UNIUNEA EUROPEANĂ

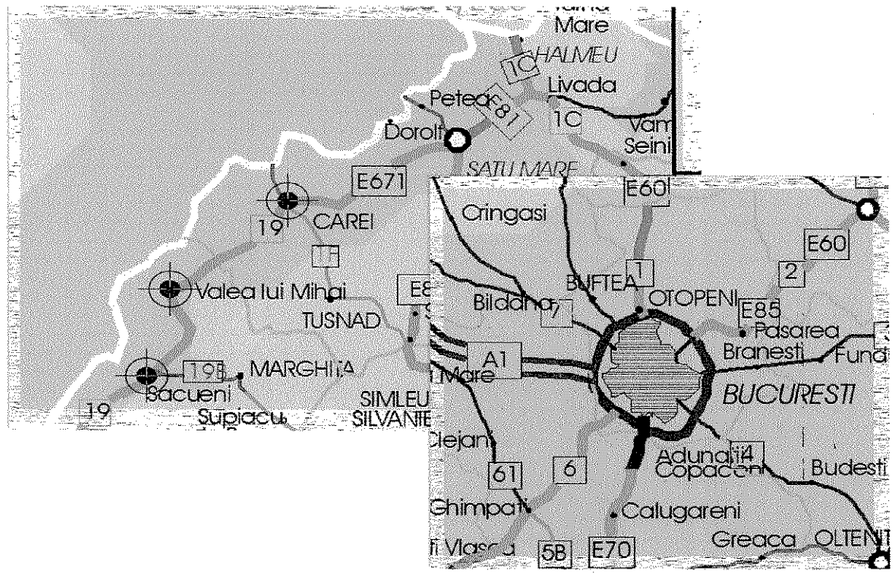
Proiect finanțat prin Phare

Instrumente Structurale 2007 - 2013

AUTORITATEA CONTRACTANTA / *CONTRACTING AUTHORITY* – Oficiul de Plati si Contractare PHARE / *Central Financing and Contracting Unit*
AUTORITATEA DE IMPLEMENTARE / *IMPLEMENTING AUTHORITY* – Ministerul Transporturilor si Infrastructuri / *Ministry of Transport and Infrastructure*
BENEFICIAR / *BENEFICIARY* – Compania Nationala de Autostrazi si Drumuri Nationale din Romania / *Romanian National Company of Motorways and National Roads*

ASISTENTA TEHNICA PENTRU REVIZUIREA SI ACTUALIZAREA STUDIULUI DE FEZABILITATE EXISTENT, ELABORAREA PROIECTULUI TEHNIC LA NIVEL DE DETALII DE EXECUTIE, A DOCUMENTATIEI DE ATRIBUIRE PENTRU REABILITAREA SECTIUNII BUCURESTI – ADUNATII COPACENI SI CONSTRUIREA VARIANTELOR OCOLITOARE SACUIENI, VALEA LUI MIHAI, CAREI /

TECHNICAL ASSISTANCE FOR REVIEWING AND UPDATING THE EXISTING FEASIBILITY STUDY, PREPARING THE DETAILED DESIGN AND TENDER DOCUMENTATION FOR THE REHABILITATION OF THE ROAD SECTION BUCHAREST-ADUNAȚII COPĂCENI AND FOR THE CONSTRUCTION OF THE BYPASSES AT SĂCUIENI, VALEA LUI MIHAI AND CAREI



VARIANTA DE OCOLIRE CAREI / *CAREI BYPASS*
Proiect Tehnic si Detalii de Executie / *Detailed Design and Working Drawings*
Volumul 5.3 – Piese Desenate. Pasajul peste Calea Ferata la km. 6+035 / *Volume 5.3 – Drawings. Railway Overpass at km. 6+035*

MARTIE / *MARCH* 2009

prointec

CONSIS PROIECT

25.05.2009

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Proiect finanțat prin Phare

Instrumente Structurale 2007 - 2013

AUTORITATEA CONTRACTANTA – Oficiul de Plati si Contractare PHARE
AUTORITATEA DE IMPLEMENTARE – Ministerul Transporturilor si Infrastructurii
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Varianta Ocolitoare Carei / *Carei Bypass*

Proiect Tehnic la Nivel de Detalii de Executie / *Detailed Design and Working Drawings*

Volumul 5.3 – Piese Desenate. Pasajul peste C.F. la km. 6+035 *Volume 5.3 – Drawings. Railway Overpass la km. 6+035*

Louis Berger SAS

prointec

CONSIS PROIECT

Verificat / *Checked by*:	Manager de Proiect / *Project Manager*	Ing. / *Eng.* Mircea Radulescu	
Verificat / *Checked by*:	Sef Echipa Proiectare / *Project Team Leader*	Ing. / *Eng.* Armando Pezzoni	
	Rev.	00	Martie / March 2009

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Proiect finanțat prin Phare

Instrumente Structurale 2007 - 2013

ASISTENTA TEHNICA PENTRU REVIZUIREA SI ACTUALIZAREA STUDIULUI DE FEZABILITATE EXISTENT, ELABORAREA PROIECTULUI TEHNIC LA NIVEL DE DETALII DE EXECUTIE, A DOCUMENTATIEI DE ATRIBUIRE PENTRU REABILITAREA SECTIUNII BUCURESTI – ADUNATII COPACENI SI CONSTRUIREA VARIANTELOR OCOLITOARE SACUIENI, VALEA LUI MIHAI, CAREI

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Proiect Tehnic la Nivel de Detalii de Executie / *Detailed Design and Working Drawings*

CUPRINS / *TABLE OF CONTENTS*

Volumul 5.3 – Pasajul peste Calea Ferata la km. 6+035 / *Railway Overpass at km. 6+035*

NUMELE ŞI PRENUMELE VERIFICATORULUI ATESTAT:
Ing. Diaconu Ion Dumitru
ADRESA :
Bucureşti, B-dul Iuliu Maniu 184A Bl G2 et 6, ap.24 sect 6
Tel/fax.021.4340152; Tel: 0744.338252

Nr.: 104 Data: 28.04.2009
Conform registrului de evidenţă

Referat ,

privind verificarea de calitate la cerintele A4, B2, D a proiectului: Drumul National DN19 – Construirea variantei ocolitoare a localitatii Carei – Pasaj peste linia CF Carei- Sarmasag- Zalau

1. Date de identificare

- Denumire obiectiv : **Drumul National DN19 – Construirea variantei ocolitoare a localitatii Carei – Pasaj peste linia CF Carei- Sarmasag-Zalau**
- Beneficiar : **Ministerul Transporturilor – C.N.A.D.N.R.**
- Proiectant general: **Consortiul Louis Berger S.A.S. - PROINTEC**
- Amplasament : **Drumul National DN19 – varianta ocolitoare a localitatii Carei, km 6+030 la intersectia cu CF 413**
- Data prezentării proiectului pentru verificare : **22.04.09**

2. Caracteristicile principale ale proiectului şi ale construcţiei

La km 6+030 al variantei de ocolire a localitatii Carei, traversarea liniei CF 413 se face cu un pasaj cu 3 deschideri de 21.00m cu o lungime de suprastructura de 64.12m si o lungime totata, inclusiv zidurile intoarse de 73.22m.

Pasajul va fi proiectat la clasa E de incarcare (A30;V80).

Platforma podului are o latime totala de 11.30m din care:

- parte carosabila de 7.80 m latime
- trotuare denivelate 2x1.50m
- lise pentru parapet pietonal 2x0.25m

Pasajul este in aliniament si traverseaza sub un unghi de 57 de grade linia CF 413. Schema statica a podului este de grinzi simplu rezemate, rezemarea suprastructurii realizandu-se prin intermediul unor aparate de reazem din neopren.

Structura de rezistenta a suprastructurii este alcatuita din grinzi prefabricate de beton precomprimat avand lungimea de 21.00m si inaltimea de 0.93m. In sectiune transversala sunt dispuse 8 grinzi la distanta de 1.22m (interax). Solidarizarea lor se realizeaza printr-o placa de suprabetonare din beton armat turnata monolit.

Imbracamintea pe partea carosabila este din BAP turnat in doua straturi (3+4)cm.

La marginile partii carosabile este prevazut parapet metallic de tip foarte greu pentru delimitarea partii carosabile de trotuar. Trotuarele sunt denivelate si au 1.00m parte utila.

Parapetul pietonal este metalic.. Pe deschiderea centrala, in dreptul liniei CF este prevazuta plasa de protective din plasa de sarma de 2.5m inaltime, care se prinde pe parapetul pietonal.

Panta transversala este de 2%, cea longitudinala de 1,5% iar in dreptul fiecarei pile sint prevazute cate 2 guri de scurgere cu un sistem de evacuare a apelor prin tubulatura din PVC de 110 mm.

Pentru imbunatatirea scurgerii apelor pe pod, la marginea bordurilor s-a prevazut un element prefabricat din beton armat, pozat pe mortar si avind asigurata etansarea intre sistemul rutier si borduri prin folosirea unui mastic bituminos.

Dispozitivele de acoperire a rosturilor de dilataţie vor fi de tip etanş cu posibilitatea de schimbare

Se folosesc aparate de reazem din neopren.

Culeile pasajului sunt de tip culei inecate cu trei pereti si ziduri intoarse de 4.50m lungime din beton armat, fundate indirect pe piloti forati de diametru mare F=1.08m si L=25.00m. Radierele culeilor sunt din beton armat si au dimensiunile de 10.60x4.60x2.00m.

Pilele pasajului au elevatiile alcatuite din cate trei stalpi circulari cu diametrul de 1.30m uniti la partea superioara cu o rigla pe care reazema grinzile prin intermediul unor aparate de reazem din neopren. Pilele sunt fundate indirect pe piloti forati de diametru mare F=1.08m si L=25.00m. Radierele pilelor sunt din beton armat si au dimensiunile de 10.60x4.60x2.00m.

Racordarea cu terasamentele este prevazuta cu sferturi de con pereate, cu pante de 2/3 si 1/2, cu scari asezate in diagonala si casiuri la fiecare capat de pod. La trecerea de pe pod pe rampa sunt prevazute placi de racordare 6.00x1.10x0.38m.

3. Documente ce se prezintă la verificare :

- Memoriu tehnic
- Caiet de Sarcini
- 27 planşe desenate
-

4. Concluzii asupra verificării :

In urma verificarii se considera ca proiectarea lucrărilor s-a facut corespunzător pentru faza verificată, în concordanţă cu legile, STAS şi normativele în vigoare.

Am predat 5 exemplare
VERIFICATOR TEHNIC ATESTAT
Ing. Diaconu Ion Dumitru

DIACONU ION DUMITRU
ROMANIA M.T.C.T. NR.06536 A4, B2, D
INGINER VERIFICATOR PROIECTE

Am primit 5 exemplare

VARIANTA DE OCOLIRE CAREI / *CAREI BYPASS*

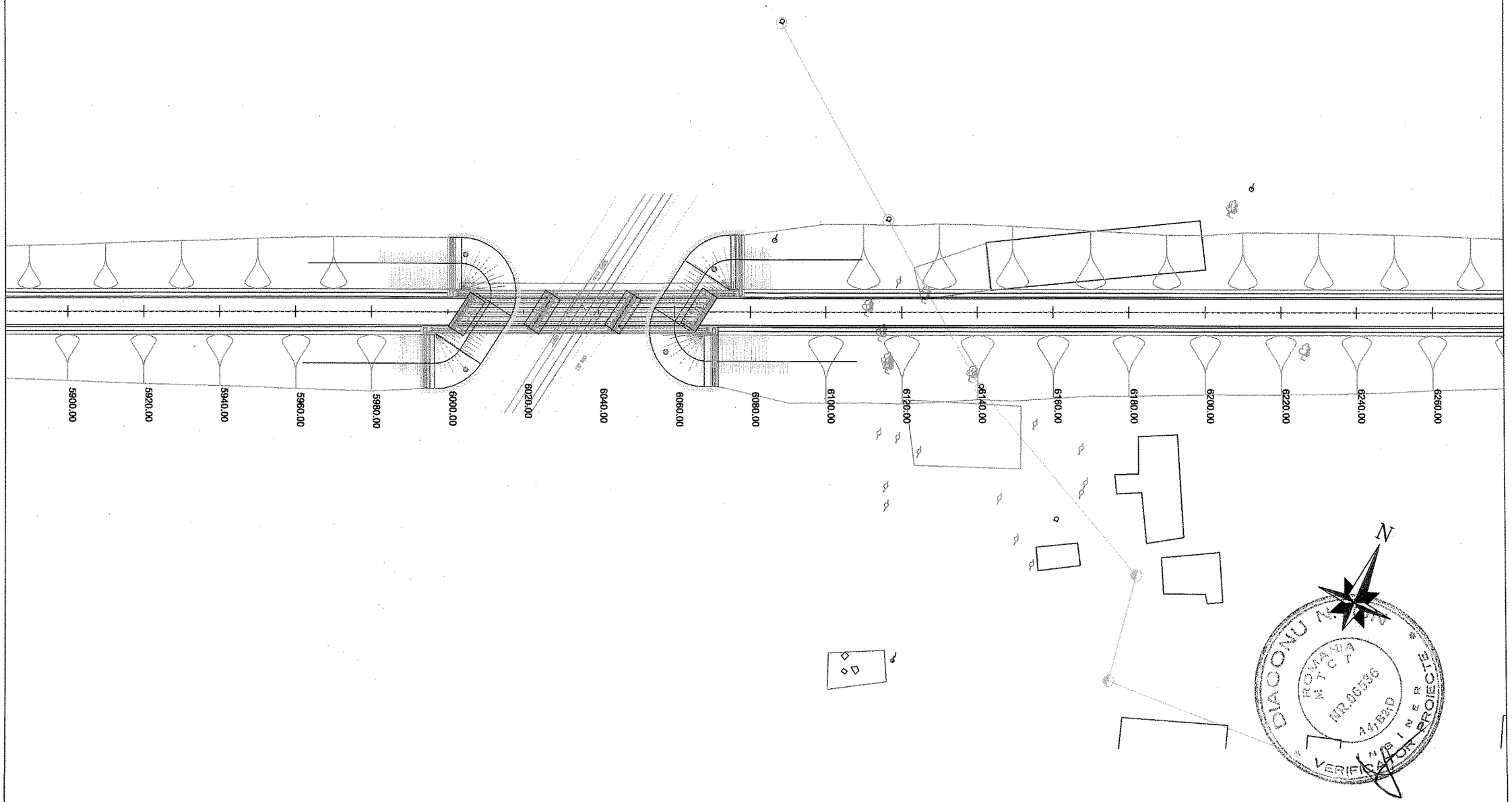
PROIECT TEHNIC SI DETALII DE EXECUTIE / *DETAILED DESIGN AND WORKING DRAWINGS*

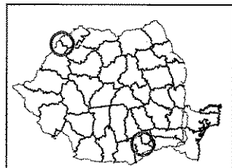
BORDEROU / LIST OF DRAWINGS

PASAJUL PESTE CALEA FERATA LA KM.6+035 */ RAILWAY OVERPASS AT KM.6+ 035*

PLAN DE SITUATIE
LAYOUT

SCARA/SCALE 1:1000





INVESTOR/INVESTITOR: COMPANIA NATIONALA DE AUTOSTRAZI SI DRUMURI NATIONALE DIN ROMANIA

DESIGNER/PROIECTANT: IN ASSOCIATION WITH promtec CONSIS PROIECT

PROJECT TITLE / TITLU PROIECT

Technicial assistance for reviewing and updating the existing feasibility study, preparing the detailed design and tender documentation for the rehabilitation of the road section Bucuresti-Adunati Copaceni and for the construction of the bypasses at Sacuieni, Valea lui Mihai and Carei

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VERIFICATOR PROIECT	Ing. Dumitru Ion DIACONU
DESENAT	Ing. Catalin MOMARLEANU
PROIECTAT	Ing. Bogdan MIHAESCU
VERIFICAT	Ing. Mircea RADULESCU
MANAGER DE PROIECT	Ing. Mircea RADULESCU
SEF ECHIPA PROIECTARE	Ing. Armando PEZZONI
Data	FEBRUARIE 2009
COD CONTRACT / DIRECTOR	DES. / NUMAR / REV.
PHARE 2005/017-553.04.03	D E PS 0 0 1 0

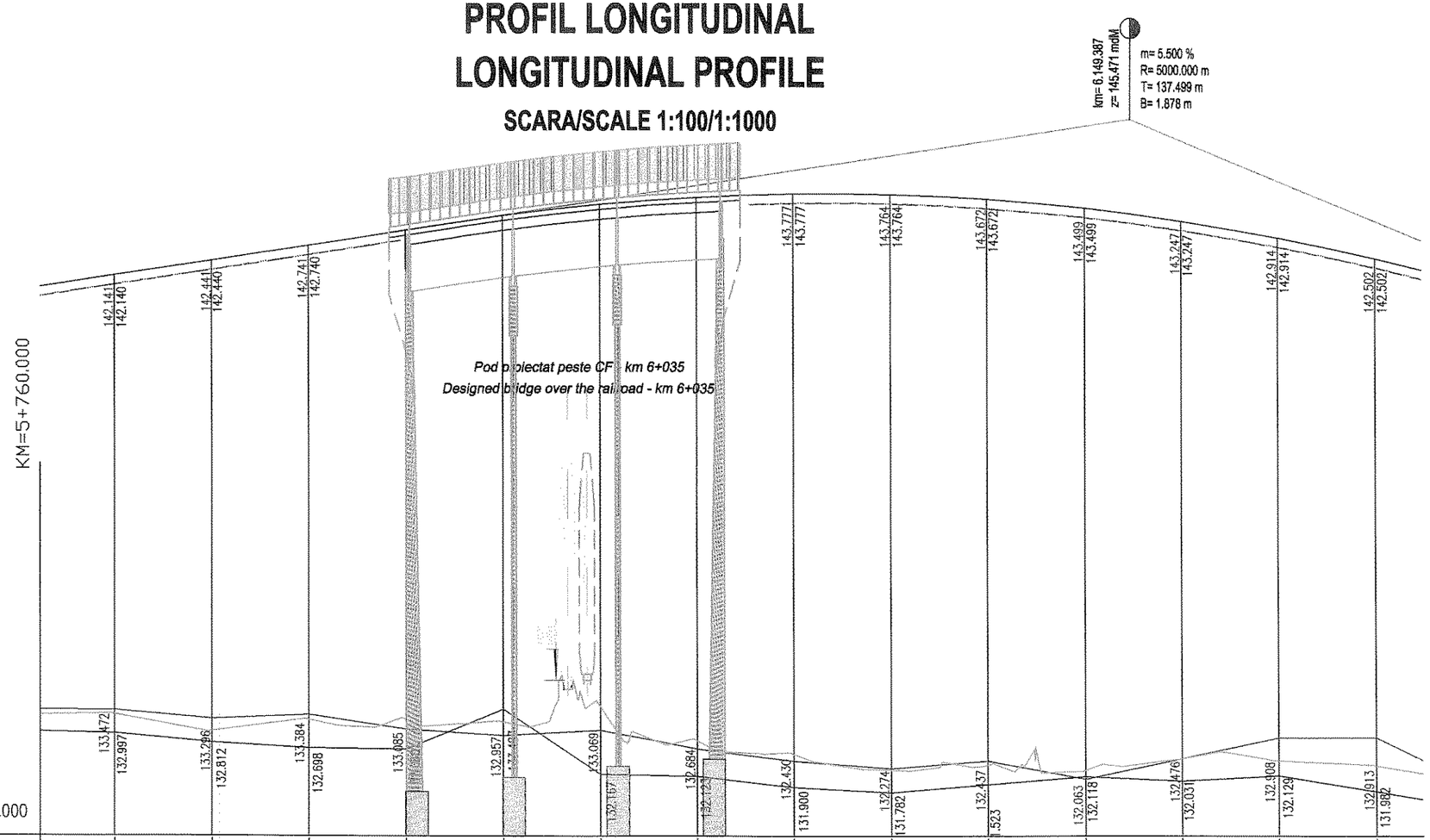
BRIDGE WORKS/LUCRARI DE PODURI

VARIANTA OCOLITOARE CAREI/
CAREI BYPASS
PASAJ PESTE LINIA C.F. NR.412
BRIDGE OVER RAILWAY LINE No. 412

PLAN DE SITUATIE /
LAYOUT
SCARA/SCALE 1:1000

PROFIL LONGITUDINAL
LONGITUDINAL PROFILE

SCARA/SCALE 1:100/1:1000



Plan Referinta/ Level Datum =132.000

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Cote Teren Existing Levels	134.521	133.365	133.092	133.280	133.272	133.231	133.550	132.849	132.575	132.253	132.352	132.243	132.483	132.436	132.334
Kilometraj/ Chainage	5760.000	5940.000	5960.000	5980.000	6000.000	6020.000	6040.000	6060.000	6080.000	6100.000	6120.000	6140.000	6160.000	6180.000	6200.000
Declivitati Vertical											L=275.000m R=-5000.000m				
Curbe si Aliniamente Horizontal															

ONU N. ION
ROMANIA
M.T.C.T.
NR.00536
44;B2;D
INGINER
VERIFICATOR PROIECTE

INVESTOR/INVESTITOR
COMPANIA NATIONALA DE AUTOSTRAZI SI DRUMURI NATIONALE DIN ROMANIA

DESIGNER/PROIECTANT
IN ASSOCIATION WITH
prointec
CONSES PROIECT

PROJECT TITLE / TITLU PROIECT

Technicial assistance for reviewing and updating the existing feasibility study, preparing the detailed design and tender documentation for the rehabilitation of the road section Bucuresti–Adunatii Copaceni and for the construction of the bypasses at Sacuieni, Valea lui Mihai and Carei

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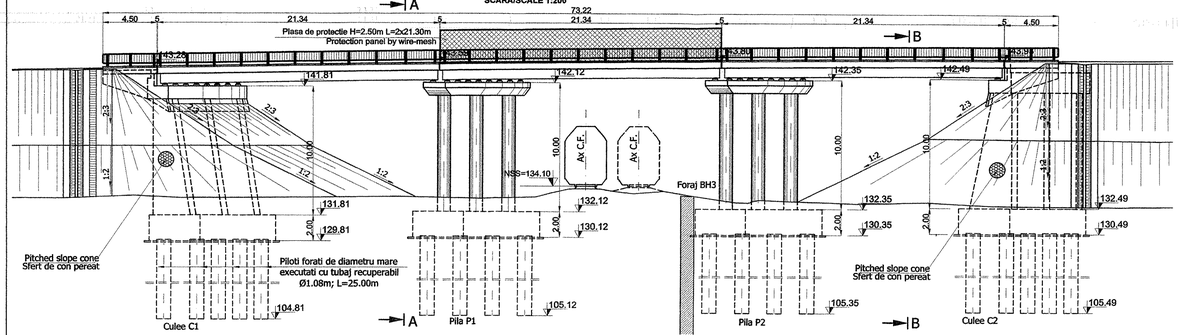
SEF ECHIPA PROIECTARE	Ing. Armando PEZZONI						
Data	FEBRUARIE 2009						
DOS CONTRACT							
DIRECTOR			DES.		NUMAR		REV.
PHARE 2005/017-553.04.03	D	E		PS	0	0	2	0

