | -Beton în stratul de protectie a hidroizolatiei:<br>-Concrete for the waterproofing protection layer:<br>C 25/30 - CEM II/A - S 32,5 - (XC4+XF3) - A/C = 0,50 - Dmax16 - Cl 0,20 |

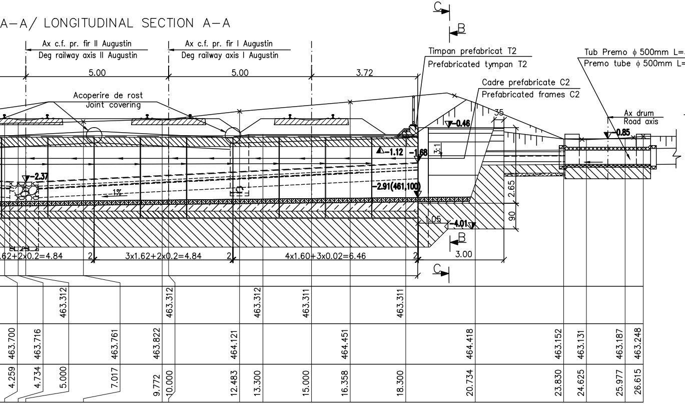
## SECTIUNE LONGITUDINALA


F
E
D
H
G
Ax c.f.linia II pr.
Dsg. railway axis II
Ax c.f.linia I pr.
Dsg. railway axis I
3.80
5.00
5.00
Rosturi matate cu mortar de ciment la exterior si cu celochit la interior.
Caulked joints exterior with cement mortar and interior with staple putty
Sapa hidrofuga
Hydrofuge blanket
NSS proiectat/designed
±0.000 (464,012)
-0.70
-1.00
2:3
1:1
Aripa prefabricata A2
Prefabricated wing A2
1.80
50
1.5%
-3.21
-3.18
-4.33
70
-4.84(459,372)
Saltea din piatra bruta
Battoming made of row stone
50
2.00
50
1.00
Pereu din beton,de 30cm grosime
pe strat filtrant de 10 cm grosime
Pinten din beton
Spurs concrete
3.10
2
4x1.60+3x0.02=6.46
2
3x1.62+2x0.2=4.84
2
3x1.
27.52
458.0 m datum
Nivelul platformei pr.
Subgrade
462.635
462.660
463.095
463.275
463.400
Nivelul terenului existent
Ground
463.114
463.349
463.629
463.873
464.062
464.071
463.940
463.811
463.795
463.818
463.755
463.693
Distanta
Distance
24.850
22.920
19.338
18.440
15.477
12.926
6.352
5.000
2.500
1.902
0.444
0.790
3.172

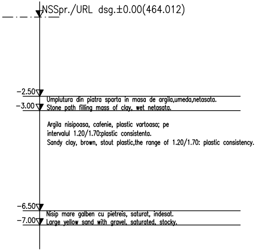
## VEDERE PLANA / PLAN


2.00
50
10.00
2.75
3.60
2.75
2:3
1:1
A
74
71
1.80/2
1.80/2
71
74
10
1.45
15
SIGHISOARA
BRASOV
Ax c.f.linia II pr.
Dsg. railway axis II
Ax c.f.linia I pr.
Dsg. railway axis I
2.00/2
2.00/2
23
23
12
12
3.10
2
3.80
5.00
5.00
Km 221+248.690

## A–A/ LONGITUDINAL SECTION A–A


C
B
Ax c.f. pr. fir II Augustin
Deg railway axis II Augustin
Ax c.f. pr. fir I Augustin
Deg railway axis I Augustin
5.00
5.00
3.72
Timpan prefabricat T2
Prefabricated tympan T2
Tub Premo ϕ 500mm L=3,00m
Premo tube ϕ 500mm L=3,00m
Cadre prefabricate C2
Prefabricated frames C2
Acoperire de rost
Joint covering
35
-0.46
Ax drum
Road axis
-0.85
-1.12
-1.68
3:1
-2.37
1%
-2.91(461,100)
2.65
90
1.05
-4.01
B
3.00
.62+2x0.2=4.84
2
3x1.62+2x0.2=4.84
2
4x1.60+3x0.02=6.46
2
C
463.312
463.312
463.312
463.311
463.311
463.700
463.716
463.761
463.822
464.121
464.451
464.418
463.152
463.131
463.187
463.248
4.259
4.734
5.000
7.017
9.772
10.000
12.483
13.300
15.000
16.358
18.300
20.734
23.830
24.625
25.977
26.615