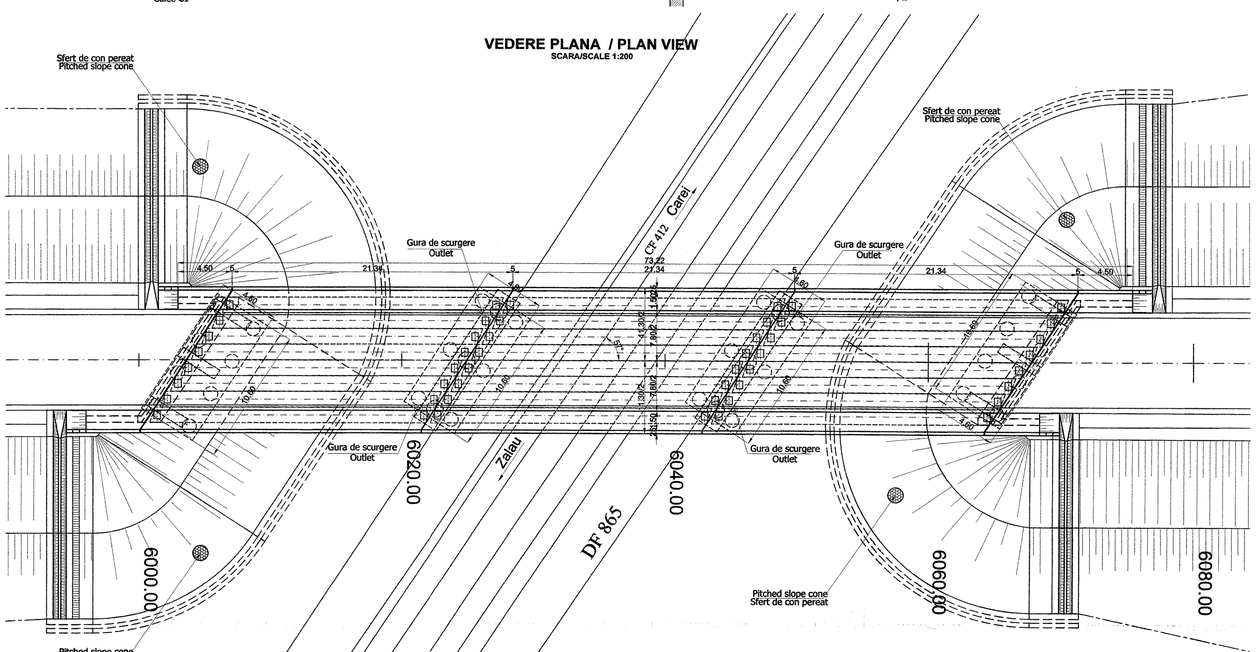
BRIDGE WORKS/LUCRARI DE PODURI

VARIANTA OCOLITOARE CAREI/
CAREI BYPASS
PASAJ PESTE LINIA C.F. NR.412
BRIDGE OVER RAILWAY LINE No. 412
PROFIL LONGITUDINAL /
LONGITUDINAL PROFILE
SCARA/SCALE 1:100/ 1:1000

ELEVATIE / ELEVATION
SCARA/SCALE 1:200



VEDERE PLANA / PLAN VIEW
SCARA/SCALE 1:200



SECTIUNI TRANSVERSALE / CROSS SECTIONS
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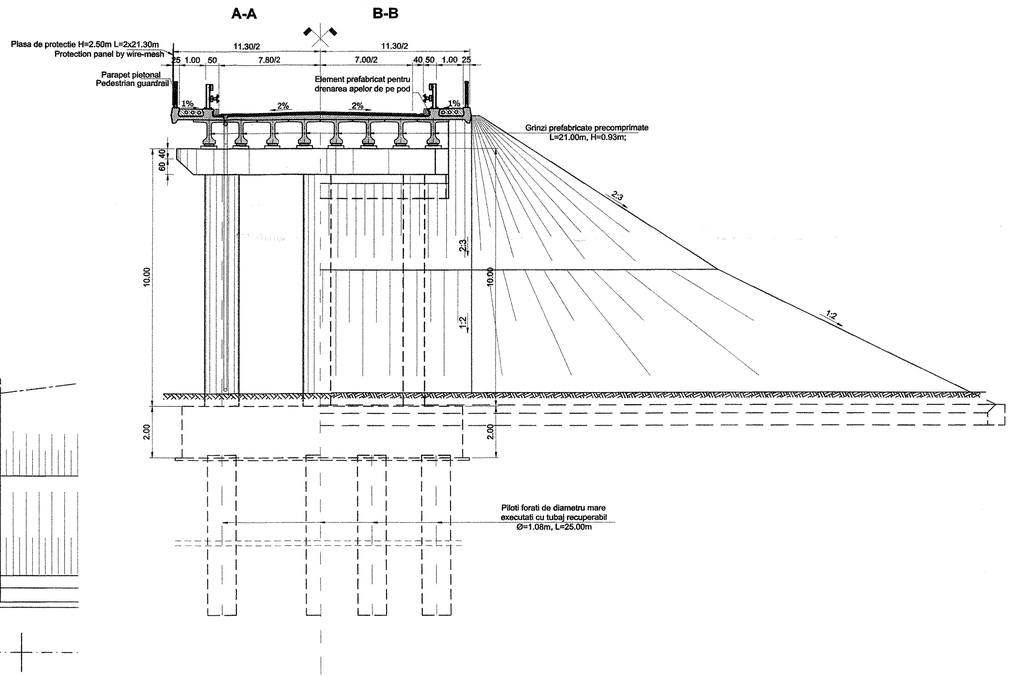

FORAJ BH3 - BORING BH3
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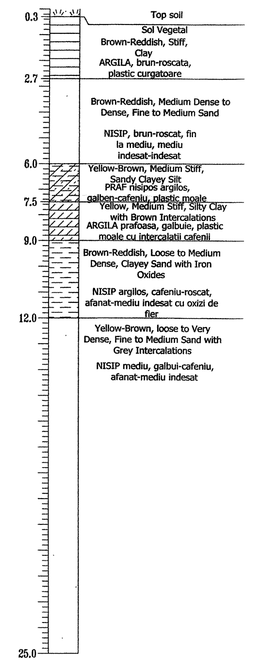

SCHEMA STATICA

LEGENDA: -RM - aparat de reazem mobil tip6 (type6 mobile bearing)
-RF - aparat de reazem fix tip6 (type6 fixed bearing)

Clasa "E" de incarcare (V80, A30);
"E" Loading class (V80 and A30 vehicles)

DIA JONU N. ION
ROMANIA
NR.065536
A 4 2020
INGINER
VERIFICATOR PROIECTE

Harta zonei/KEY MAP

INVESTITOR/INVESTITOR: COMPANIA NATIONALA DE AUTOSTRAZI SI DRUMURI NATIONALE DIN ROMANIA

DESIGNER/PROIECTANT: in ASSOCIATION WITH prointec CONSULTING ENGINEERS

PROJECT TITLE / TITLU PROIECT

Technical assistance for reviewing and updating the existing feasibility study, preparing the detailed design and tender documentation for the construction of the bypasses at Bacsieni, Valea lui Mihai and Carei

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VERIFICATOR PROIECT	Ing. Dumitru Ion DIACONU	
DESENAT	Ing. Catalin MONARTEANU	
PROIECTAT	Ing. Bogdan MINAILESCU	
VERIFICAT	Ing. Mircea RADULESCU	
MANAGER DE PROIECT	Ing. Mircea RADULESCU	
SEF ECHIPA PROIECTARE	Ing. Armando PEZONE	
Data	FEBRUARIE 2009	

BRIDGE WORKS/LUCRARI DE PODURI

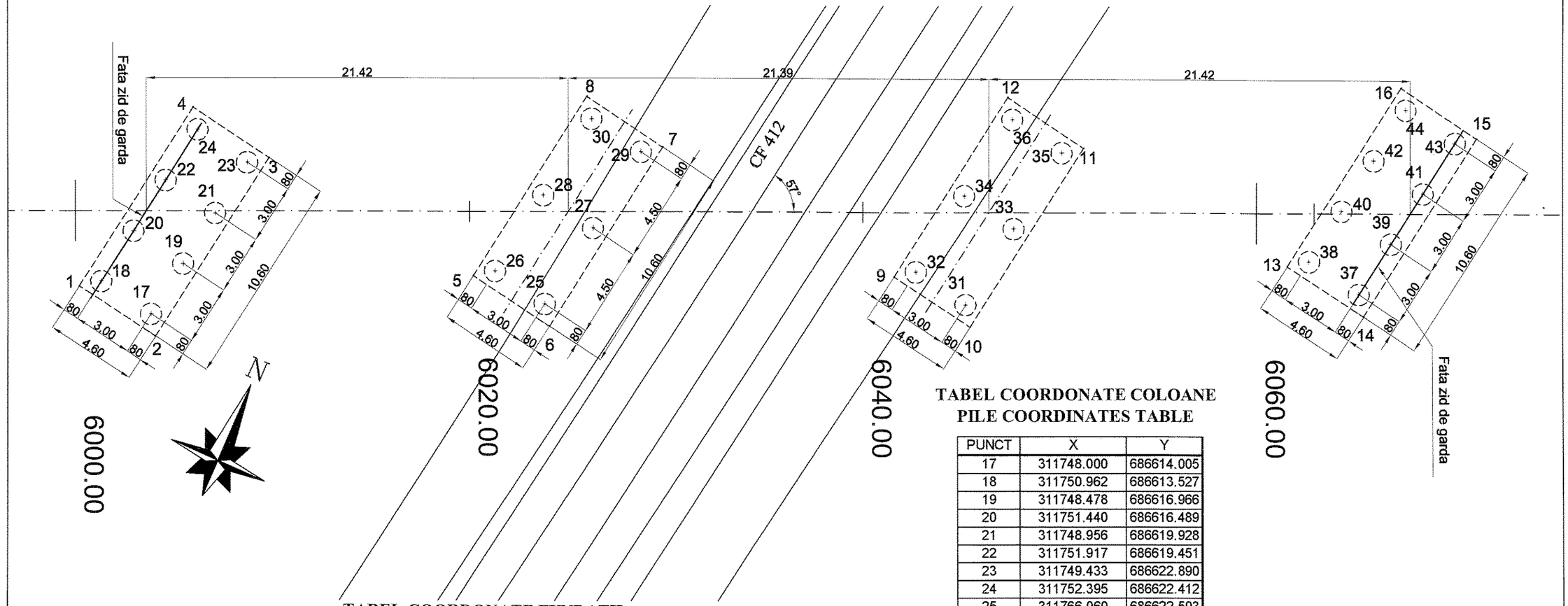
VARIANTA OCOLITOARE CAREI/
CAREI BYPASS
PASAJ PESTE LINIA C.F. NR.412
BRIDGE OVER RAILWAY LINE No. 412

DISPOZITIE GENERALA /
GENERAL ARRANGEMENT
SCARA/SCALE 1:100/ 1:200

PHARE 2005/017-553.04.05 | D | E | PB | 0 | 0 | 3 | 0

VEDERE PLANA / PLAN VIEW

SCARA/SCALE 1:200



TABEL COORDONATE COLOANE
PILE COORDINATES TABLE

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20	311751.440	686616.489
21	311748.956	686619.928
22	311751.917	686619.451
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25	311766.060	686622.593
26	311769.022	686622.115
27	311766.777	686627.035
28	311769.738	686626.558
29	311767.493	686631.478
30	311770.455	686631.000
31	311785.628	686631.239
32	311788.589	686630.761
33	311786.344	686635.682
34	311789.306	686635.204
35	311787.061	686640.124
36	311790.022	686639.647
37	311803.687	686639.826
38	311806.649	686639.348
39	311804.165	686642.787
40	311807.127	686642.310
41	311804.643	686645.75
42	311807.604	686645.27
43	311805.120	686648.71
44	311808.082	686648.23

TABEL COORDONATE FUNDATII
FOUNDATION COORDINATES TABLE

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3	311753.312	686623.075
4	311748.771	686623.807
5	311765.143	686621.930
6	311769.684	686621.198
7	311771.372	686631.663
8	311766.831	686632.395
9	311784.710	686630.577
10	311789.252	686629.844
11	311790.939	686640.309
12	311786.398	686641.041
13	311802.770	686639.163
14	311807.311	686638.431
15	311808.999	686648.896
16	311804.458	686649.628

DIACONU N. ION
ROMANIA
NTCT
NR.06536
44;B24D
INGINER PROIECTE
VERIFICATOR

Harta cheie/KEY MAP

INVESTOR/INVESTITOR

COMPANIA NATIONALA DE AUTOSTRAZI SI DRUMURI NATIONALE DIN ROMANIA

DESIGNER/PROIECTANT

IN ASSOCIATION WITH

prointec
COWI as PROIECT

PROJECT TITLE / TITLU PROIECT

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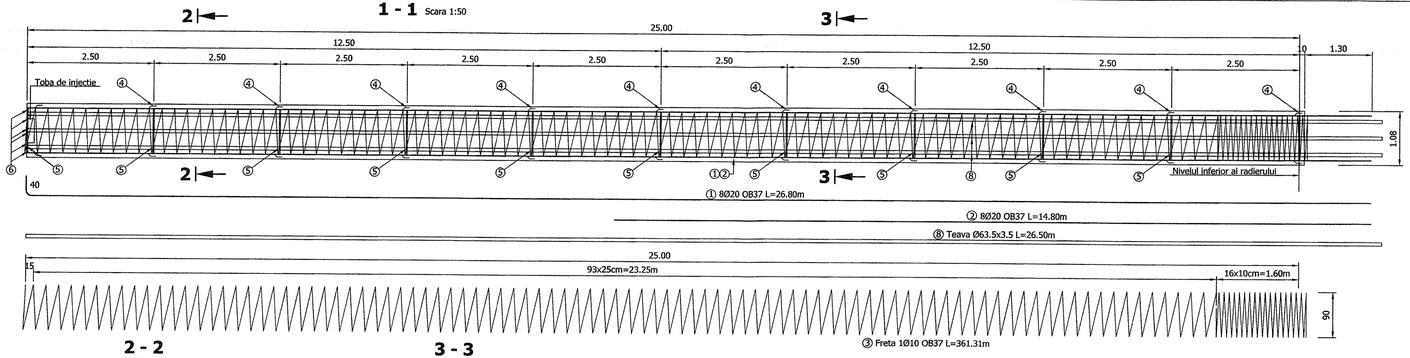
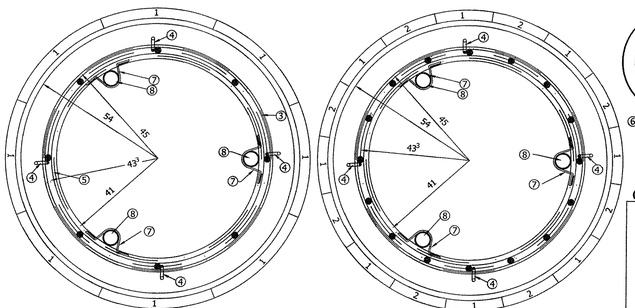
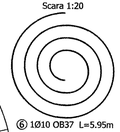
BRIDGE WORKS/LUCRARI DE PODURI

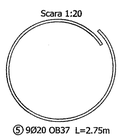
VARIANTA OCOLITOARE CAREI/
CAREI BYPASS
PASAJ PESTE LINIA C.F. NR.412
BRIDGE OVER RAILWAY LINE No. 412

PLAN TRASARE FUNDATII
SETTING OUT FOUNDATION
SCARA/SCALE 1:200







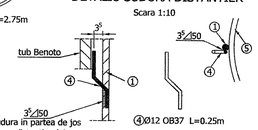


CERINTE DE CALITATE

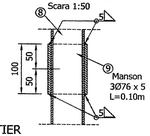
Beton C20/25
Otel OB37/ PC52

Clasa de expunere: XC1
Grad de impermeabilitate: P4
Tipul de ciment: II A-S 32.5
Valoare maxima A/C: 0.50

DETALIU SUDURA DISTANTIER

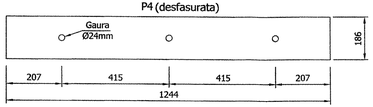


DETALIU IMBINARE TEVI



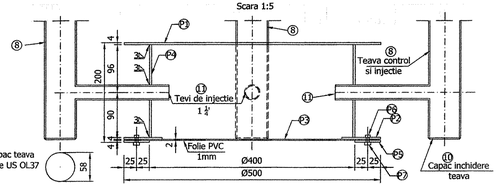
NOTA:
Continuitatea si calitatea betonului dupa turnare vor fi verificate cu ultrasunete (US) pentru fiecare coloana.
Imbinarile barelor marca 1 se vor realiza prin sudura electrica.
Inainte de realizarea sudurilor in serie se vor executa doua probe de sudura conform detaliului din STAS 10111/2-87 paragraful 6.7.5.1.2, ce vor fi incercate la tractiune.
Pe fundul forajului de coloana, inainte de lansarea carcasei de armatura si betonare, se va asterne un strat de 20cm de piatra sparta.
In situatia in care sectiunea de innadire se afla sub adancimea de 16.00m de la nivelul inferior al radierului, se admite ca toate barele sa fie innadite in acelasi sectiune.

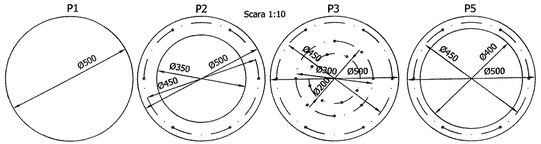
P4 (desfasurata)



Raza in ax armatura rezistenta(cm)	43,3
Raza in ax cerc de rigidare(cm)	41
Raza in ax freta(cm)	45

DISPOZITIV DE INJECTIE LA BAZA PILOTULUI





MASURATOAREA ARMATURII PENTRU O COLOANA L=20m

M	Φ (mm)	n (buc.)	L (m)	n x L - OB37			n x L - PC52
				ϕ10	ϕ12	ϕ20	ϕ20
1	20	8	26.80				214.40
2	20	8	14.80				118.40
3	10	1	361.31	361.31			
4	12	44	0.25		11.00		
5	20	11	2.75			30.25	
6	10	1	5.95	5.95			
7	10	33	0.55	18.15			
TOTAL LUNGIMI PE DIAMETRU (m)				385.41	11.00	30.25	332.80
GREUTATE PE METRU (kg/m)				0.617	0.888	2.466	2.466
GREUTATE PE DIAMETRU (kg)				237.62	9.77	74.60	820.73
GREUTATE PE TIP OTEL (kg)				322.00			821.00
GREUTATE TOTALA (kg)				1143.00			

Masuratoare material metalic pentru un dispozitiv de injectie

M	Dimensiuni(mm)	G/buc (kg)	Buc.	G totala (buc)	Material
P1	Tg 500x4-500	6,16	1	6,16	OL37
P2	Tg 500x4-500	2,96	1	2,96	OL37
P3	Tg 500x2-500	3,06	1	3,06	OL37
P4	Tg 186x4-1244	7,26	1	7,26	OL37
P5	Tg 500x4-500	2,38	1	2,38	OL37
P6	Suruburi M6-20	6,50kg/100buc	6	0,039	
P7	Piulite cu saibe	6,32kg/100buc	6	0,014	
Total				31.02kg	

Material metalic pentru control si injectare pentru o coloana

M	Material	Sectiune	Lungime	Nr.buc.	Greutate(kg)	STAS
8	OLT35	Φ63.5x3.5	26.50	3	380.74	
9	OLT35	76x5	0.10	3	1.90	
10	OL37	58.5		6	2.64	SR404/1 - 90
11	OLT35	Teava 1 1/4"	0.20	3	1.88	
TOTAL 387.16						

DIACONU N. ION
ROMANIA
NR.06536
MECANIC
INGINER
VERIFICATOR PROIECTE

INVESTOR/INVESTITOR
COMPANIA NATIONALA DE AUTOSTRAZI SI DRUMURI NATIONALE DIN ROMANIA
DESIGNER/PROIECTANT
promtec

PROJECT TITLE / TITLU PROIECT

Technical assistance for reviewing and updating the existing feasibility study, preparing the detailed design and tender documentation for the Bucharest Ring Road Sector between Bucuresti-Ploiesti Junction and for the construction of the bypasses at Sauceni, Valea lui Mihai and Carei

Asistenta tehnica pentru revizuirea si actualizarea Studiului de Fezabilitate existent, elaborarea Proiectului Tehnic la nivel de Detalii de Executie, a Documentatiei de Atribuire pentru realizarea sectiunii Bucuresti - Autostr.Centurii si construirea variantelor ocolitoare Sauceni, Valea lui Mihai si Carei

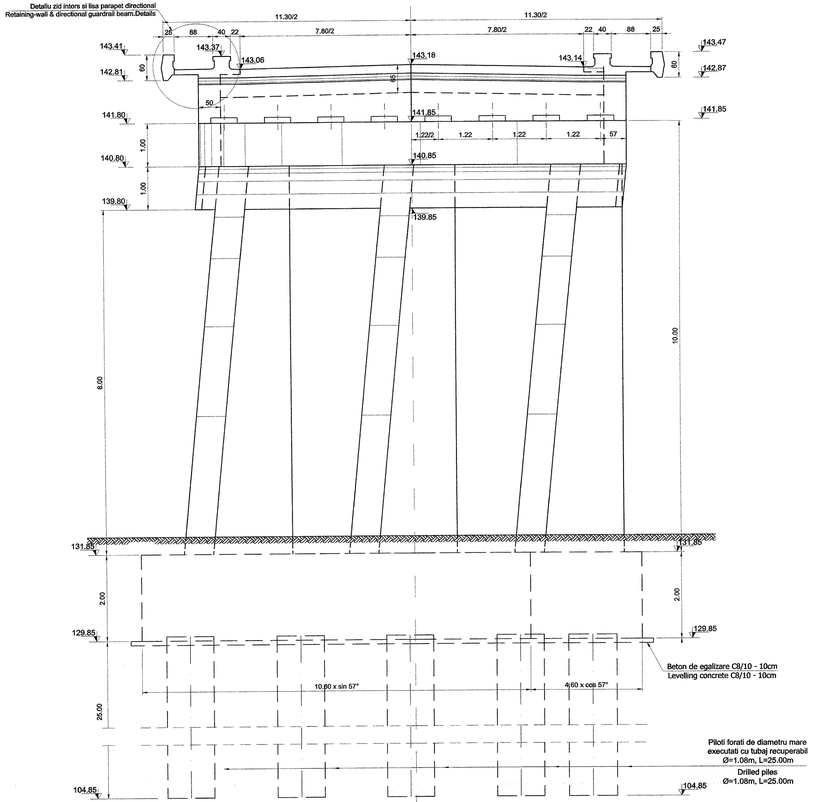
VERIFICATOR PROIECT	Ing. Dumitru Ion DIACONU		
DESENAT	Ing. Catalin ROMANLEANU		
PROIECTAT	Ing. Bogdan SANDESCU		
VERIFICAT	Ing. Mircea RADULESCU		
MANAGER DE PROIECT	Ing. Mircea RADULESCU		
SEF ECHIPA PROIECTARE	Ing. Armando PEZZONI		
Data	FEBRUARIE 2009		
Faza	DTAC		
PHARE 2005/017-553.04.05	D E	PS O O S O	

BRIDGE WORKS/LUCRARI DE PODURI

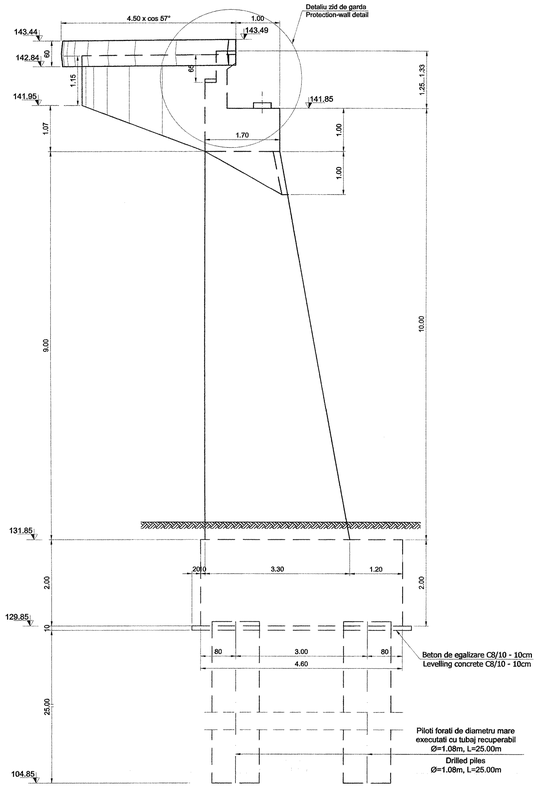
VARIANTA OCOLITOARE CAREI/
CAREI BYPASS
PASAJ PESTE LINIA C.F. NR.412
BRIDGE OVER RAILWAY LINE No. 412

PLAN ARMARE PILOT FORAT L=25.00m d=1.08m /
BORED PILES L=30.00m D=1.50m REINFORCEMENT PLAN
SCARA/SCALE 1:50/ 1:10 / 1:5 / 1:2.5

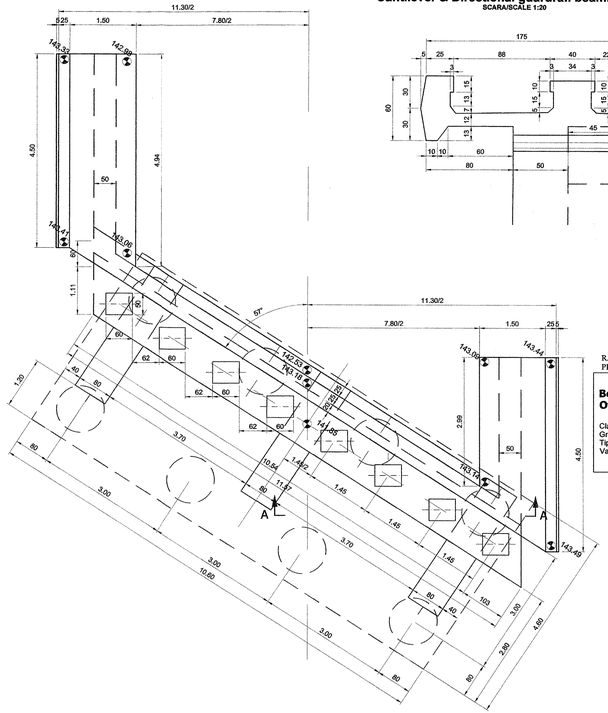
ELEVATIE A-A / ELEVATION A-A
SCARA/SCALE 1:50



VEDERE LATERAL B-B / LATERAL VIEW B-B
SCARA/SCALE 1:50

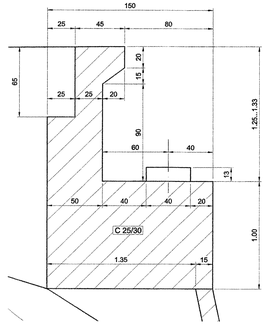


VEDERE PLANA C-C / PLAN VIEW C-C
SCARA/SCALE 1:50



Detaliu consola&lisa parapet directional Cantilever & Directional guardrail beam. Details
SCARA/SCALE 1:20

Detaliu zid de garda Protection-wall details
SCARA/SCALE 1:20



CERINTE DE CALITATE/QUALITY REQUIREMENTS

RADIER
PILE CAP

Beton/Concrete C20/25
Otel/Steel OB37/ PC52

Clasa de expunere/Exposure class: XC1
Grad de impermeabilitate/Impermeability: P4
Tipul de ciment/Cement type: II A-S 32.5 / II32.5
Valoare maxima A/C / Water-Cement ratio: 0.65

ELEVATIE CULEE & ABUTMENTS ELEVATION
CUZINETI/BLOCK BEARINGS

Beton/Concrete C25/30
Otel/Steel OB37/ PC52

Clasa de expunere/Exposure class: XC4, XF3
Grad de impermeabilitate/Impermeability P8
Grad de gelivitate/Gelivity: G100
Tipul de ciment/Cement type II A-S32.5 or IIA-V32.5
Valoare maxima A/C / Water-Cement ratio 0.50

NOTA:
1. Toate suprafetele de beton aflate in contact cu pamantul vor fi acoperite cu doua straturi de bitum fierbinte.
2. Toate muchiile de beton ascutite formate de doua planuri ce alcatuiesc un unghi < 90°, se vor tesi cu cate 2cm pe fiecare directie.

NOTE:
1. On all concret surfaces in contact with the soil will be spread 2 layers of bitumen emulsion.
2. All the concrete edge which are made it between two planes that has an angle <90°, will be 2 cm bevel on both direction.

DIACONU N. ION
INGINER
VERIFICAT

Harta cheie/KEY MAP

INVESTITOR/INVESTITOR: COMPANIA NATIONALA DE AUTOSTRAZI SI DRUMURI NATIONALE DIN ROMANIA

PROIECTANT/DESIGNER: promtec

PROJECT TITLE / TITLU PROIECT

Tehnical assistance for reviewing and updating the existing feasibility study, preparing the detailed design and tender documentation for the project: Bypass Constanta, Access to Mihail Kogalniceanu Airport and the rehabilitation of the bypasses at Saraiu, Valea Lui Mihai and Cumpana

Asistenta tehnica pentru revizuirea si actualizarea Studiului de Fezabilitate existent, elaborarea Proiectului Tehnic la nivel de Detalii de Executie si a documentatiei de atribuire pentru lucrarile aferente proiectului: Ocolitoare Constanta cu lucrari de consolidare/ imbunatatire existente Saraiu, Valea lui Mihai si Cumpana

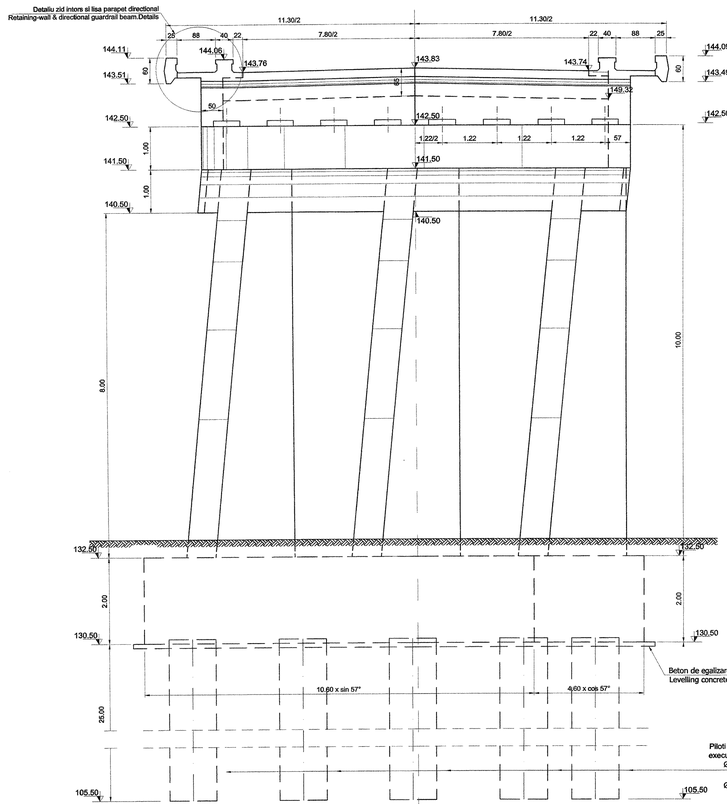
VERIFICATORI PROIECT	Ing. Dumitru Ion DIACONU	
DESIGNAT	Ing. Catalin MOMOTLONU	
PROIECTAT	Ing. Bogdan BRATESCU	
VERIFICAT	Ing. Mihnea RADULESCU	
MANAGER DE PROIECT	Ing. Mihnea RADULESCU	
DIR. DIRIG. PROIECTARE	Ing. Armando PAVESE	
Data/Data	FEBRUARY, 2009	
Faza/Phase		
Nr./No.	TPL / NRAM / SEC /	
PHARE 2005/017-553.04.05	D E P S 0 0 6 0	

BRIDGE WORKS/LUCRARI DE PODURI

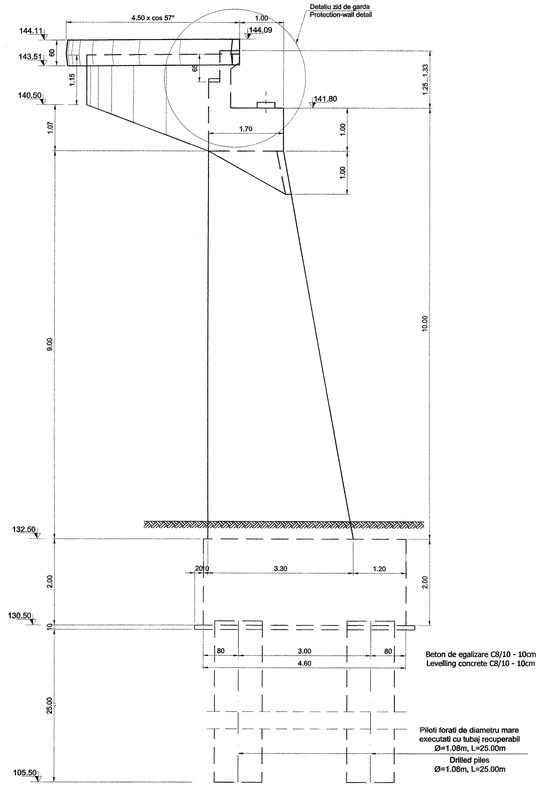
VARIANTA OCOLITOARE CAREI/
CAREI BYPASS
PASAJ PESTE LINIA C.F. NR.412
BRIDGE OVER RAILWAY LINE No. 412

PLAN COFRAJ CULEE C1
ABUTMENT C1 FORMWORK PLAN
SCARA/SCALE 1:50/ 1:20

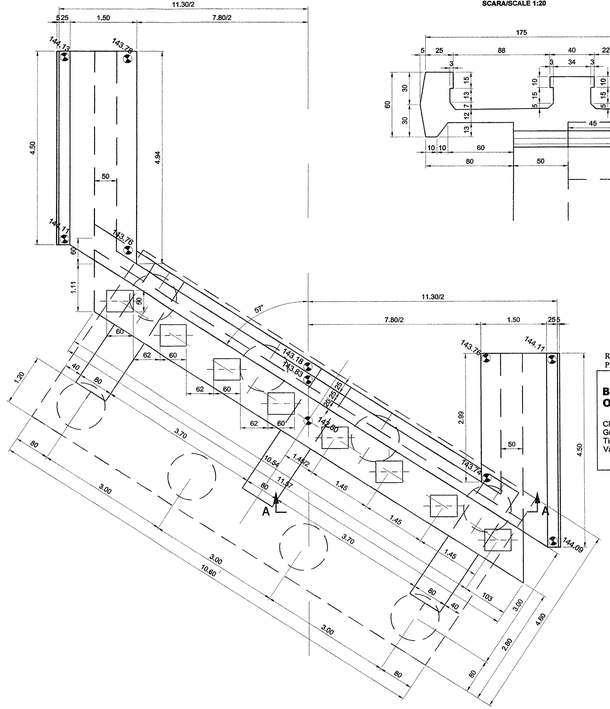
ELEVATIE A-A / ELEVATION A-A
SCARA/SCALE 1:50



VEDERE LATERAL B-B / LATERAL VIEW B-B
SCARA/SCALE 1:50

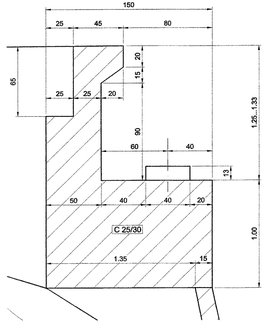


VEDERE PLANA C-C / PLAN VIEW C-C
SCARA/SCALE 1:50



Detaliu consola&lisa parapet directional
Cantilever & Directional guardrail beam. Details
SCARA/SCALE 1:20

Detaliu zid de garda
Protection-wall details
SCARA/SCALE 1:20



CERINTE DE CALITATE/QUALITY REQUIREMENTS

RADIER
PILE CAP

Beton/Concrete C20/25
Otel/Steel OB37/ PC52

Clasa de expunere/Exposure class: XC1
Grad de impermeabilitate/Impermeability: P4
Tipul de ciment/Cement type: II A-S 32.5 / II32.5
Valoare maxima A/C / Water-Cement ratio: 0.65

ELEVATIE CULEE & ABUTMENTS ELEVATION
CUZINETI/BLOCK BEARINGS

Beton/Concrete C25/30
Otel/Steel OB37/ PC52

Clasa de expunere/Exposure class: XC4, XF3
Grad de impermeabilitate/Impermeability P8
Grad de gelivitate/Gelivity: G100
Tipul de ciment/Cement type II A-S32.5 or IIA-V32.5
Valoare maxima A/C / Water-Cement ratio 0.50

NOTA:
1. Toate suprafetele de beton aflate in contact cu pamantul vor fi acoperite cu doua straturi de bitum filerizat.
2. Toate muchiile de beton ascutite formate de doua planuri ce alcatuiesc un unghi < 90°, se vor tesi cu cate 2cm pe fiecare directie.

NOTE:
1. On all concret surfaces in contact with the soil will be spread 2 layers of bitumen emulsion.
2. All the concrete edge which are made it between two planes that has an angle <90°, will be 2 cm bevel on both direction.

INVESTOR/INVESTITOR	COMPANIA NATIONALA DE AUTOSTRAZI SI DRUMURI NATIONALE DIN ROMANIA
DESIGNER/PROJECTANT	promtec

PROJECT TITLE / TITLU PROIECT

Technical assistance for reviewing and updating the existing documentation for the rehabilitation of the road section Bucharest - Ploiesti - Brasov, including the construction of the bypasses at Sacuieni, Voiesti si Mihai and Cerei

Asistenta tehnica pentru verificarea si actualizarea Studiului de Fezabilitate existent, elaborarea Proiectului Tehnic la nivel de Detalii de Executie, a Documentatiei de Atribuire pentru reabilitarea sectiunii Bucuresti - Ploiesti - Brasov si construirea variantelor ocolitoare Sacuieni, Voiesti si Mihai si Cerei

VERIFICATOR PROJECT	Ing. Dumitru Ion DIACONU	
DESENAT	Ing. Cornel MUNTEANU	
PROIECTAT	Ing. Bogdan BARZOIU	
VERIFICAT	Ing. Mihnea RADULESCU	
MANAGER DE PROIECT	Ing. Mihnea RADULESCU	
SEF ECHIPA PROIECTARE	Ing. Armando PEZONE	
DATA	FEBRUARIE 2009	

faza / f.	DES	PROT	DEC
D	E	PS	0 0 7 0

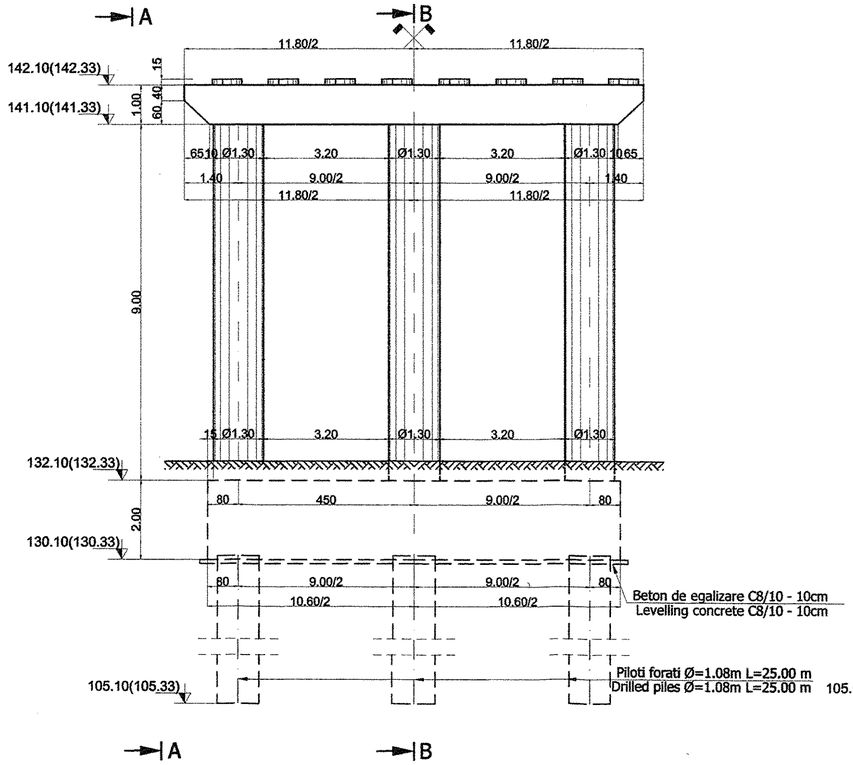
PHARE 2005/017-553.04.05

BRIDGE WORKS/LUCRARI DE PODURI

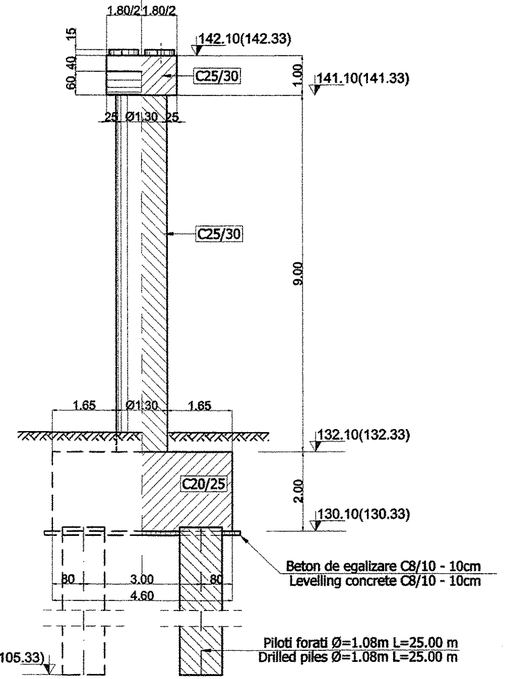
VARIANTA OCOLITOARE CAREI/
CAREI BYPASS
PASAJ PESTE LINIA C.F. NR.412
BRIDGE OVER RAILWAY LINE No. 412

PLAN COFRAJ CULEE C2
ABUTMENT C2 FORMWORK PLAN
SCARA/SCALE 1:50; 1:20

ELEVATIE/ELEVATION
Scara 1:100

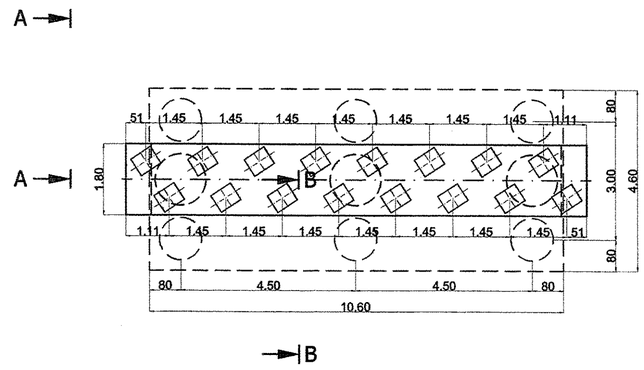


VEDERE A-A
VIEW A-A
Scara 1:100



SECTIUNE B-B
B-B CROSS SECTION
Scara 1:100

VEDERE PLANA / PLAN VIEW
Scara 1:100



CERINTE DE CALITATE/QUALITY REQUIREMENTS

COLOANE SI RADIERE/PILES AND PILECAPS

Beton/Concrete C20/25
Otel/Steel OB37/ PC52

Clasa de expunere/Exposure class: XC2
Grad de impermeabilitate/Impermeabillity: P4
Tipul de ciment/Cemant type: II A-S 32.5 / I32.5
Valoare maxima A/C / Cement-Water ratio: 0.60

ELEVATII & RIGLE PILE/ELEVATIONS &BENCHES

Beton/Concrete C25/30
Otel/Steel OB37/ PC52

Clasa de expunere/Exposure class: XC2
Grad de impermeabilitate/Impermeability P8
Grad de gelivitate/Gelivity: G100
Tipul de ciment/Cement type II A-S32.5 or IIA-V32.5
Valoare maxima A/C / Water-Cement ratio 0.60

CUZINETI/BLOCK BEARINGS

Beton/Concrete C25/30
Otel/Steel OB37/ PC52

Clasa de expunere/Exposure class: XC2
Grad de impermeabilitate/Impermeability P8
Grad de gelivitate/Gelivity: G100
Tipul de ciment/Cement type II A-S32.5 or IIA-V32.5
Valoare maxima A/C / Water-Cement ratio 0.60

NOTA:
1.Toate suprafetele aflate in contact cu pamantul vor fi acoperite cu doua straturi de bitum filerizat.
2.Cotele din paranteza se refera la pila P2.
NOTE:
1.On all surfaces in contact with the soil wil be spread 2 layers of bitumen emulsion.
2.The dimension between brakets are refere to P2 pier.