## Sondaj/drill nr.F1



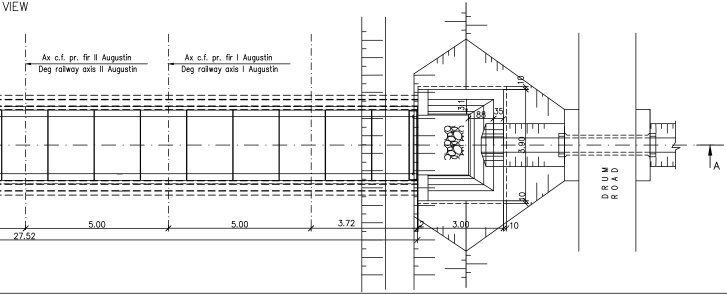
NSSpr./URL dsg.±0.00(464.012)

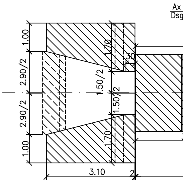
−2.50 Umplutura din piatra sparta in masa de argila,umeda,netasata.
−3.00 Stone path filling mass of clay, wet netasata.

Argila nisipoasa, cafenie, plastic vartoasa; pe intervalul 1.20/1.70:plastic consistenta.
Sandy clay, brown, stout plastic,the range of 1.20/1.70: plastic consistency.

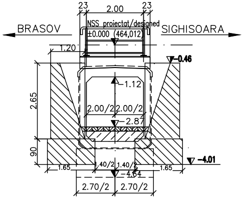
−6.50 Nisip mare galben cu pietreis, saturat, indesat.
−7.00 Large yellow sand with gravel, saturated, stocky.

## VIEW

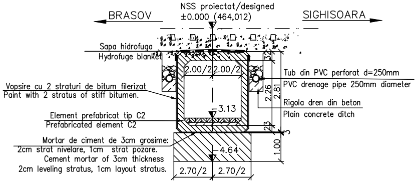

Ax c.f. pr. fir II Augustin
Deg railway axis II Augustin
Ax c.f. pr. fir I Augustin
Deg railway axis I Augustin
3:1
88
35
10
3.90
10
DRUM
ROAD
A
5.00
5.00
3.72
2
3.00
10
27.52


Ax
Dsg
1.00
2.90/2
2.90/2
1.00
1.70
1.50/2
1.50/2
1.70
30
3.10
2

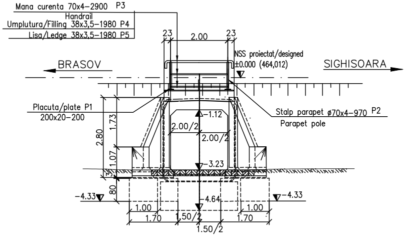
## SECTIUNE TRANSVERSALA C–C
## C–C CROSS SECTION


23
2.00
23
BRASOV
NSS proiectat/designed
±0.000 (464,012)
SIGHISOARA
1.20
−0.46
−1.12
2.65
2.00/2
2.00/2
−2.87
90
−4.01
1.65
1.40/2
1.40/2
1.65
−4.64
2.70/2
2.70/2

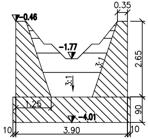
## SECTIUNE TRANSVERSALA D–D
## CROSS SECTION D–D


BRASOV
NSS proiectat/designed
±0.000 (464,012)
SIGHISOARA
Sapa hidrofuga
Hydrofuge blanket
Tub din PVC perforat d=250mm
PVC drenage pipe 250mm diameter
Vopsire cu 2 straturi de bitum filerizat
Paint with 2 stratus of stiff bitumen.
2.00/2
2.00/2
32
2.26
2.81
Rigola dren din beton
Plain concrete ditch
−3.13
Element prefabricat tip C2
Prefabricated element C2
23
3
1.00
Mortar de ciment de 3cm grosime:
2cm strat nivelare, 1cm strat pozare.
Cement mortar of 3cm thickness
2cm leveling stratus, 1cm layout stratus.
−4.64
2.70/2
2.70/2