DIACONU N. ION
ROMANIA
M.T.C.T.
NR.06536
44;82;D
INGINER
VERIFICATOR PROIECTE

Harta cheie/KEY MAP

INVESTOR/INVESTITOR: COMPANIA NATIONALA DE AUTOSTRAZI SI DRUMURI NATIONALE DIN ROMANIA

DESIGNER/PROIECTANT: IN ASSOCIATION WITH prointec CONSIS PROIECT

PROJECT TITLE / TITLU PROIECT

Technicial assistance for reviewing and updating the existing feasibility study, preparing the detailed design and tender documentation for the rehabilitation of the road section Bucuresti-Adunatii Copaceni and for the construction of the bypasses at Sacuieni, Valea lui Mihai and Carei

Asistenta tehnica pentru revizuirea si actualizarea Studiului de Fezabilitate existent, elaborarea Proiectului Tehnic la nivel de Detalii de Executie, a Documentatiei de Atribuire pentru reabilitarea sectiunii Bucuresti - Adunatii Copaceni si construirea variantelor ocolitoare Sacuieni, Valea lui Mihai si Carei

VERIFICATOR PROIECT	Ing. Dumitru Ion DIACONU
DESENAT	Ing. Catalin MOMARLEANU
PROIECTAT	Ing. Bogdan MIHAESCU
VERIFICAT	Ing. Mircea RADULESCU
MANAGER DE PROIECT	Ing. Mircea RADULESCU
SEF ECHIPA PROIECTARE	Ing. Armando PEZZONI
Data	FEBRUARIE 2009

	DOS.	MAKR	REV.
PHARE 2005/017-553.04.03	D E	PS 0 0 B	0

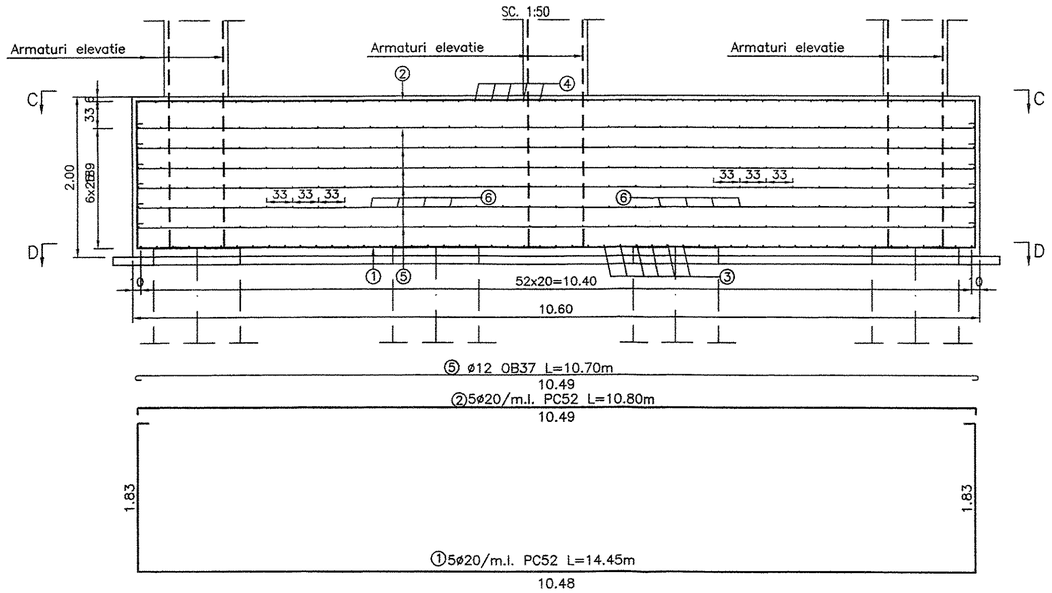
BRIDGE WORKS/LUCRARI DE PODURI

VARIANTA OCOLITOARE CAREI/
CAREI BYPASS
PASAJ PESTE LINIA C.F. NR.412
BRIDGE OVER RAILWAY LINE No. 412

PLAN COFRAJ PILE
PIERS FORMWORK PLAN
SCARA/SCALE 1:100/ 1:20

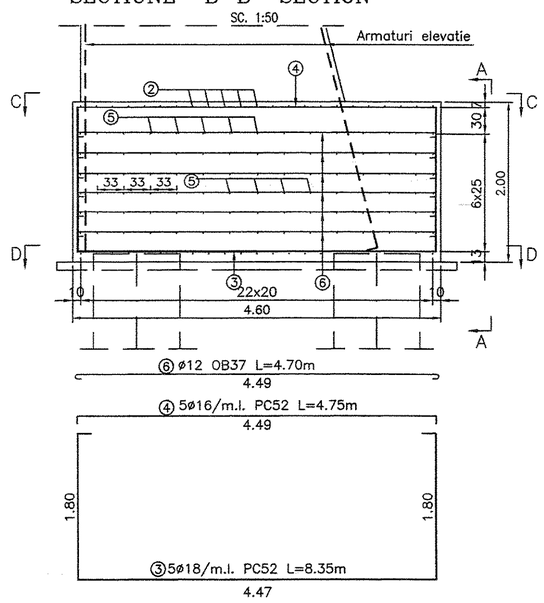
ELEVATIE A–A ELEVATION

SC. 1:50



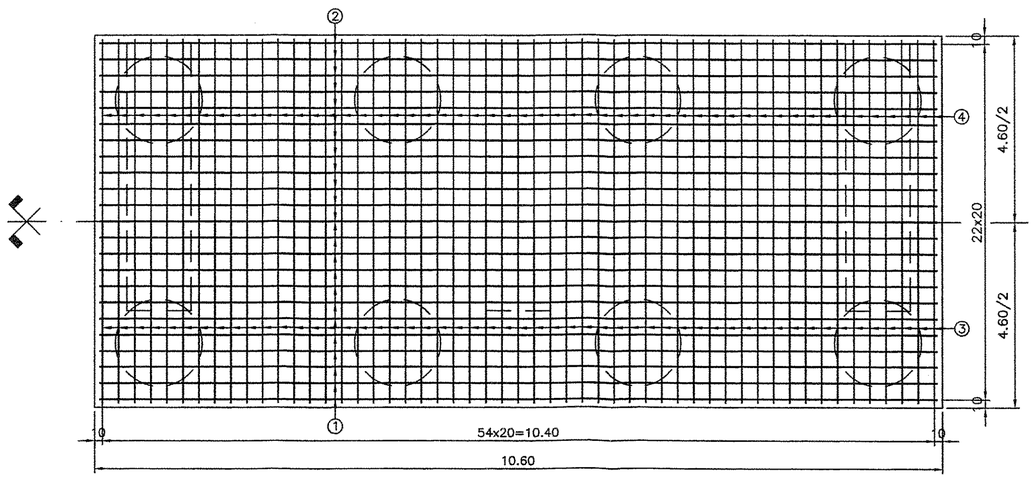
SECTIUNE B–B SECTION

SC. 1:50



SECTIUNE C–C SECTION

SC. 1:50



SECTIUNE D–D SECTION

SC. 1:50

Beton C20/25	Concrete C20/25
Otel OB37/ PC52	Steel OB37/ PC52
c=5cm pentru zonele in contact cu pamantul	

EXTRAS ARMATURA REINFRCEMENT QUANTITY

M	Φ (mm)	n (buc.)	L (m)	OB37	PC52		
				ϕ12	ϕ16	ϕ18	ϕ20
1	20	23	14.45				332.35
2	20	23	10.80				248.40
3	18	53	8.35			442.55	
4	16	53	4.75		251.75		
5	12	90	10.70	963.00			
6	12	198	4.70	930.60			
TOTAL LUNGIMI PE DIAMETRU (m)				1893.60	251.75	442.55	580.75
GREUTATE PE METRU (kg/m)				0.888	1.578	1.998	2.466
GREUTATE PE DIAMETRU (kg)				1681.16	397.35	884.03	1432.22
GREUTATE PE TIP OTEL (kg)				1682.00	2714.00		
GREUTATE TOTALA (kg) pt. 1 radier				4396.00			
TOTAL 2 CULEI				8792.00			

NOTA:

1) Aceasta plansa se citeste impreuna cu plansa P.10.

NOTE:

1)This drawing will be used in the same time with plan P.10.

DIACONU N. ION ROMANIA M.T.C.T. NR.06536 A4;B2;D INGINER VERIFICATOR PROIECTE

Harta cheie/KEY MAP

INVESTOR/INVESTITOR: COMPANIA NATIONALA DE AUTOSTRAZI SI DRUMURI NATIONALE DIN ROMANIA

DESIGNER/PROIECTANT: IN ASSOCIATION WITH prointec CONSIS PROIECT

PROJECT TITLE / TITLU PROIECT

Technical assistance for reviewing and updating the existing feasibility study, preparing the detailed design and tender documentation for the rehabilitation of the road section Bucuresti–Ploiesti, Comarnic and for the construction of the bypasses at Sacuieni, Valea lui Mihai and Carei

Asistenta tehnica pentru revizuirea si actualizarea Studiului de Fezabilitate existent, elaborarea Proiectului Tehnic la nivel de Detalii de Executie, a Documentatiei de Atribuire pentru reabilitarea sectiunii Bucuresti – Adunati Copaceni si construirea variantelor ocolitoare Sacuieni, Valea lui Mihai si Carei

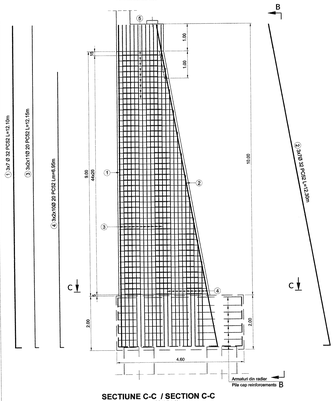
VERIFICATOR PROIECT	Ing. Dumitru Ion DIACONU
DESENAT	Ing. Catalin MOMARLEANU
PROIECTAT	Ing. Bogdan MIHAESCU
VERIFICAT	Ing. Mircea RADULESCU
MANAGER DE PROIECT	Ing. Mircea RADULESCU
SEF ECHIPA PROIECTARE	Ing. Armando PEZZONI
Data	FEBRUARIE 2009
COD CONTRACT / PROIECT	DES. / NUMAR / REV.
FHARE 2005/017-553.04.03	D E PS 0 0 9 0

BRIDGE WORKS/LUCRARI DE PODURI

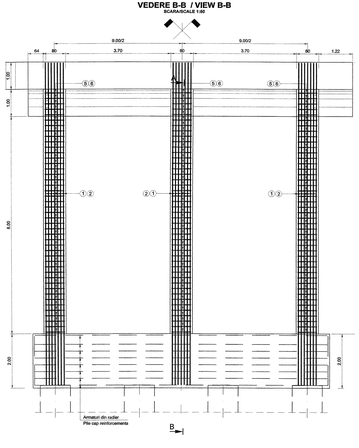
VARIANTA OCOLITOARE CAREI/
CAREI BYPASS
PASAJ PESTE LINIA C.F. NR.412
BRIDGE OVER RAILWAY LINE No. 412
PLAN ARMARE RADIER CULEI/
ABUTMENTS BASE REINFORCEMENT
SCARA/SCALE 1:50

ARMARE ELEVATII CULEI - REINFORCING OF ABUTMENTS ELEVATIONS

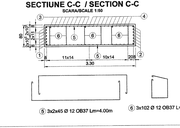
SECTIUNE A-A / SECTION A-A
SCARA/SCALE 1:50



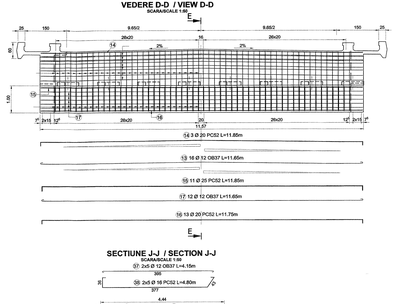
VEDERE B-B / VIEW B-B
SCARA/SCALE 1:50



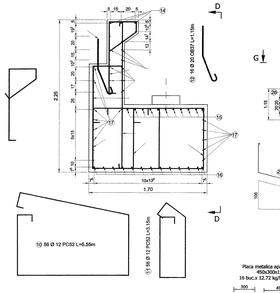
SECTIUNE C-C / SECTION C-C
SCARA/SCALE 1:50



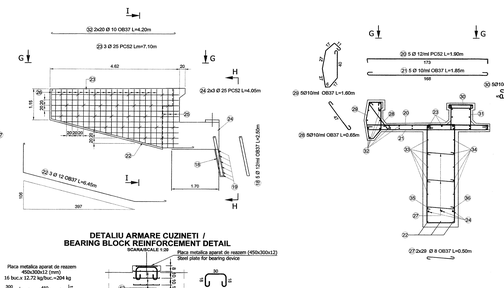
VEDERE D-D / VIEW D-D
SCARA/SCALE 1:50



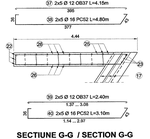
SECTIUNE E-E / SECTION E-E
SCARA/SCALE 1:20



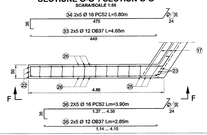
VEDERE F-F / VIEW F-F
SCARA/SCALE 1:50



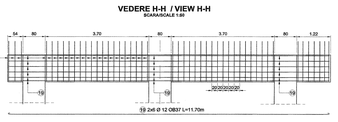
SECTIUNE J-J / SECTION J-J
SCARA/SCALE 1:50



SECTIUNE G-G / SECTION G-G
SCARA/SCALE 1:50



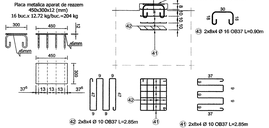
VEDERE H-H / VIEW H-H
SCARA/SCALE 1:50



SECTIUNE I-I / SECTION I-I
SCARA/SCALE 1:20

DETALIU ARMARE CUZINETI / BEARING BLOCK REINFORCEMENT DETAIL
SCARA/SCALE 1:20

Placa metalica aparat de reazem 450x300x12 (mm)
Steel plate for bearing device



CERINTE DE CALITATE/QUALITY REQUIREMENTS

Beton	**C25/30**
Otel	**OB37/ PC52**
ordon - acoperirea minima cu beton a armaturii de rezistenta pentru elemente in contact cu pamantul	

NOTA:
1.Toate suprafetele de beton aflate in contact cu pamantul vor fi acoperite cu doua straturi de bitum fiertcat.
2.Aceasta planse se aplica pentru ambele culei ale podului.

NOTE:
1.On all concret surfaces in contact with the soil will be spread 2 layers of bitumen emulsion.
2.This drawing will be apllied to both abutments.

NOTA:
1) Aceasta planse se citeste impreuna cu planse P.S.
2)Barele marca 1,2,3,4 se vor monta sidra cu barele din radier.

NOTE:
1)This drawing will be used in the same time with plan P.S.
2)The bars mark 1,2,3,4 will be mounted in the same time with bars from foundation.

ARMARE RIGLA & ZIDURI INTOARSE CULEI - REINFORCING OF BENCH AND RETAINING WALLS

EXTRAS DE ARMATURA PENTRU O CULEE
QUANTITY REINFORCEMENT FOR ONE ABUTMENT

Marca Mark	ϕ (mm)	n (buc.)	L (m)	ms.OB37							ms.PC52		
				ϕ8	ϕ10	ϕ12	ϕ16	ϕ20	ϕ12	ϕ14	ϕ16	ϕ20	ϕ25	ϕ32
1	32	21	12.10											254.16
2	32	21	12.30											258.30
3	20	56	12.15									801.90		
4	20	60	8.80									417.00		
5	12	208	5.65		1880.00									
6	12	208	3.70		841.50									
7	12	53	2.40		127.20									
8	14	53	2.20						116.60					
9	14	53	3.30						121.90					
10	12	53	5.65						284.15					
11	12	53	3.23						166.65					
12	20	16	1.15					18.40						
13	32	16	11.65											
14	20	3	11.85									35.55		
15	25	11	11.65										130.35	
16	20	13	11.75									141.90		
17	12	12	11.65			151.45								
18	12	12	4.50			145.00								
19	12	12	11.70			140.40								
20	12	46	1.89			87.45								
21	12	46	1.85			85.15								
22	10	1	4.20			17.35								
23	25	3	7.10										21.30	
24	25	6	4.06										24.36	
25	12	6	5.30			31.80								
26	12	36	4.10			147.60								
27	8	58	0.50	29.00										
28	10	58	0.65		37.70									
29	10	56	1.60		92.80									
30	10	46	0.95		43.70									
31	10	46	1.30		59.05									
32	10	46	1.50		69.00									
33	12	10	9.65			46.50								
34	16	10	5.80								58.00			
35	12	10	3.85			38.50								
36	16	10	3.90								39.00			
37	12	10	4.15			41.50								
38	16	10	4.80								48.00			
39	12	10	2.40			24.00								
40	16	10	3.10								31.00			
41	10	64	2.85		182.40									
42	10	64	2.05		131.40									
43	32	2	0.64				33.00							
TOTAL LUNGIMI PE DIAMETRU (m)				29.00	691.00	3193.70	33.00	18.40	461.10	238.50	176.00	1395.45	176.01	512.46
TOTAL LUNGIMI PER DIAMETER (m)														
GREUTATE PE METRU (kg/m) WEIGHT PER METER (kg/m)				0.395	0.617	0.888	1.578	2.466	0.888	1.208	1.578	2.466	3.853	6.313
GREUTATE PE DIAMETRU (kg) WEIGHT PER DIAMETER (kg)				11.44	426.64	2835.41	52.51	45.38	409.37	288.23	277.79	3441.39	678.23	3234.96
GREUTATE PE TIP OTEL (kg) WEIGHT PER STEEL TYPE (kg)						3370.00						8330.00		
GREUTATE TOTALA (kg) TOTAL WEIGHT (kg)											11700.00			
GREUTATE TOTALA PT 2 BUCATI ASEMENEA TOTAL WEIGHT FOR 2 UNITS											23400.00			

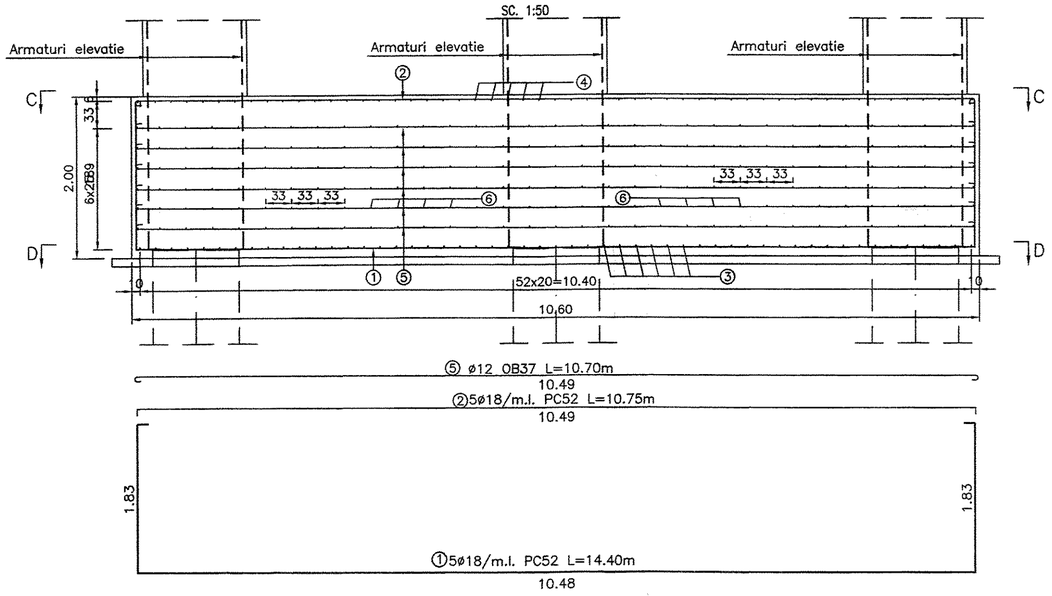
Drafted by: Checked by: Approved by:
Date: 2007 Scale: 1:50 Sheet: 1 of 1
Drwg. No.: 01 Rev.: 0
Drwg. Identif.: 0001.DWF

INVESTITOR / CLIENT: DIRECTIA NATIONALA DE DRUMURI SI PODURI
CONSULTANT PROJECT: proiect
Proiectul contine informatii exclusive si confidentiale destinate de client. Nu este permisa distribuirea sau copierea acestui proiect fara acordul scris al proiectantului. Aplicabilitatea acestui proiect este limitata la scopul specificat. Nu se recomanda folosirea acestui proiect pentru alte scopuri decat cele specificate.