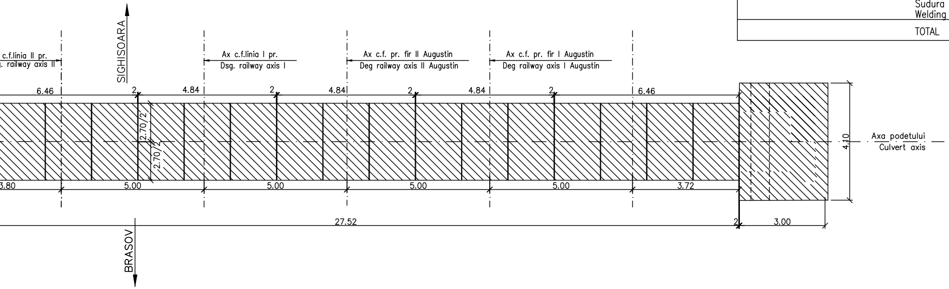
## SECTIUNE E–E
## E–E SECTION


Mana curenta 70x4–2900 P3
Handrail
Umplutura/Filling 38x3,5–1980 P4
Lisa/Ledge 38x3,5–1980 P5
23
2.00
23
NSS proiectat/designed
±0.000 (464,012)
BRASOV
SIGHISOARA
Placuta/plate P1
200x20–200
Stalp parapet ø70x4–970 P2
Parapet pole
1.73
2.80
−1.12
2.00/2
2.00/2
1.07
−3.23
3
80
−4.33
−4.64
−4.33
1.00
1.70
1.50/2
1.00
1.70
1.50/2

## SECTIUNE B–B
## B–B SECTION


0.35
−0.46
−1.77
3:1
3:1
2.65
1.25
−4.01
90
10
3.90
10

## PLANUL FUNDATIILOR
## FUNDATION PLAN


SIGHISOARA
c.f.linia II pr.
. railway axis II
Ax c.f.linia I pr.
Dsg. railway axis I
Ax c.f. pr. fir II Augustin
Deg railway axis II Augustin
Ax c.f. pr. fir I Augustin
Deg railway axis I Augustin
6.46
2
4.84
2
4.84
2
4.84
2
6.46
2.70/2
2.70/2
4.10
Axa podetului
Culvert axis
3.80
5.00
5.00
5.00
5.00
3.72
27.52
2
3.00
BRASOV

## MATERIAL METALIC PENTRU CONFECTIONAREA PARAPETULUI PODETULUI
## THE METALLIC MATERIAL TO BUILD PARAPET OF CULVERT

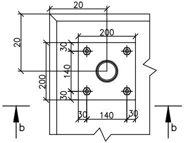
| Poz.<br>Piece | Denumirea materialului<br>The denomination of the material<br>OL EN 10025 – S235 JR | Buc. | Sectiune<br>Section | Lung.<br>Long.<br>(mm) | Sectiune/Section kg/ml | kg/buc | kg |
|---|---|---|---|---|---|---|---|
| P1 | Placuta prindere<br>Clamping plate | 4 | 200x20 | 200 | 31.40 | 6.28 | 25.12 |
| P2 | Stalp parapet EN 10297 – E275<br>Parapet pole | 4 | 70x4 | 970 | 6.51 | 6.32 | 25.26 |
| P3 | Mana curenta EN 10297 – E275<br>Handrail | 2 | 70x4 | 2900 | 6.51 | 18.88 | 37.76 |
| P4 | Umplutura EN 10058<br>Filling | 2 | 38x3,5 | 1980 | 2.98 | 5.90 | 11.80 |
| P5 | Lisa EN 10058<br>Ledge | 2 | 38x3,5 | 1980 | 2.98 | 5.90 | 11.80 |
| | Total partial<br>Partially total | | | | | | 111.74 |
| | Sudura 2%<br>Welding 2% | | | | | | 2.24 |
| | TOTAL kg | | | | | | 115 |

# DETALIU PENTRU PRINDEREA PLACUTELOR P1 DE TIMPAN
# DETAIL TO JOIN THE SLABS P1 AT THE TYMPANUM

Scara 1:5

VEDERE IN PLAN a–a

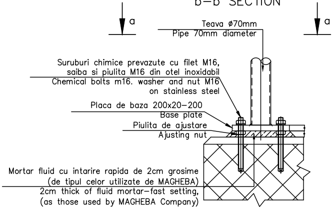
a–a PLAN VIEW



20
20
200
200
30
140
30
30
140
30
b
b

SECTUINE b–b

b–b SECTION



a
a
Teava ø70mm
Pipe 70mm diameter
Suruburi chimice prevazute cu filet M16, saiba si piulita M16 din otel inoxidabil
Chemical bolts m16. washer and nut M16 on stainless steel
Placa de baza 200x20–200
Base plate
Piulita de ajustare
Ajusting nut
Mortar fluid cu intarire rapida de 2cm grosime (de tipul celor utilizate de MAGHEBA)
2cm thick of fluid mortar–fast setting, (as those used by MAGHEBA Company)