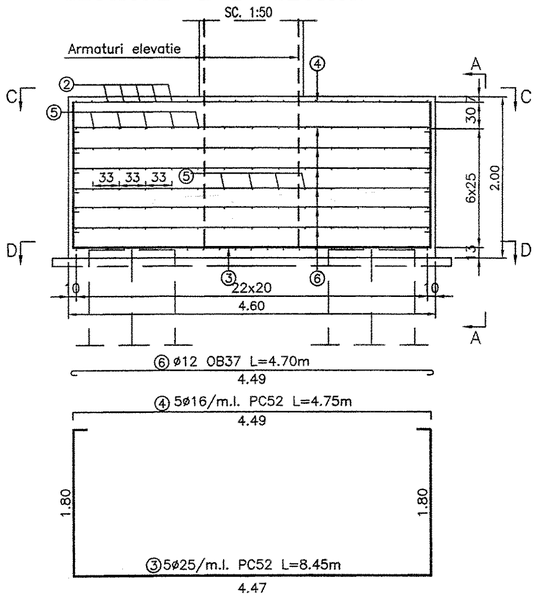
MANAGER PROIECT	Ing. Sandru Ion 241090	
PROIECTAT	Ing. Sandru Ion 241090	
DESENAT	Ing. Sandru Ion 241090	
VERIFICAT	Ing. Sandru Ion 241090	
DIRECTOR DE PROIECT	Ing. Sandru Ion 241090	
DIRECTOR TEHNIC	Ing. Sandru Ion 241090	

PROJECT TITLE / TITLU PROIECT
PASAJ PESTE CALEA FERATA KM. 48+412
BRIDGE OVER RAILWAY LINE Km. 48+412
SUBJECT / SUBIECTUL PROIECTULUI
ARMARE CULEE REINFORCEMENT ABUTMENTS
SCARA/SCALE 1:50 / 1:20
BRIDGE WORKS/LUCRARI DE PODURI
VARIANTA OCOLITOARE CAROLI
CAROLI BYPASS

ELEVATIE A–A ELEVATION

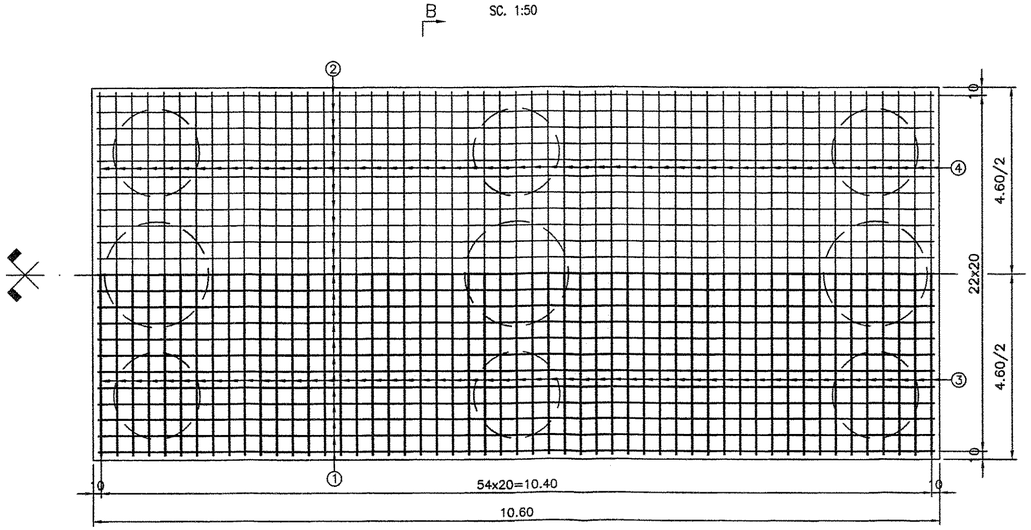


SECTIUNE B–B SECTION



Beton C20/25	Concrete C20/25
Otel OB37/ PC52	Steel OB37/ PC52
c=5cm pentru zonele in contact cu pamantul	

SECTIUNE C–C SECTION



SECTIUNE D–D SECTION

SC. 1:50

EXTRAS ARMATURA
REINFRCEMENT QUANTITY

M	Φ (mm)	n (buc.)	L (m)	OB37	PC52		
				ϕ12	ϕ16	ϕ18	ϕ25
1	18	23	14.40			331.20	
2	18	23	10.75			247.25	
3	25	53	8.45				447.85
4	16	53	4.75		251.75		
5	12	90	10.70	963.00			
6	12	198	4.70	930.60			
TOTAL LUNGIMI PE DIAMETRU (m)				1893.60	251.75	578.45	447.85
GREUTATE PE METRU (kg/m)				0.888	1.578	1.998	3.853
GREUTATE PE DIAMETRU (kg)				1681.16	397.35	1155.50	1725.73
GREUTATE PE TIP OTEL (kg)				1682.00	3279.00		
GREUTATE TOTALA (kg) pt. 1 radier				4961.00			
TOTAL 2 RADIERE				9922.00			

NOTA:
1) Aceasta plansa se citeste impreuna cu plansa P.12.
NOTE:
1) This drawing will be used in the same time with plan P.12
.

DIACONU N. ION
ROMANIA
NTCT
NR.06536
A4;B3;D
INGINER
VERIFICATOR PROIECTE

Harta cheie/KEY MAP

INVESTOR/INVESTITOR: COMPANIA NATIONALA DE AUTOSTRAZI SI DRUMURI NATIONALE DIN ROMANIA

DESIGNER/PROIECTANT: IN ASSOCIATION WITH prointec CONSIS PROIECT

PROJECT TITLE / TITLU PROIECT

Technicial assistance for reviewing and updating the existing feasibility study, preparing the detailed design and tender documentation for the rehabilitation of the road section Bucuresti–Adjudul Copacani and for the construction of the bypasses at Sacueni, Valea lui Mihai and Carei

Asistenta tehnica pentru revizuirea si actualizarea Studiului de Fezabilitate existent, elaborarea Proiectului Tehnic la nivel de Detalii de Executie, a Documentatiei de Atribuire pentru reabilitarea sectiunii Bucuresti – Adjudul Copacani si construirea variantelor ocolitoare Sacueni, Valea lui Mihai si Carei

VERIFICATOR PROIECT	Ing. Dumitru Ion DIACONU
DESENAT	Ing. Catalin MOMARLEANU
PROIECTAT	Ing. Bogdan MIHAESCU
VERIFICAT	Ing. Mircea RADULESCU
MANAGER DE PROIECT	Ing. Mircea RADULESCU
SEF ECHIPA PROIECTARE	Ing. Armando PEZZONI
Data	FEBRUARIE 2009

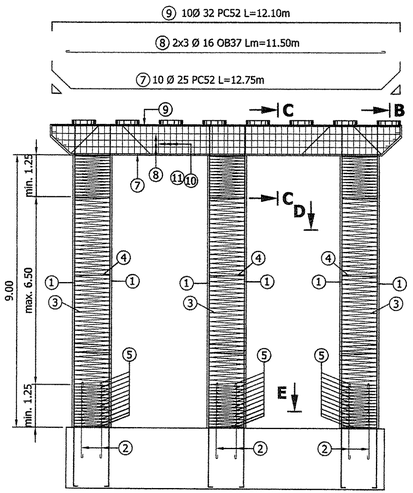
PHARE 2005/017-553.04.03 D E | DES. PS | NUMAR 0 1 1 | REV. 0

BRIDGE WORKS/LUCRARI DE PODURI

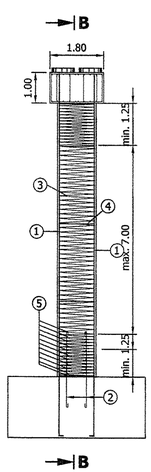
VARIANTA OCOLITOARE CAREI/
CAREI BYPASS
PASAJ PESTE LINIA C.F. NR.412
BRIDGE OVER RAILWAY LINE No. 412

PLAN ARMARE RADIER PILE/
PIERS BASE REINFORCEMENT
SCARA/SCALE 1:50

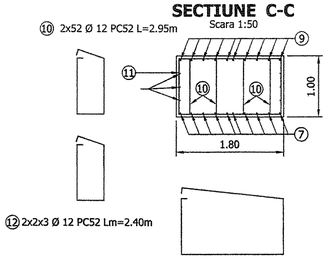
SECTIUNE A-A
Scara 1:100



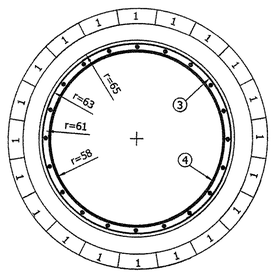
SECTIUNE B-B
Scara 1:100



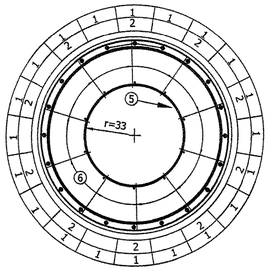
SECTIUNE C-C
Scara 1:50

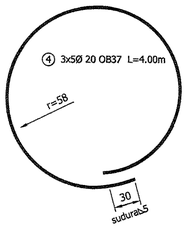


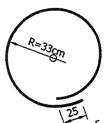
SECTIUNE D-D
Scara 1:20



SECTIUNE E-E
Scara 1:20





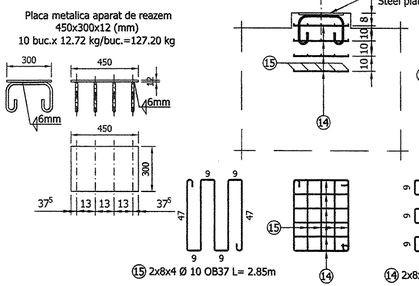


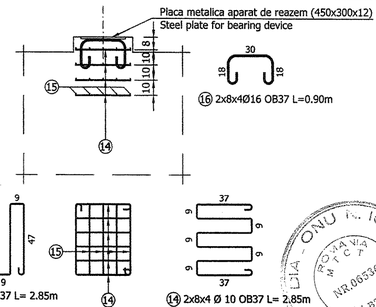
⑤ 3x11 Ø 16 OB37 L=2.20m

⑥ 3x10x6 Ø 12 OB37 L=0.40m

③ Freta 3Ø 10 OB37 L=277.63m

ARMARE CUZINETI
Scara 1:20





EXTRAS DE ARMATURA PENTRU O PILA
QUANTITY REINFORCEMENT FOR ONE PIER

Marca	ϕ (mm)	n (buc.)	L (m)	nxL-OB37				nxL-PC52		
				ϕ10	ϕ12	ϕ16	ϕ20	ϕ12	ϕ25	ϕ32
1	25	60	12.32						739.20	
2	16	30	2.70			81.00				
3	10	3	277.63	832.89						
4	20	15	4.00				60.00			
5	16	33	2.20			72.60				
6	12	180	0.40		72.00					
7	25	10	12.75						127.50	
8	16	6	11.50			69.00				
9	32	10	12.10							121.00
10	12	104	2.95					306.80		
11	12	52	5.45					283.40		
12	12	12	2.40					28.80		
13	12	6	4.90					29.40		
14	10	64	2.85	182.40						
15	10	64	2.85	182.40						
16	16	64	0.90			57.60				
TOTAL LUNGIMI PE DIAMETRU (m)				1197.69	72.00	280.20	60.00	648.40	866.70	121.00
GREUTATE PE METRU (kg/m)				0.617	0.888	1.578	2.466	0.888	3.853	6.313
GREUTATE PE DIAMETRU (kg)				738.42	63.92	442.25	147.97	575.66	3339.71	763.91
GREUTATE PE TIP OTEL (kg)				1393.00				4680.00		
GREUTATE TOTALA (kg)				6073.00						
GREUTATE TOTALA PT 2 BUCATI ASEMENE				12146.00						

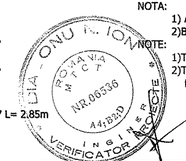
CERINTE DE CALITATE

Beton/Concrete C25/30
Otel /Steel OB37/ PC52

c=3.5cm - acoperirea minima cu beton a armaturii de rezistenta
c=3.5cm - minimum concrete covering layer

NOTA:
1) Aceasta plansa se citeste impreuna cu plansa P.11.
2)Barele marca 1,2 se vor monta odata cu barele din radier.

NOTE:
1)This drawing will be used in the same time with plan P.11
2)The bars mark 1,2 will be mounted in the same time with bars from foundation




Harta zonei/KEY MAP

INVESTOR/INVESTITOR: COMPANIA NATIONALA DE AUTOSTRAZI SI DRUMURI NATIONALE DIN ROMANIA

DESIGNER/PROIECTANT: in ASSOCIATION WITH prointec

PROJECT TITLE / TITLU PROIECT

Technical assistance for reviewing and updating the existing feasibility study, preparing the detailed design and tender documentation and the implementation of the road section Bucharest - Ploiesti, Varianta Ocolitoare Carei, section of the bypasses at Sacuieni, Valea lui Mihai and Carei

Asistenta tehnica pentru revizuirea si actualizarea Studiului de Fezabilitate existent, elaborarea Proiectului Tehnic la nivel de Detalii de Executie, a Documentatiei de Atribuire pentru reabilitarea sectiunii Bucuresti - Adunati Copaceni si construirea variantelor ocolitoare Sacuieni, Valea lui Mihai si Carei

VERIFICATOR PROIECT	Ing. Dumitru Ion DIACONU	
DESENAT	Ing. Catalin MONAHILEANU	
PROIECTAT	Ing. Bogdan MIHAILESCU	
VERIFICAT	Ing. Mircea RADULESCU	
MANAGER DE PROIECT	Ing. Mircea RADULESCU	
SEF ECHIPA PROIECTARE	Ing. Armando PEZZONI	
Data	FEBRUARIE 2009	
semnat		
stampila		

PHASE 2005/017-553.04.03 | D | E | | PS | 0 | 1 | 2 | 0 | (REV. / NUMAR / REV.)

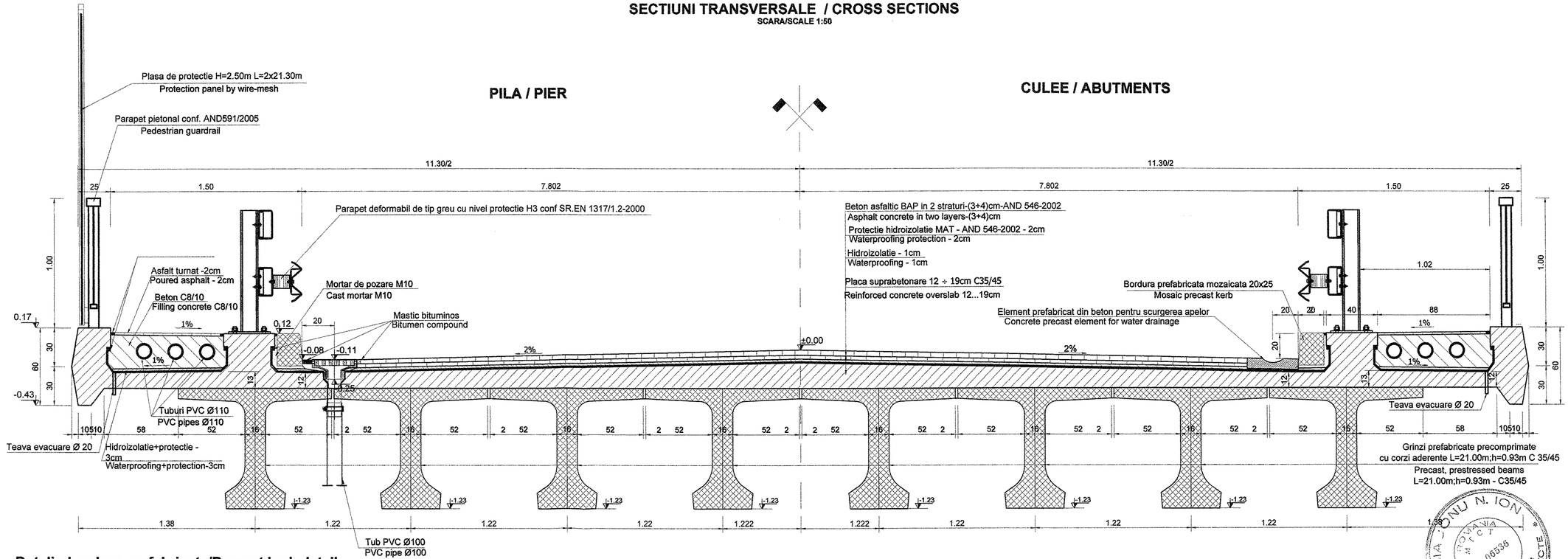
BRIDGE WORKS/LUCRARI DE PODURI

VARIANTA OCOLITOARE CAREI/
CAREI BYPASS
PASAJ PESTE LINIA C.F. NR.412
BRIDGE OVER RAILWAY LINE No. 412

PLAN ARMARE ELEVATII PILE
PIERS REINFORCEMENT PLAN
SCARA/SCALE 1:100/1:50/1:20

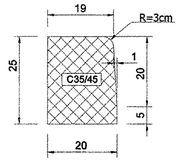
SECTIUNI TRANSVERSALE / CROSS SECTIONS

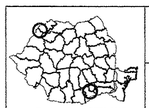
SCARA/SCALE 1:50



Detaliu bordura prefabricata/Precast kerb detail

SCARA/SCALE 1:10





Harta cheie/KEY MAP

INVESTOR/INVESTITOR: COMPANIA NATIONALA DE AUTOSTRAZI SI DRUMURI NATIONALE DIN ROMANIA

DESIGNER/PROIECTANT: IN ASSOCIATION WITH prointec CONGIS PROJECT

PROJECT TITLE / TITLU PROIECT

Technicial assistance for reviewing and updating the existing feasibility study, preparing the detailed design and tender documentation for the rehabilitation of the road section, Bucuresti-Adunati Copaceni and for the construction of the bypasses at Sacueni, Valea lui Mihai and Carei

Asistenta tehnica pentru revizuirea si actualizarea Studiului de Fezabilitate existent, elaborarea Proiectului Tehnic la nivel de Detalii de Executie, a Documentatiei de Atribuire pentru realizarea sectiunii Bucuresti - Adunati Copaceni si construirea variantelor ocolitoare Sacueni, Valea lui Mihai si Carei

VERIFICATOR PROIECT	Ing. Dumitru Ion DIACONU
DESENAT	Ing. Catalin MOMARLEANU
PROIECTAT	Ing. Bogdan MIHAESCU
VERIFICAT	Ing. Mircea RADULESCU
MANAGER DE PROIECT	Ing. Mircea RADULESCU
SEF ECHIPA PROIECTARE	Ing. Armando PEZZONI
Data	FEBRUARIE 2009
SEF BIROU / DIRECTOR	
DIRECTOR	
FAZA/PHASE	DEL. / NUMAR / REV.
PHARE 2005/017-553.04.03	D E PT 0 1 3 0

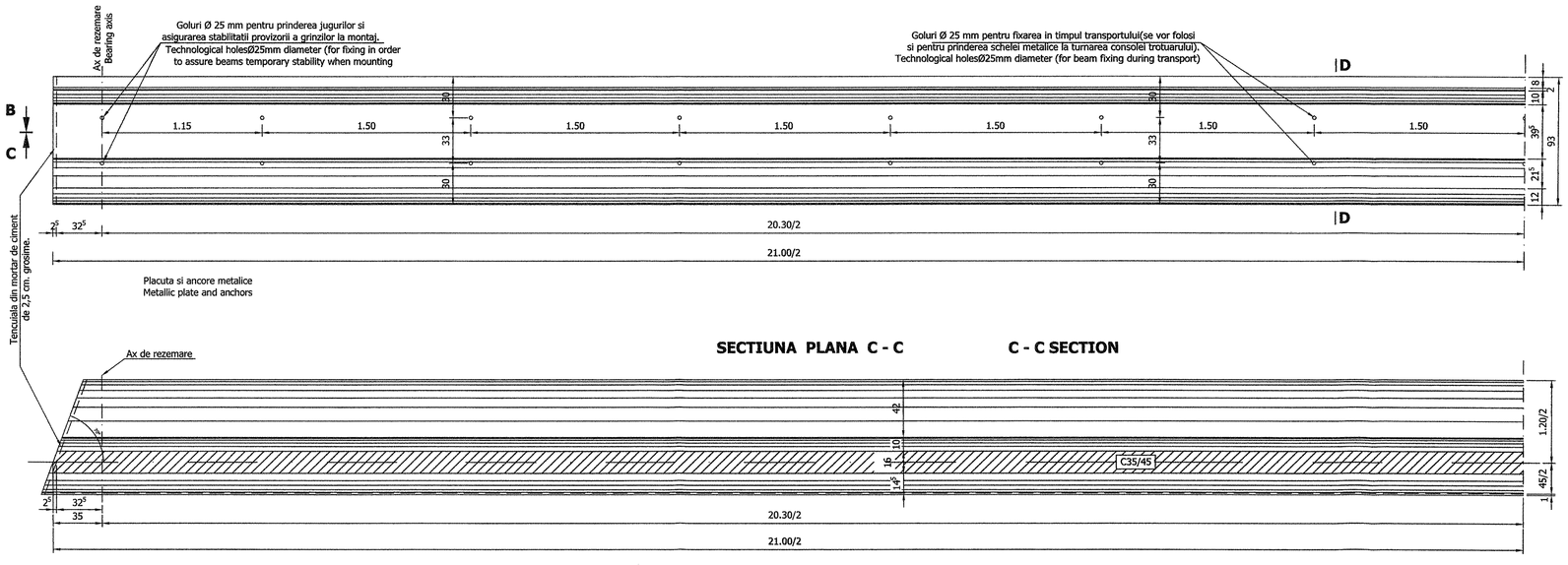
BRIDGE WORKS/LUCRARI DE PODURI

VARIANTA OCOLITOARE CAREI/
CAREI BYPASS
PASAJ PESTE LINIA C.F. NR.412
BRIDGE OVER RAILWAY LINE No. 412

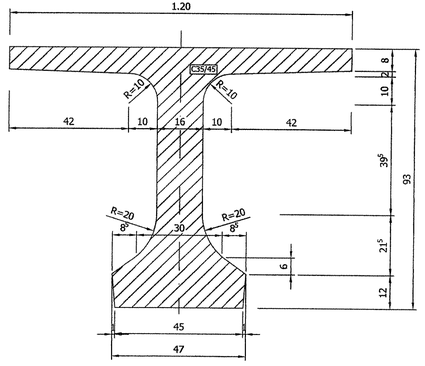
SECTIUNE TRANSVERSALA /
SUPERSTRUCTURE CROSS SECTION
SCARA/SCALE 1:20/1:10

DIA JONU N. ION
ROMANIA
NR.08536
A1 1929
INGINER PROIECTE
VERIFICATOR

ELEVATIE A - A A - A ELEVATION
Sc. 1:20



SECTIUNE TRANSVERSALA D - D
D - D CROSS SECTION
Sc. 1:10



SECTIUNE PLANA C - C C - C SECTION

SECTIUNA PLANA B - B B - B SECTION

CERINTE DE CALITATE
QUALITY REQUIREMENTS

C35/45- beton grinda	C35/45 - Concrete precast beam
Otel OB37 PC52 TBP12 (7Ø4)	Steel OB37 PC52 TBP12 (7Ø4)
Clasa de expunere: XC4, XF2	Exposure class: XC4, XF2
Grad de impermeabilitate: P8	Impermeability degree: P8
Grad de gelivitate: G100	Frost resistance degree: G100
Tipul de ciment: I 42.5; SRI 42.5;II A-S 42.5	Cement type: I 42.5; SRI 42.5;II A-S 42.5
Valoare maxima A/C: 0,40	Maximum W/C ratio: 0,40

NOTA
- Betonul din grinzi se va realiza cu agregate de concasare.
- Se vor face incercari pe cuburi conform prescriptiilor in vigoare pentru verificarea realizarii marcii C35/45.
-In timpul turnarii si vibrarii betonului se va respecta pozitia toroanelor conform proiectului.
- Greutatea unei grinzi este de 16.60 tone.
- Detaliile de fixare a placutei si ancorelor metalice sunt date in plansa de armare a grinzii cu armatura nepretensionata.
- Forta de pretensionare: N_0=112.0KN/toron.
- Efortul de control: σ_c=1251N/mm^2.
- La armaturile pretensionate marca 2 3 4 , se monteaza tuburi din masa plastica in pozitia indicata pe desen pentru intreruperea aderentei intre otel si beton.
- Se recomanda ca tuburile din material plastic sa aiba culori diferite corespunzator lungimii.
- In cazul in care nu se asigura transferul lent al fortei de precomprimare, taierea toroanelor se va face pe perechi, simetric fata de axa verticala a grinzii, incepand cu toroanele cele mai apropiate de axa si de sus in jos.
- Taierea va fi facuta la cca. 1cm de la fata betonului.
- Rezistenta betonului la transfer va fi 35 N/mm^2

NOTE
- Beam concrete will be executed with crushed aggregates.
-Tests on cubes will be made in accordance with the present regulations for C35/45 grede checking.
- Tendons position will be protected during concrete pouring and vibration in accordance with the project.
- Beams weight is 16.60 tons.
- Details of metallic plate and anchors will be shown in dwg. referring to beams reinforcement.
- Prestress force: N_0=112.0KN/tendon.
- Control stress: σ_c=1251N/mm^2
- Plastic mass tubes are mounted to 2 3 4 prestressed reinforcements in the position indicated on dwg. for stopping the adherence between steel and concrete.
- Plastic material tubes should be different colored according to the lenght.
- If prestress force slow transfer is not assured, section cutting will be made on pairs simetrically to beam vertical centerline, starting to the closer tendons to the centerline and up and down, tendons cutting will be made at 1cm from concrete surface.
- Concrete strenght during transfer shall be 35N/mm^2.

Harta obiect/KEY MAP

INVESTOR/INVESTITOR: COMPANIA NATIONALA DE AUTOSTRAZI SI DRUMURI NATIONALE DIN ROMANIA

DESIGNER/PROIECTANT: prointec

PROJECT TITLE / TITLU PROIECT

Technical assistance for reviewing and updating the existing feasibility study, preparing the detailed design and tender documentation for the construction of the Bucuresti-Ploiesti Expressway and for the construction of the bypasses at Sauceni, Varea lui Mihai and Carei

Asistenta tehnica pentru revizuirea si actualizarea Studiului de Fezabilitate existent, elaborarea Proiectului Tehnic la nivel de Detalii de Executie, a Documentatiei de Atribuire pentru Inabilitarea sectiunii Bucuresti - Ploiesti Expresiei si construirea variantelor ocolitoare Sauceni, Varea lui Mihai si Carei

VERIFICATOR PROIECT	Ing. Dumitru Ion DIACONU	
DESENAT	Ing. Cehelin MOMARLEANU	
PROIECTAT	Ing. Bogdan MIHAESCU	
VERIFICAT	Ing. Mircea RADULESCU	
MANAGER DE PROIECT	Ing. Mircea RADULESCU	
SEF ECHIPA PROIECTARE	Ing. Armando PEZZONI	
Data	FEBRUARIE 2009	

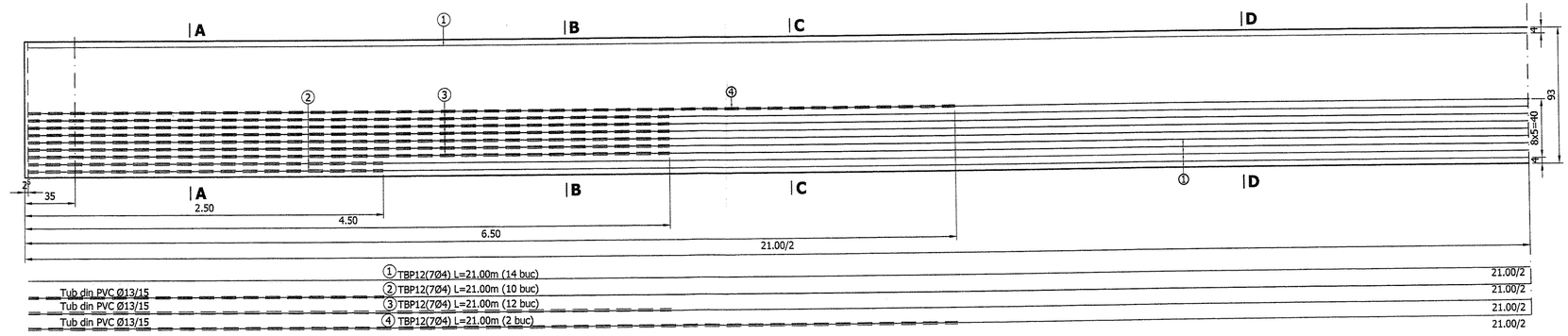
PHARE 2005/017-553.04.03

D	E			PS	0	1	4	0

BRIDGE WORKS/LUCRARI DE PODURI

VARIANTA OCOLITOARE CAREI/ CAREI BYPASS
PASAJ PESTE LINIA C.F. NR.412 BRIDGE OVER RAILWAY LINE No. 412

PLAN COFRAJ GRINDA PREFABRICATA / PRECAST PRESTRESSED BEAM FORMWORK PLAN
SCARA/SCALE 1:10/1:20



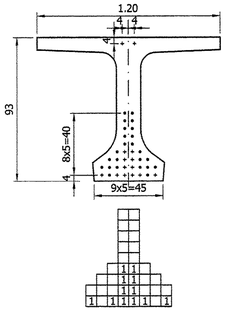
NOTA
- Forta de pretensionare: N_0=112.0KN/toron.
- Efortul de control: σ_K=1251N/mm^2.
- La armaturile pretensionate marca 2 3 4 , se monteaza tuburi din masa plastica in pozitia indicata pe desen pentru intreruperea aderentei intre otel si beton.
- Se recomanda ca tuburile din material plastic sa aiba culori diferite corespunzator lungimii.
- In cazul in care nu se asigura transferul lent al fortei de precomprimare, taierea toroanelor se va face pe perechi, simetric fata de axa verticala a grinzii, incepand cu toroanele cele mai apropiate de axa si de sus in jos.
- Taierea va fi facuta la cca. 1cm de la fata betonului.
- Rezistenta betonului la transfer va fi 35 N/mm^2

NOTE
- Prestress force: N_0=112.0KN/tendon.
- Control stress: σ_K=1251N/mm^2
- Plastic mass tubes are mounted to 2 3 4 prestressed reinforcements in the position indicated on dwg. for stopping the adherence between steel and concrete.
- Plastic material tubes should be different colored according to the lenght.
- If prestress force slow transfer is not assured, section cutting will be made on pairs simetrically to beam vertical centerline, starting to the closer tendons to the centerline and up and down, tendons cutting will be made at 1cm from concrete surface.
- Concrete strenght during transfer shall be 35N/mm^2.

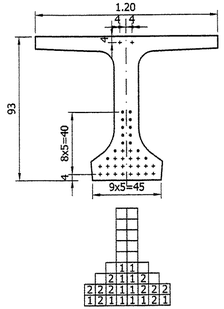
LEGENDA:
⊙ - Toroane cu aderenta intrerupta
• - Toroane cu aderenta neintrerupta

LEGEND:
⊙ - Debounded tendons
• - Bounded tendons

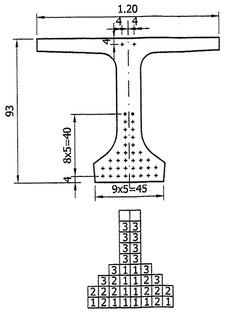
SECTIUNE A - A
A - A SECTION



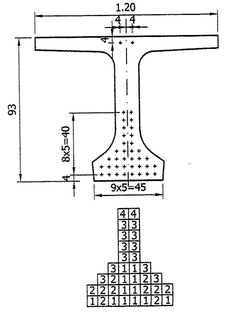
SECTIUNE B - B
B - B SECTION



SECTIUNE C - C
C - C SECTION



SECTIUNE D - D
D - D SECTION



MASURATOAREA ARMATURII PRETENSIONATE
PRESTRESS REINFORCEMENT QUANTITY

M	Ø	n	L	Lungimi pe diametre TBP tip 12
1	TBP 7Ø4	14	21.00	294.00
2	TBP 7Ø4	10	21.00	210.00
3	TBP 7Ø4	12	21.00	252.00
4	TBP 7Ø4	2	21.00	42.00
Total lungimi pe diametre				798.00
Greutati pe metru				0.711
Greutati pe diametre				567.378
TOTAL CLASA I DE FISURARE				568 kg.

CERINTE DE CALITATE
QUALITY REQUIREMENTS

Beton C35/45
Otel OB37/ PC52
TBP 12

c=2.5cm - acoperirea minima cu beton a armaturii de rezistenta

DIACONU N. ION
ROMANIA M.T.C.T.
NR.06536
INGINER VERIFICATOR PROIECTE

Harta cheie/KEY MAP

INVESTOR/INVESTITOR: COMPANIA NATIONALA DE AUTOSTRAZI SI DRUMURI NATIONALE DIN ROMANIA

DESIGNER/PROIECTANT: IN ASSOCIATION WITH prointec COWIconsult

PROJECT TITLE / TITLU PROIECT

Technical assistance for reviewing and updating the existing feasibility study, preparing the detailed design and tender documentation for the rehabilitation of the road section Bucuresti-Adjudeni Cojasesti and for the construction of the bypasses at Secuieni, Valea lui Mihai and Carei

Asistenta tehnica pentru revizuirea si actualizarea Studiului de Fezabilitate existent, elaborarea Proiectului Tehnic la nivel de Detalii de Executie, a Documentatiei de Atribuire pentru reabilitarea sectiunii Bucuresti - Adjudeni Cojasesti si construirea variantelor ocolitoare Secuieni, Valea lui Mihai si Carei

VERIFICATOR PROIECT	Ing. Dumitru Ion DIACONU		
DESENAT	Ing. Catalin NONARLEANU		
PROIECTAT	Ing. Bogdan MIHAESCU		
VERIFICAT	Ing. Mircea RADULESCU		
MANAGER DE PROIECT	Ing. Mircea RADULESCU		
SEF ECHIPA PROIECTARE	Ing. Armando PEZZONI		
Data	FEBRUARIE 2009		
beneficiar / investor	DRDP	NONAR	RDL
proiect	PS 0 1 5 0		
PHARE 2005/017-553.04.03	D E		

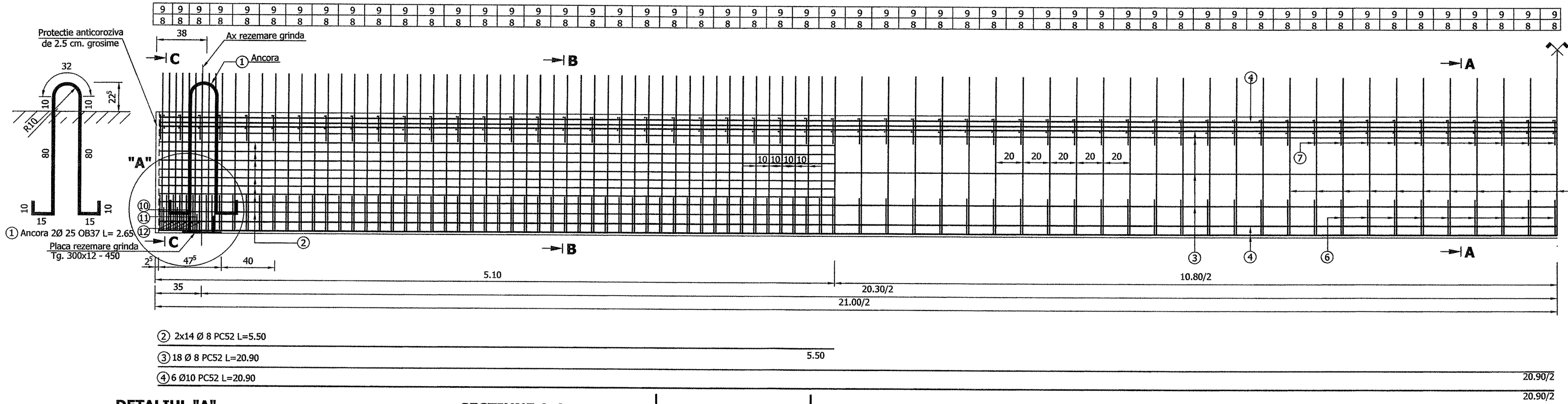
BRIDGE WORKS/LUCRARI DE PODURI

VARIANTA OCOLITOARE CAREI/
CAREI BYPASS
PASAJ PESTE LINIA C.F. NR.412
BRIDGE OVER RAILWAY LINE No. 412

PLAN ARMARE CU TOROANE GRINDA PREFABRICATA / PRECAST CONCRETE BEAM TENDONS REINFORCEMENT PLAN

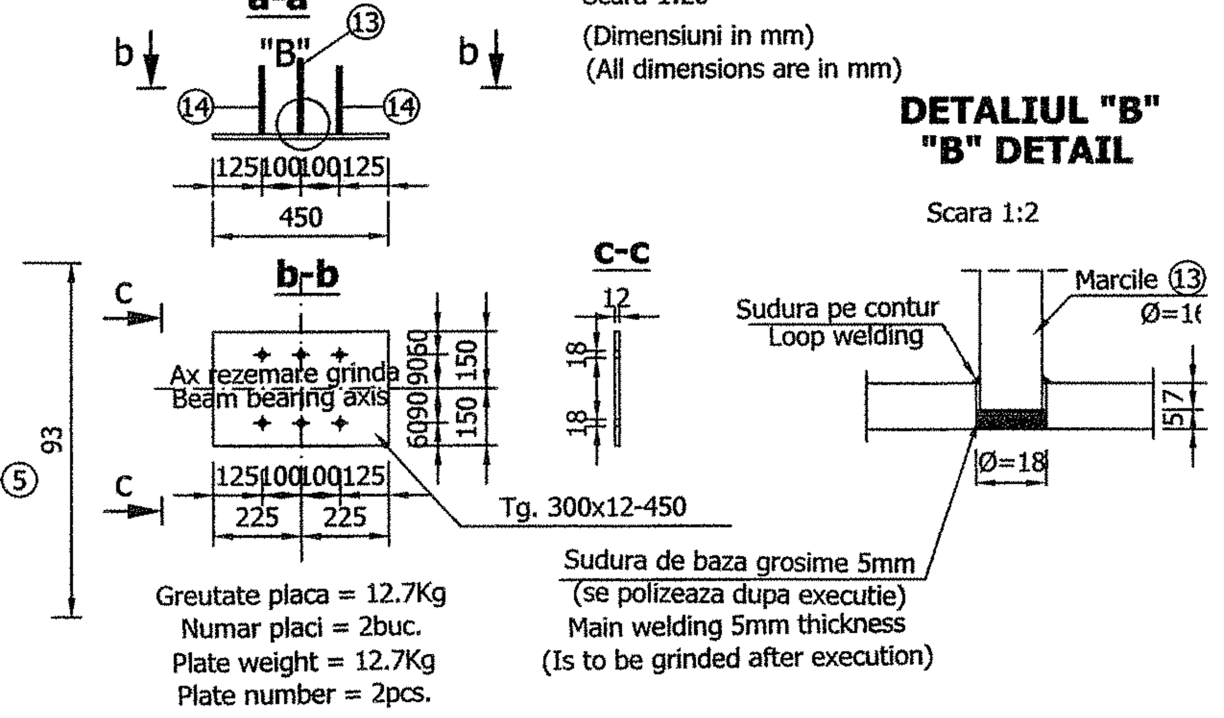
SCARA/SCALE 1:20

SECTIUNE LONGITUDINALA
Scara 1:20



DETALIUL PLACA METALICA INGLOBATA IN GRINDA
DETAIL OF FIXED METAL PLATE INCLUDED IN THE BEAM
Scara 1:20

(Dimensiuni in mm)
(All dimensions are in mm)



Greutate placa = 12.7Kg
Numar placi = 2buc.
Plate weight = 12.7Kg
Plate number = 2pcs.

CERINTE DE CALITATE
QUALITY REQUIREMENTS

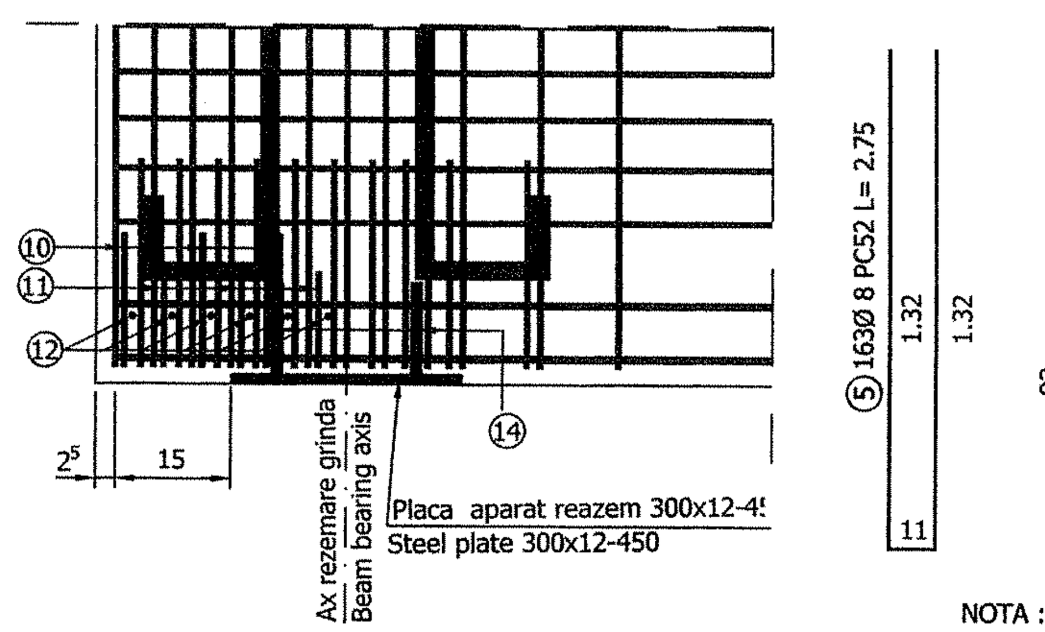
Beton C35/45
Otel OB37/ PC52
TBP 12

c=2.5cm - acoperirea minima cu beton a armaturii de rezistenta

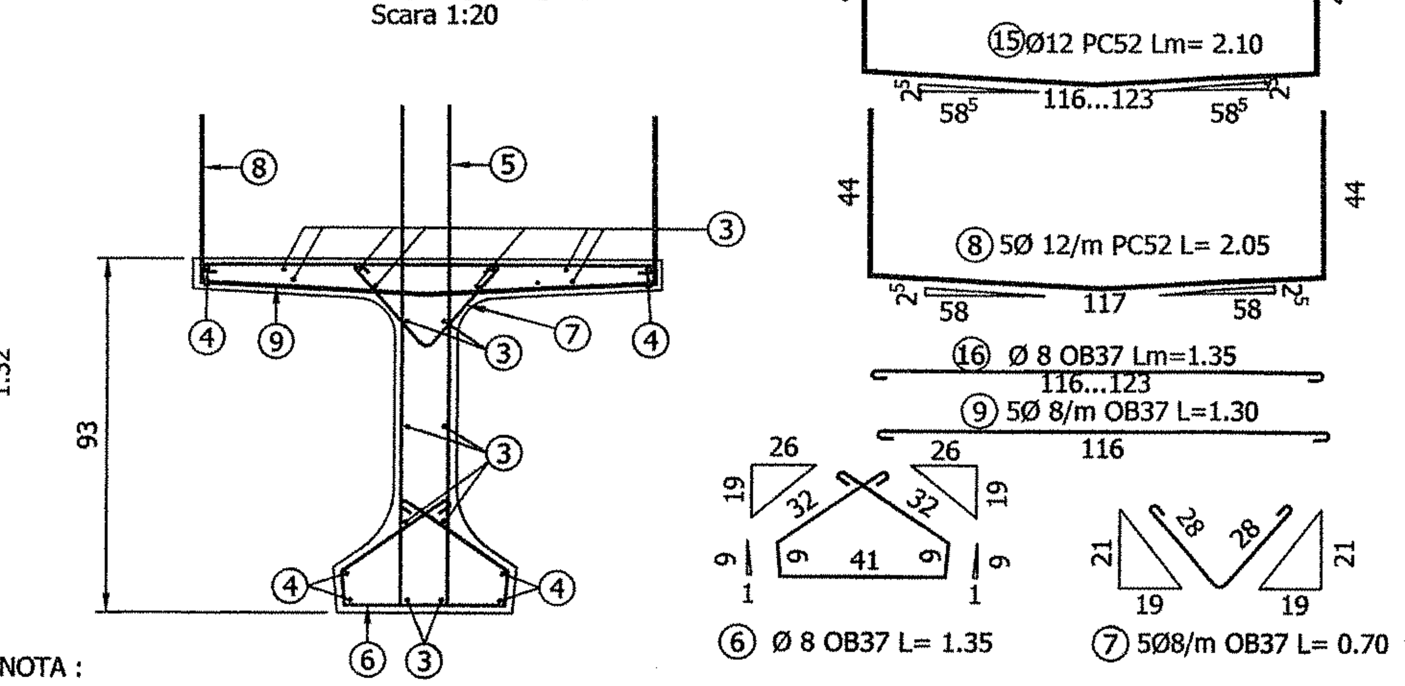
EXTRAS DE ARMATURA
REINFORCEMENT QUANTITY

Marca Bar mark	Φ (mm)	n (buc.)	L (m)	Lungimi pe diametre Lengths per diameters					
				OB37			PC52		
				Φ8	Φ16	Φ25	Φ8	Φ10	Φ12
1	25	2	2.65			5.30			
2	8	28	5.50				154.00		
3	8	18	20.90				376.20		
4	10	6	20.90					125.40	
5	8	165	2.75	453.75					
6	8	165	1.35	222.75					
7	8	107	0.70	74.90					
8	12	73	2.05						149.65
9	8	73	1.30	94.90					
10	8	12	0.50	6.00					
11	8	6	0.65	3.90					
12	8	6	0.65	149.65					
13	16	4	0.20		0.80				
14	16	8	0.17		1.36				
15	12	34	2.10						71.40
16	8	34	1.35	45.90					
Total lungimi pe diametru Total length			(m)	1051.75	2.16	5.30	530.20	125.40	221.05
Greutati pe metru liniar Weights per linear meter			(Kg/m)	0.395	1.578	3.853	0.395	0.617	0.888
Greutate pe diametre Weight per diameter			(Kg)	415.44	3.41	20.42	209.43	77.37	196.29
TOTAL			(Kg)	440.00			484.00		