## NOTA:

1. Prezentul plan s–a intocmit pe baza urmatoarelor date:
–plan de situatie
–profil in lung
–profil transversal
–fisa podului
–calcul hidraulic
–date culese pe teren
2. Podetul corespunde la convoaiele de calcul UIC (LM71 si SW/2)
3. La executie se vor respecta cu strictete prevederile din "Normativ pentru producerea betonului si executarea lucrarilor din beton, beton armat si beton precomprimat. Partea 1: Producerea betonului", indicativ NE 012/1–2007 si "Normativ pentru producerea betonului si executarea lucrarilor din beton, beton armat si beton precomprimat. Partea 2: Executarea lucrarilor din beton", indicativ NE 012/2–2010, iar verificarea calitatii lucrarilor si receptionarea lor se va face conform normativului C56–1985.
4. Daca la executie se vor constata neconcordante intre situatia existenta pe teren si cea din proiect se va anunta proiectantul.
5. Constructia se incadreaza in categoria de importanta B (constructii de importanta deosebita), modelul 1 de asigurare a calitatii si clasa de importanta B, conform HG 766/1997.
6. Proiectul va fi verificat la exigentele A4.2; B2.2; D2.2.
7. Se atrage in mod deosebit atentia asupra obligativitatii rezemarii elevatiilor prefabricate pe blocul de fundatie prin intermediul unui strat de mortar de ciment pentru a se realiza un contact perfect pe toata suprafata intre talpa prefabricatului si fundatie. Se interzice rezemarea directa fara strat de moratar de ciment.

## NOTE:

1. This plan has been drawn up based on the following data:
–Lay–out Plan
–Longitudinal Profile
–Cross–section Profile
–Bridge's File
–Hydraulic determination
–Field Data
2. The culvert corresponds to the UIC determination convoys (LM71 and SW/2).
3. The execution will strictly comply with the provisions of "Practice code for the concrete production and works execution, reinforced and pre–stressed concrete – Part 1: Practice code for concrete production" NE 012/1–2007 and "Practice code for the concrete production and works execution, reinforced and pre–stressed concrete – Part 2: The execution of concrete works." NE 012/2–2010, and the quality and the reception of the works shall be made accordingly to Norm C 56–1985.
4. If during the execution, discrepancies are found between the existing situation on site and the situation stated in the project, the designer will be noticed.
5. The construction has been classified in B category of importance (high important constructions), model 1–ensuring the quality and class of importance B according to G.O. 766/97.
6. The project will be checked in order to comply with the A4.2; B2.2; D2.2 requirements.
7. Particular attention is drawn on binding prefabricated elevations settlement on block foundation through a layer of cement mortar to achieve a perfect contact over the entire surface between precast and foundation base.Propping is prohibited without direct layer of cement mortar.

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| | | | | | |
|---|---|---|---|---|---|
| D | | | | | |
| C | | | | | |
| B | | | | | |
| A | 12.2011 | REVIZIA 1 | Elena Radu | | |
| Indice<br>Index | Data<br>Date | Modificare<br>Modification/Revision | Proiectant<br>Designer | Aprobat Consultant<br>Approved Consultant | Aprobat CFR<br>Approved CFR |

**GUVERNUL ROMANIEI**
**ROMANIAN GOVERNMENT**

**PROIECT FINANŢAT DE UNIUNEA EURO**
**EUROPEAN UNION FINANCED PR**

**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<br>Date | SemnŁturŁ<br>Signature |
|---|---|---|---|---|
| Aprobat<br>Approved | ķef proiect<br>Project manager | R. Liuzza | | |
| Aprobat<br>Approved | Coordonator SecŞune 1<br>Section 1 Coordinator | C. Gambelli | | |
| Verificat<br>Checked | Expert Cheie<br>Checking Expert | V.Kallidromitis | | VK |

**SUBCONTRACTANT / SUBCONTRACTOR**

AREX COMPANY

| | | | | |
|---|---|---|---|---|
| Aprobat<br>Approved | Responsabil Subconsultant<br>Subconsultant Responsible | A. Dinulescu Stanciu | 10.2011 | |
| Ȯtocmit<br>Elaborated | Proiectant<br>Designer | Elena Radu | 10.2011 | |

Reabilitarea liniei de cale ferata Braкov - Simeria, parte componentŁ a coridorului IV Pan European, pentru circulaŞa trenurilor cu viteza maximŁ 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 :

**STATIA / STATION : RACOS**
**PODET - KM 221+248,690 / KM 221+248,690 - CULVERT**
**DISPOZITIE GENERALA / GENERAL DISPOSITION**

| | | | |
|---|---|---|---|
| Codificare / Codification System | Scara / Scale<br>1:100; 1:5 | LOT / LOT | Nr. / No<br>01 / 01 |

E A 5 1 | 0 1 | C | 1 1 | P A | P O | 0 2 | 9 | 1 | 0 0 2 | 1