DETALIUL "A"
"A" DETAIL
Scara 1:10

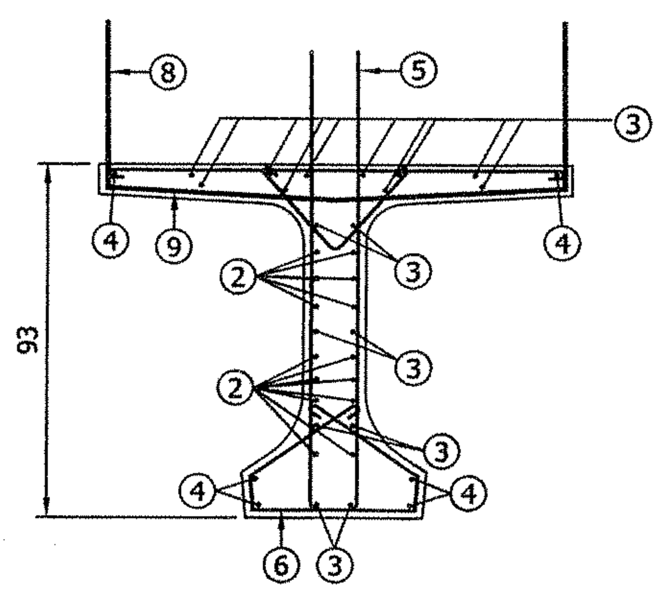


SECTIUNE A-A
A-A SECTION
Scara 1:20

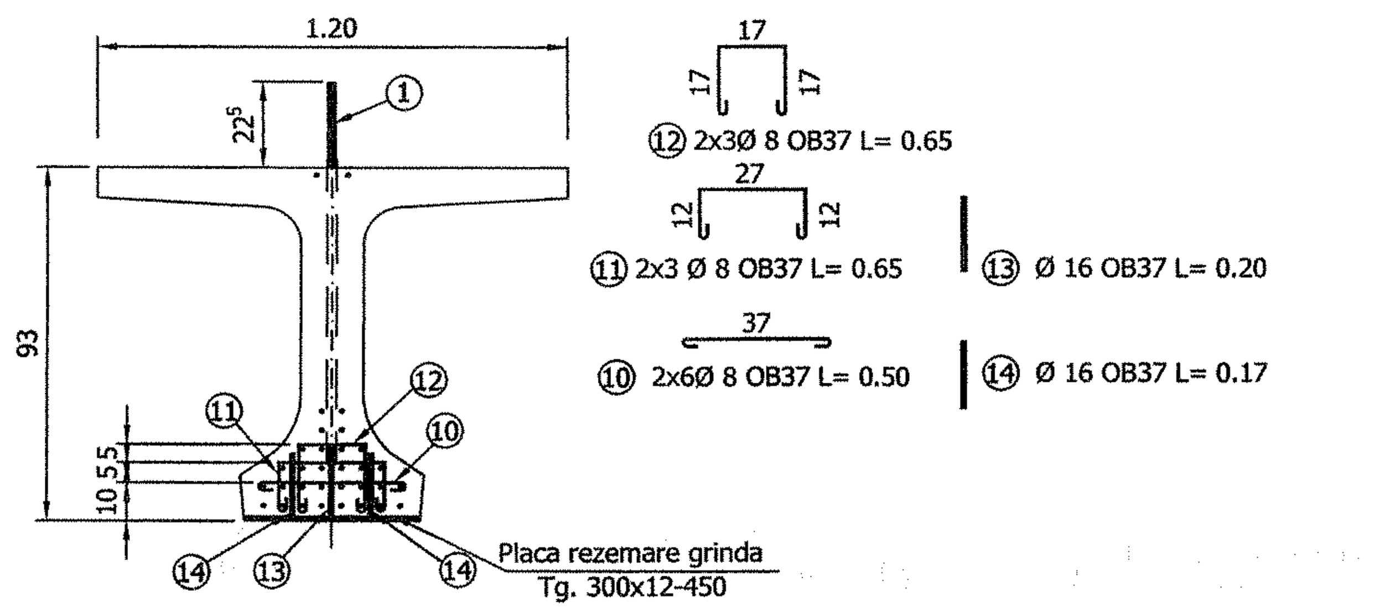


NOTA :
- Conectorii marca (6) si (9) se vor indoi pe santier in functie de grosimea placii de suprabetonare.

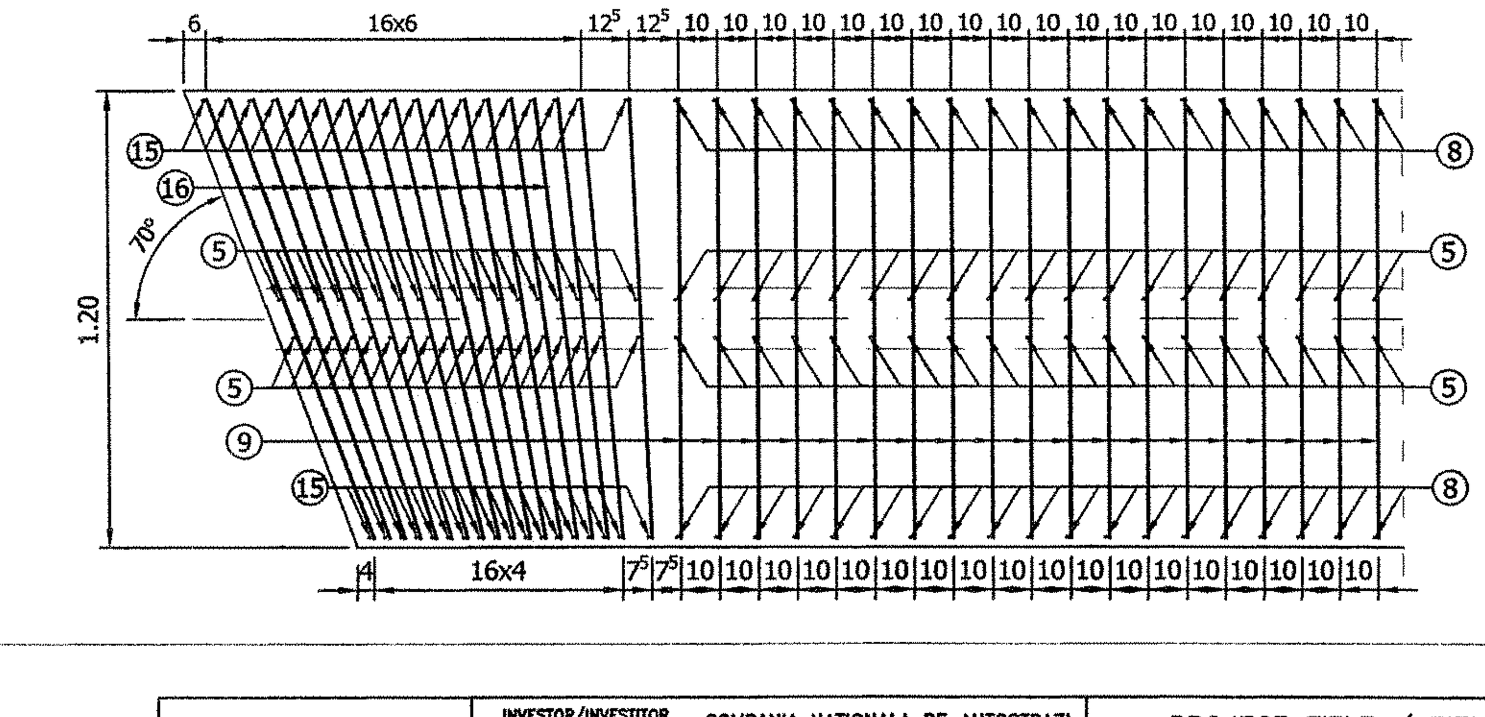
SECTIUNE B-B
B-B SECTION
Scara 1:20



SECTIUNE C-C
C-C SECTION
Scara 1:20



DETALIUL ADAPTERE LA OBLICITATE A ARMATURII PLACII SKEW
ADJUSTMENT OF THE TOP FLANGE RE-BARS DETAIL Sc.1:20



INVESTOR/INVESTITOR	COMPANIA NATIONALA DE AUTOSTRAZI SI DRUMURI NATIONALE DIN ROMANIA
DESIGNER/PROIECTANT	IN ASSOCIATION WITH prointec CONSIS PROIECT

PROJECT TITLE / TITLU PROIECT

Technical assistance for reviewing and updating the existing feasibility study, preparing the detailed design and tender documentation for the rehabilitation of the road section Bucuresti-Adunatii Copaceni and for the construction of the bypasses at Saculeni, Valea lui Mihai and Carei

Asistenta tehnica pentru revizuirea si actualizarea Studiului de Fezabilitate existent, elaborarea Proiectului Tehnic la nivel de Detalii de Executie, a Documentatiei de Atribuire pentru reabilitarea sectiunii Bucuresti - Adunatii Copaceni si construirea variantelor ocolitoare Sacueni, Valea lui Mihai si Carei

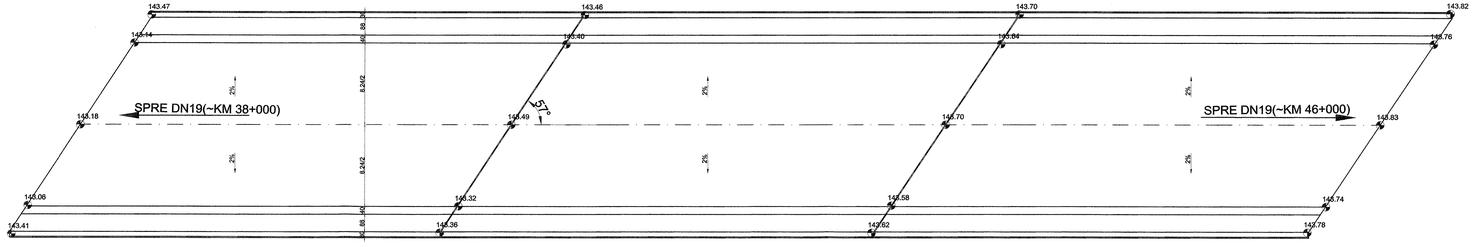
VERIFICATOR PROIECT	Ing. Dumitru Ion DIACONU
DESENAT	Ing. Catalin MOMARLEANU
PROIECTAT	Ing. Bogdan MIHAESCU
VERIFICAT	Ing. Mircea RADULESCU
MANAGER DE PROIECT	Ing. Mircea RADULESCU
SEF ECHIPA PROIECTARE	Ing. Armando PEZZONI
Data	FEBRUARIE 2009
PHARE 2005/017-553.04.03	D E PS 0 1 6 0

BRIDGE WORKS/LUCRARI DE PODURI

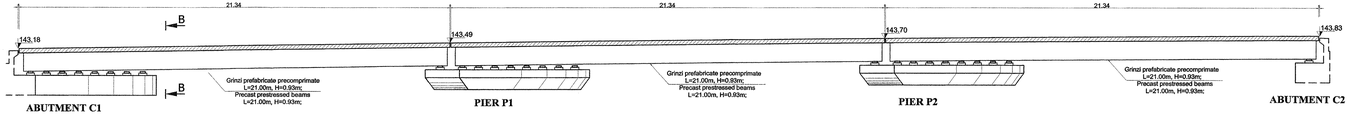
VARIANTA OCOLITOARE CAREI/
CAREI BYPASS
PASAJ PESTE LINIA C.F. NR.412
BRIDGE OVER RAILWAY LINE No. 412
PLAN ARMARE GRINDA PREFABRICA
PRECAST PRESTRESSED BEAM.REINFORCEMENT PLAN
SCARA/SCALE 1:20/ 1:10/ 1:2

ONU N. ION — ROMANIA M.T.C.T. NR.06536 A4;B2;D — INGINER VERIFICATOR PROIECTE

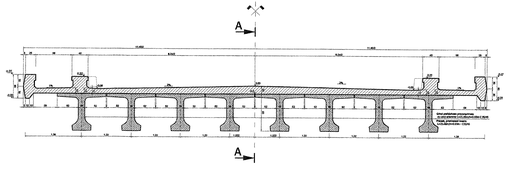
VEDERE PLANA / PLAN VIEW
SCARA/SCALE 1:100



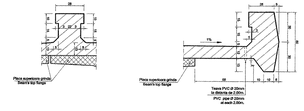
SECTIUNE LONGITUDINALA A-A / A-A LONGITUDINAL SECTION
SCARA/SCALE 1:100



SECTIUNE TRANSVERSALA B-B / B-B CROSS SECTION
SCARA/SCALE 1:50



DETALIU LISA PARAPET DIRECTIONAL& LISA PARAPET PIETONAL/ DIRECTIONAL GUARDRAIL BEAM&PEDESTRIAN GUARDRAIL BEAM
SCARA/SCALE 1:20



CERINTE DE CALITATE/QUALITY REQUIREMENTS

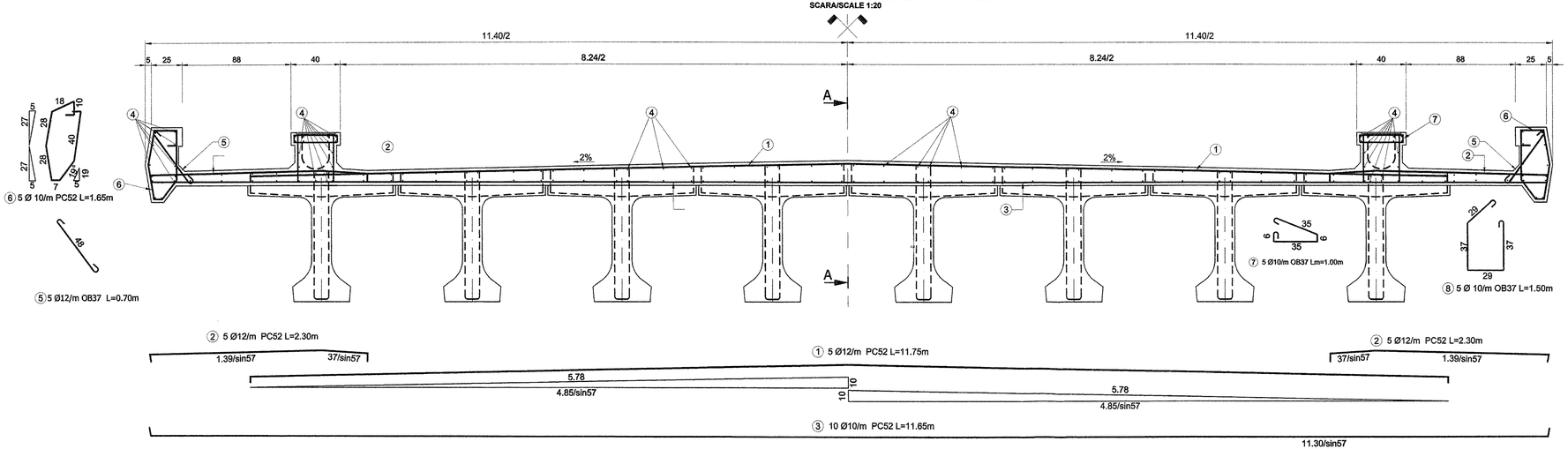
Beton/Concrete	**C35/45**
Otel/Steel	**OB37/ PC52**

Clasa de expunere/Exposure class: XC4+XD3+XF4
Grad de impermeabilitate/Impermeability: P8
Grad de gelivitate/Gelivity: G100
Tipul de ciment/Cement type:I32.5 I 42.5 II/A-B32.5
Valoare maxima A/C / Water-Cement ratio 0.45

Harta obiect/OBX MAP	INVESTITOR/INVESTITOR	COMPANIA NATIONALA DE AUTOSTRAZI SI DRUMURI NATIONALE DIN ROMANIA	PROJECT TITLE / TITLU PROIECT	VERIFICATOR PROIECT	Ing. Dumitru Ion DIACONU	BRIDGE WORKS/LUCRARI DE PODURI
	DESIGNER/PROIECTANT	prontec	Tehnical assistance for reviewing and updating the existing feasibility study, preparing the detailed design and tender documents for the project: "Varianta ocolitoare Carei - Bypass Carei" Asistenta tehnica pentru revizuirea si actualizarea Studiului de Fezabilitate existent, elaborarea Proiectului Tehnic si a celui de Detalii de Executie, a Documentatiei de Atribuire pentru obiectivul de investitii: "Varianta ocolitoare Carei - Bypass Carei"	DESENAT	Ing. Cătălin MOMANEANU	VARIANTA OCOLITOARE CAREI/ CAREI BYPASS PASAJ PESTE LINIA C.F. NR.412 BRIDGE OVER RAILWAY LINE No. 412 PLAN COFRAJ PLACA DE SUPRABETONARE OVERLAY SLAB FORMWORK PLAN SCARA/SCALE 1:100/1:50/1:20
				PROIECTAT	Ing. Bogdan MINDRU	
				VERIFICAT	Ing. Mircea NAGHEL	
				DIRECTOR DE PROIECT	Ing. Mircea NAGHEL	
				SEF SECTIE PROIECTARE	Ing. Mircea NAGHEL	
				Data	FEBRUARIE 2020	
				Nr. revizie		
				Scara		
				Proiect 2065/017-053.04.02E	D E T	P E 0 1 F 0

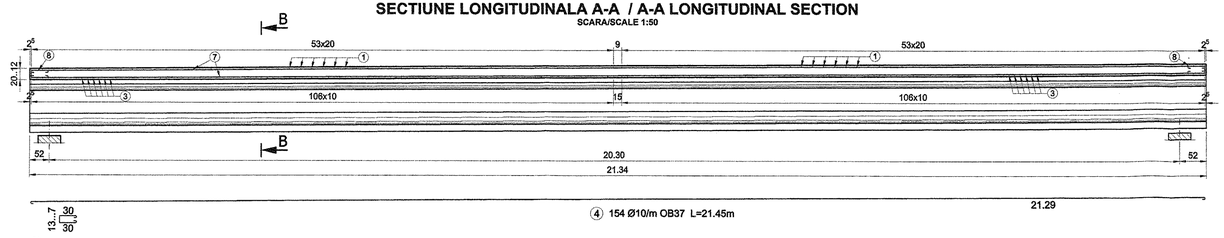
SECTIUNE TRANSVERSALA B-B / B-B CROSS SECTION

SCARA/SCALE 1:20



SECTIUNE LONGITUDINALA A-A / A-A LONGITUDINAL SECTION

SCARA/SCALE 1:50



EXTRAS DE ARMATURA PENTRU PLACA DE SUPRABETONARE PE O DESCHIDERE
QUANTITY REINFORCEMENT FOR ONE SPAN SLAB

Marca	ϕ (mm)	n (buc.)	L (m)	nxL-OB37 ϕ10	nxL-OB37 ϕ12	nxL-PC52 ϕ10	nxL-PC52 ϕ12
1	12	108	11.75				1269.00
2	12	216	2.30				496.80
3	10	216	11.65			2516.40	
4	10	154	21.45	3303.30			
5	12	216	0.70		151.20		
6	10	216	1.65			356.40	
7	10	216	1.00	216.00			
8	10	216	1.50	324.00			
9	10	108	0.85	91.80			
TOTAL LUNGIMI PE DIAMETRU (m)				3935.10	151.20	2872.80	1765.80
GREUTATE PE METRU (kg/m)				0.617	0.888	0.617	0.888
GREUTATE PE DIAMETRU (kg)				2426.14	134.24	1771.19	1567.70
GREUTATE PE TIP OTEL (kg)				2561.00		3339.00	
GREUTATE TOTALA (kg)				5900.00			
GREUTATE TOTALA PT 3 BUCATI ASEMENEA				17700.00			

CERINTE DE CALITATE/QUALITY REQUIREMENTS

Beton/Concrete C35/45
Otel/Steel OB37/ PC52

Clasa de expunere/Exposure class: XC4+XD3+XF4
Grad de impermeabilitate/Impermeability P8
Grad de gelivitate/Gelivity: G100
Tipul de ciment/Cement type I32.5 I 42.5 II/A-S32.5
Valoare maxima A/C / Water-Cement ratio 0.45

Harta zonei/KEY MAP

INVESTOR/INVESTITOR: COMPANIA NATIONALA DE AUTOSTRAZI SI DRUMURI NATIONALE DIN ROMANIA

DESIGNER/PROIECTANT: prointec, IN ASSOCIATION WITH, COWI CONSULT PROJECT

PROJECT TITLE / TITLU PROIECT

Technical assistance for reviewing and updating the existing feasibility study, preliminary design and detailed design documents for the reconstruction of the road section Bucuresti-Adunatii Copaceni and for the construction of the bypasses at Sascuteni, Valea lui Mihai and Carei

Asistenta tehnica pentru revizuirea si actualizarea Studiului de Fezabilitate existent, elaborarea Proiectului Tehnic la nivel de Detalii de Executie, a Documentatiei de Atribuire pentru realizarea sectiunii Bucuresti - Adunatii Copaceni si construirea ocolitoarelor localitatilor Sascuteni, Valea lui Mihai si Carei

VERIFICATOR PROIECT	Ing. Dumitru Ion DIACONU				
DESENAT	Ing. Catalin NOMAIA ZAMU				
PROIECTAT	Ing. Bogdan NOMAICU				
VERIFICAT	Ing. Mircea RADULESCU				
MANAGER DE PROIECT	Ing. Mircea RADULESCU				
SEF ECHIPA PROIECTARE	Ing. Armando PEZZONI				
Data	FEBRUARIE 2009				
SEMNATA					
STAMPA					
PHARE 2005/017-553.04.02	D E		PS	0 1	8 0

BRIDGE WORKS/LUCRARI DE PODURI

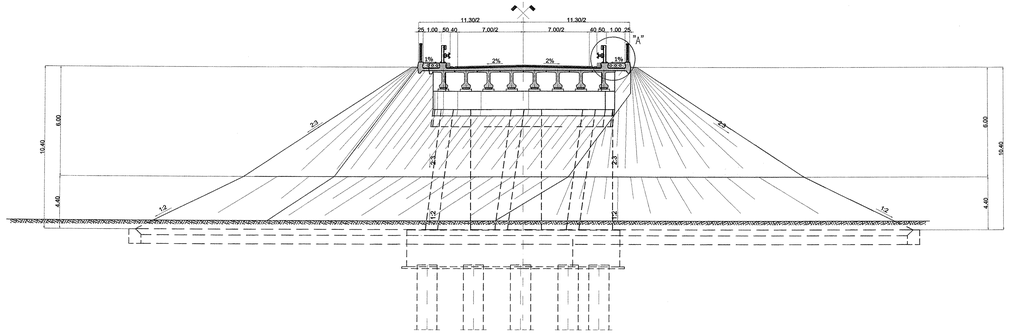
VARIANTA OCOLITOARE CAREI/
CAREI BYPASS
PASAJ PESTE LINIA C.F. NR.412
BRIDGE OVER RAILWAY LINE No. 412

PLAN ARMARE PLACA DE SUPRABETONARE
OVERLAY SLAB REINFORCEMENT PLAN

SCARA/SCALE 1:50/1:20

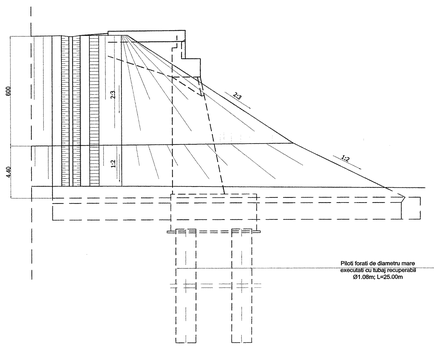
ELEVATIE A-A A-A ELEVATION

Sc 1:100



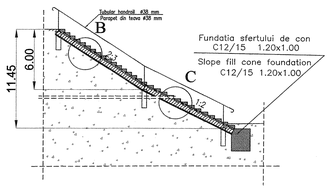
VEDERE C-C C-C VIEW

Sc 1:100



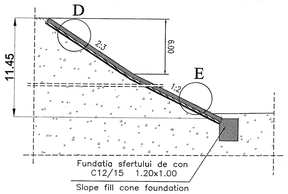
SECTIUNE D-D D-D SECTION

Sc 1:100



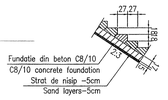
SECTIUNE E-E E-E SECTION

Sc 1:100



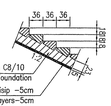
DETALIUL "B"

SCARA 1:50

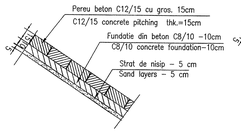


DETALIUL "C"

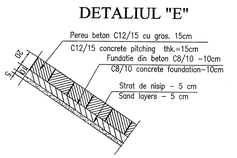
SCARA 1:50



DETALIUL "D"

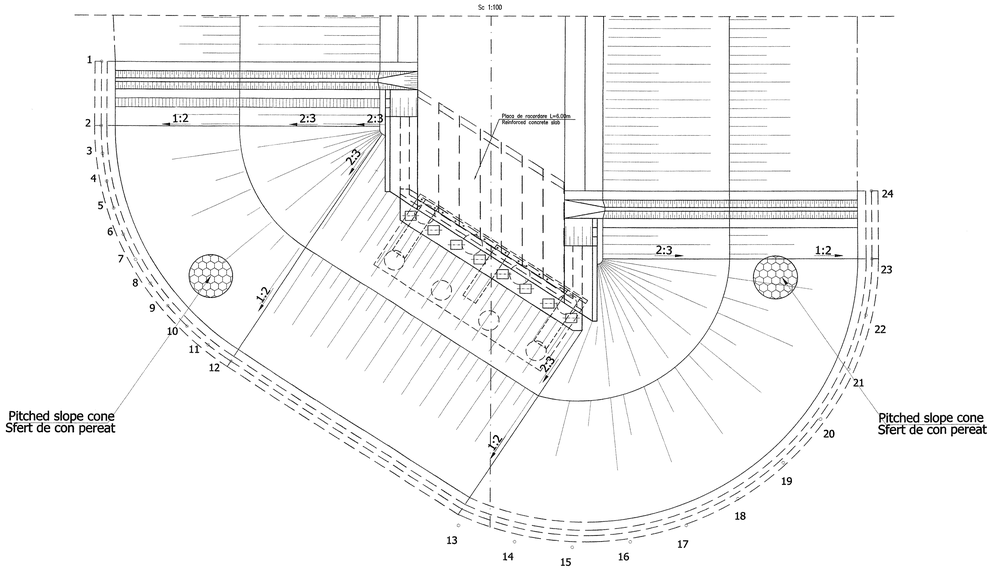


DETALIUL "E"



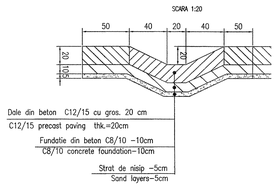
VEDERE PLANA B-B B-B PLANE VIEW

Sc 1:100



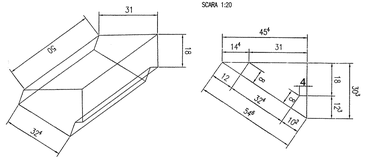
DETALIU CASIU SIDE DITCH DETAIL

SCARA 1:20



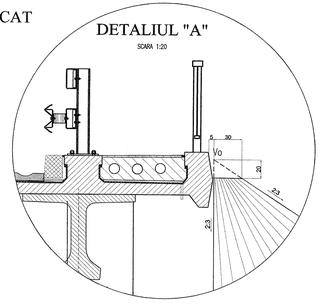
DETALIU TREAPTA DIN BETON PREFABRICAT
DETAIL-PRECAST CONCRETE STAIRS

SCARA 1:20



DETALIUL "A"

SCARA 1:20



COORDONATE TRASARE FUNDATIE SFERT DE CON
CONE QUATER FUNDATION SETTLING COORDINATES

	PUNCT	X	Y
SFERTURI DE CON CULEE C1	1	311747.384	686594.802
	2	311750.623	686599.233
	3	311751.981	686596.916
	4	311753.264	686597.730
	5	311754.460	686598.667
	6	311755.557	686599.719
	7	311756.545	686600.874
	8	311757.412	686602.122
	9	311758.151	686603.449
	10	311758.755	686604.844
	11	311759.217	686606.292
	12	311759.534	686607.778
	13	311761.883	686622.345
	14	311761.630	686625.375
	15	311760.789	686628.299
	16	311759.386	686630.989
	17	311757.477	686633.352
	18	311755.136	686635.296
	19	311752.458	686636.725
	20	311749.549	686637.600
	21	311746.524	686637.881
	22	311743.503	686637.557
	23	311740.610	686636.641
	24	311737.225	686635.146

	PUNCT	X	Y
SFERTURI DE CON CULEE C2	1	311808.699	686667.437
	2	311805.459	686666.006
	3	311804.102	686665.324
	4	311802.818	686664.510
	5	311801.622	686663.572
	6	311800.525	686662.521
	7	311799.538	686661.365
	8	311798.670	686660.117
	9	311797.931	686658.790
	10	311797.327	686657.395
	11	311796.865	686655.948
	12	311796.549	686654.465
	13	311794.200	686639.894
	14	311794.445	686636.864
	15	311795.286	686633.945
	16	311796.689	686631.247
	17	311798.600	686628.883
	18	311800.941	686626.944
	19	311803.620	686625.508
	20	311806.531	686624.632
	21	311809.558	686624.353
	22	311812.580	686624.676
	23	311815.478	686625.593
	24	311818.860	686627.088

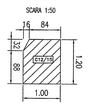
NUMAR DE TREPTE
NUMBER OF STAIRES

H (m)	Numar de trepte Number of stairs (buc)
2.98	17
5.40	30
5.90	33
TOTAL	2x17+30+34=97

TREAPTA – STEP
C 12/15
V = 0.029m
G = 72.5kg

FUNDATIA SFERTULUI DE CON
SLOPE FILL CONE FOUNDATION

SCARA 1:50



CERINTE DE CALITATE
QUALITY REQUIREMENTS

C8/10 - beton egalizare C12/15 - fundatie,scari , dale prefabricate Otel OB37 PC52 Clasa de expunere: XC1 Grad de impermeabilitate: P4 Grad de gelivitate: F100 Tipul de ciment: II/A-S 32,5 Volumi maxime A/C: 0,65	C8/10 - leveling concrete C20/25 - foundation,stairs, precast slab Steel OB37 PC52 Exposure class: XC1 Impermeability degree: P4 Frost resistance degree: F100 Cement type: II/A-S 32,5 Maximum W/C ratio: 0,65

Harta_clasa"XXY MAP"	INVESTITOR/INVESTITOR: COMPANIA NATIONALA DE AUTOSTRAZI SI DRUMURI NATIONALE DIN ROMANIA	PROJECT TITLE / TITLU PROIECT: Tehnical assistance for reviewing and updating the existing documentation for the rehabilitation of the road sections documentation for the rehabilitation of the road sections Asistenta tehnica pentru revizuirea si actualizarea Studiului de fezabilitate existent, elaborarea Proiectului Tehnic la nivel de Detalii de Executie, a Documentatiei de Atribuire pentru lucrarile de reabilitare a sectiunilor de drum si a podurilor existente in cadrul obiectivului Drumuri, Valea lui Mihai si Oradea	VERIFICATOR PROIECT: Ing. Dumitru Ion DIACONU DESIGN: Ing. Catalin ACHILEANU PROIECTAT: Ing. Bogdan MIHAESCU DESENAT: Ing. Adrian MARCULESCU VERIFICAT DE / PROIECT: Ing. Adriana RADULESCU SEF STUDIU / PROIECTANT: Ing. Constantin PETCOV DATA: FEBRUARIE 2020

BRIDGE WORKS/LUCRARI DE PODURI

VARIANTA OCOLITOARE CAREI/
CAREI BYPASS

PASAJ SUPERIOR CF. KM.412
BRIDGE OVER RAILWAY LINE, Km.412

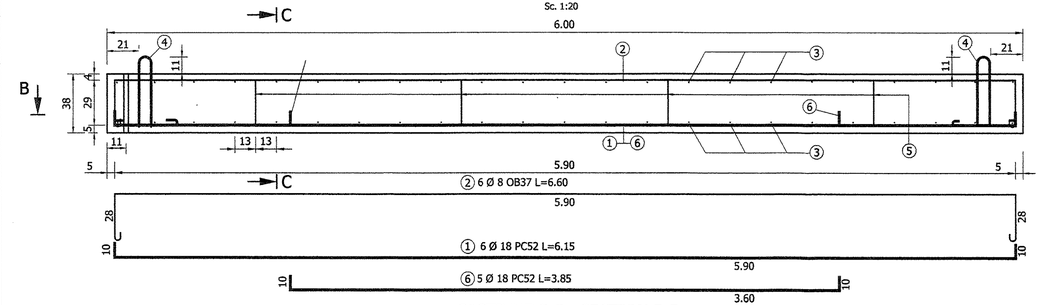
FACERILE DE TERAMENTALE SUB CAROSIL DETALII / EMBANKMENT TRANSITION ZONE UNDER ROAD DETAIL DETAILS

SCARA/SCALE: 1:100/ 1:50/ 1:20

Proiect: 2020/DT/~003.04.02 01.01

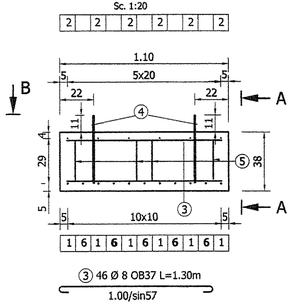
VEDERE A-A VIEW A-A

Sc. 1:20



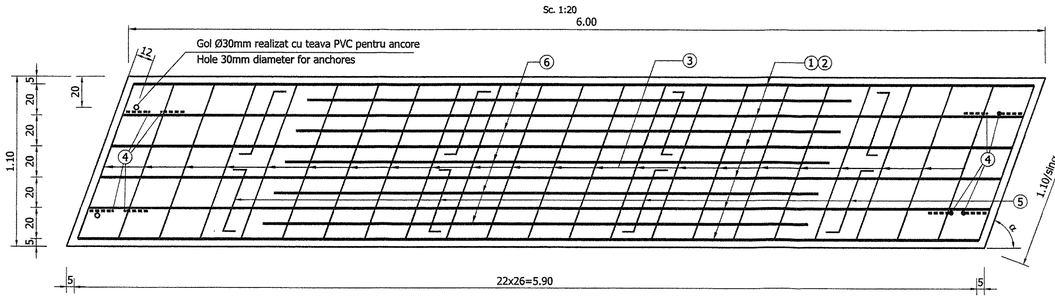
SECTIUNE C-C SECTION C-C

Sc. 1:20



SECTIUNE B-B SECTION B-B

Sc. 1:20



CERINTE DE CALITATE PENTRU PLACA DE RACORDARE
QUALITY REQUIREMENTS FOR PRECAST SLAB

VOLUM BETON : 2.51 mc/buc.
GREUTATE : 6.53 t/buc.
CONCRETE VOLUME : 2.51 mc/pcs.
WEIGHT : 6.53 t/pcs.

Beton C20/25 — **Concrete C20/25**

Clasa de expunere: XC3	Exposure class: XC3
Grad de impermeabilitate: P4	Impermeability: P4
Grad de gelivitate: G100	Gelivity: G100
Tipul de ciment: I 32.5; II/A-S 32.5	Cement: I 32.5; II/A-S 32.5
Valoare maxima A/C: 0.60	Maximum value W/C: 0.60

N O T A
1)Pe spatele culeii si pe placile de racordare se va aplica o hidroizolatie din doua straturi de bitum filerizat STAS 5088-75.
2)La realizarea placilor de racordare se vor respecta urmatoarele tolerante:
-la lungime: ±10mm;
-la latime: ±5mm;
-la grosime: ±3mm;
-la planeitate: ±6mm.

3)Placile prefabricate vor fi insotite de certificate de calitate si vor fi marcate cu vopsea mentionandu-se tipul placii.
4)Grosimea stratului de acoperire cu beton va fi de 5cm pentru marcile 1 si 6, si 4 cm pentru celelalte marci.

N O T E
1)Two layers of bituminous paint shall be applied on the transition slabs and on the abutment surfaces in contact with the ground(STAS 5088-75).
2) The following tolerances shall be considered for the transition slabs performing.
-for lenght: ±10mm;
-for width: ±5mm;
-for thick: ±3mm;
-for planing: ±6mm.
3)The precast shall have adjoined quality certificates and shall be marked with paint, with the plate type mentioned.
4)The concrete covering layer thickness of the reinforcement shall be of 5 cm for 1 and 6 and 4 cm for the other marks.

Extras de armatura pentru o placa de racordare
Quantity reinforcement for one slab

Marca Mark	ϕ (mm)	n (buc.)	L (m)	nxL-OB37 ϕ8	nxL-OB37 ϕ16	nxL-PC52 ϕ18
1	18	6	6.15			36.90
2	8	6	6.60	39.60		
3	8	46	1.30	59.80		
4	16	4	1.45		5.80	
5	8	8	1.20	9.60		
6	18	5	3.85			19.25
TOTAL LUNGIMI PE DIAMETRU (m) TOTAL LENGTH PER DIAMETER (m)				109.00	5.80	56.15
GREUTATE PE METRU (kg/m) WEIGHT PER METER (kg/m)				0.395	1.578	1.998
GREUTATE PE DIAMETRU (kg) WEIGHT PER DIAMETER (kg)				43.01	9.15	112.16
GREUTATE PE TIP OTEL (kg) WEIGHT PER STEEL TYPE (kg)				53.00		113.00
GREUTATE TOTALA (kg) TOTAL WEIGHT (kg)				166.00		
GREUTATE TOTALA PT 14 BUCATI ASEMENEA TOTAL WEIGHT FOR 14 UNITS				2324.00		

DIACONU N. ION — ROMANIA M.T.C.T. NR.06536 A1;B2;D — VERIFICATOR DE PROIECTE

Harta cheie/KEY MAP

INVESTOR/INVESTITOR: COMPANIA NATIONALA DE AUTOSTRAZI SI DRUMURI NATIONALE DIN ROMANIA

DESIGNER/PROIECTANT: prointec CONSIS PROJECT (in ASSOCIATION WITH)

PROJECT TITLE / TITLU PROIECT

Technical assistance for reviewing and updating the existing feasibility study, preparing the detailed design and tender documentation for the rehabilitation of the road section Bucuresti-Ploiesti Centura and for the construction of the bypasses at Sacuieni, Valea lui Mihai and Carei

Asistenta tehnica pentru revizuirea si actualizarea Studiului de Fezabilitate existent, elaborarea Proiectului Tehnic la nivel de Detalii de Executie, a Documentatiei de Atribuire pentru reabilitarea sectiunii Bucuresti - Ploiesti Centura si construirea variantelor ocolitoare Sacuieni, Valea lui Mihai si Carei

VERIFICATOR PROIECT	Ing. Dumitru Ion DIACONU
DESENAT	Ing. Catalin MOMARLEANU
PROIECTAT	Ing. Bogdan MIHAESCU
VERIFICAT	Ing. Mircea RADULESCU
MANAGER DE PROIECT	Ing. Mircea RADULESCU
SEF ECHIPA PROIECTARE	Ing. Armando PEZZONI
Data	FEBRUARIE 2009
co-contract number	
PHARE 2005/017-553.04.03	D E PS 0 2 D 0

BRIDGE WORKS/LUCRARI DE PODURI

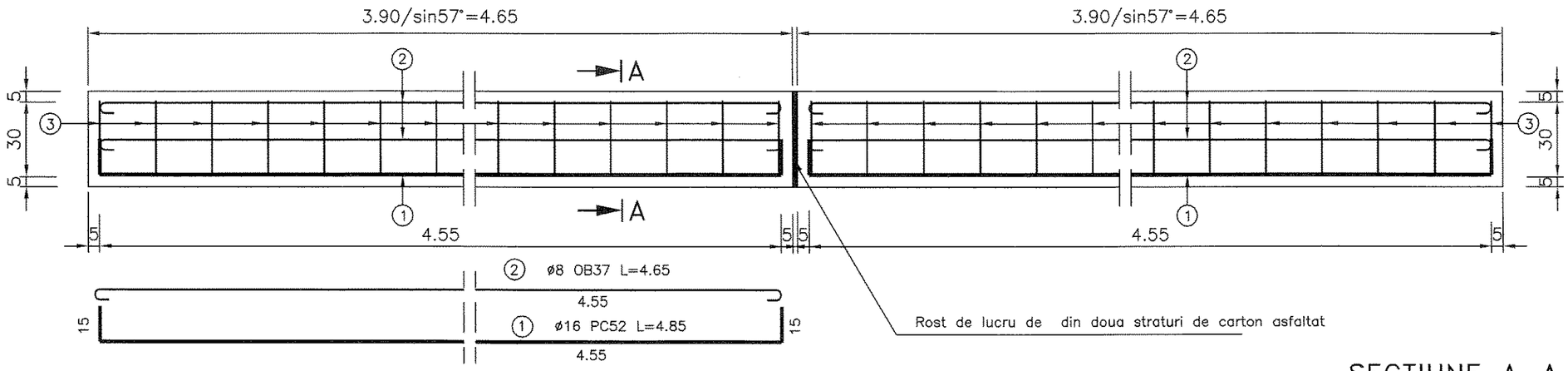
VARIANTA OCOLITOARE CAREI/
CAREI BYPASS
PASAJ PESTE LINIA C.F. NR.412
BRIDGE OVER RAILWAY LINE No. 412

PLAN ARMARE PLACA DE RACORDARE
CONNECTION SLAB REINFORCEMENT PLAN
SCARA/SCALE 1:20

ARMARE GRINDA DE REZEMARE
SECTIUNE LONGITUDINALA

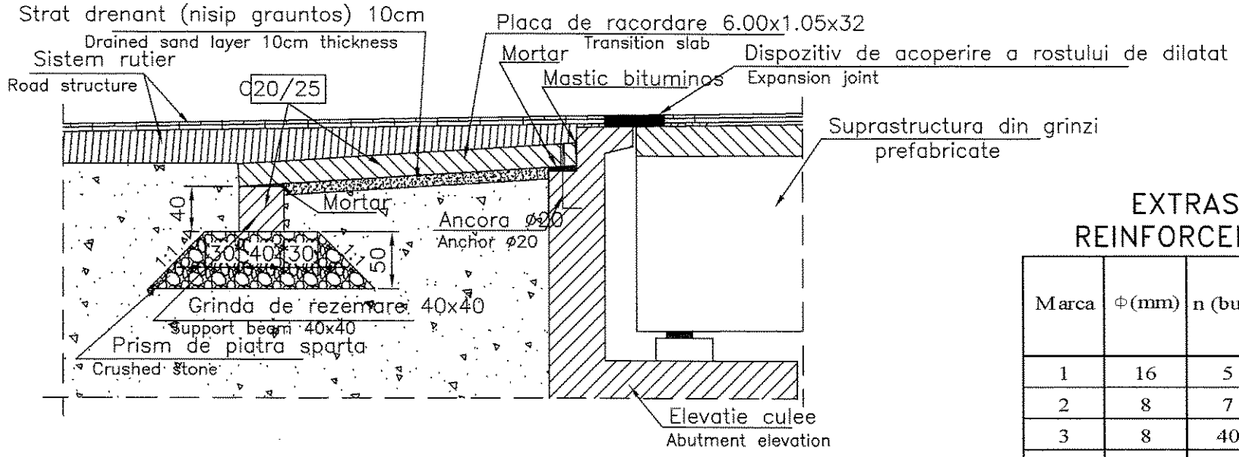
BEARING BEAM REINFORCEMENT
LONGITUDINAL SECTION

Scara 1:20



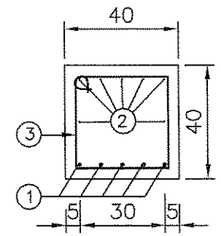
DETALIU DE REZEMARE PLACA DE RACORDARE
TRANSITION SLAB BEARING DETAILS

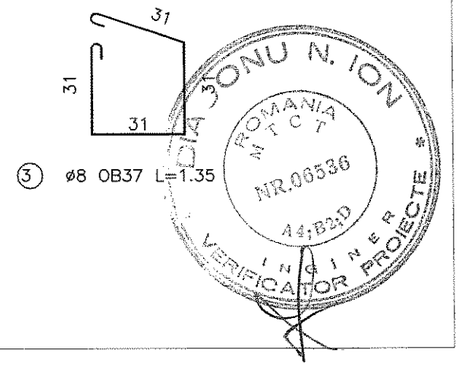
Scara 1:50



SECTIUNE A–A
A–A SECTION

Scara 1:20





EXTRAS ARMATURA
REINFORCEMENT QUANTITY

Marca	Φ(mm)	n (buc.)	L(m)	lungimi pe diametr	
				OB37	PC52
				Φ8	Φ16
1	16	5	4.85		24.25
2	8	7	4.65	32.55	
3	8	40	1.35	54.00	
Total lungimi pe diametre				86.55	24.25
Greutate pe metru(kg/ml)				0.395	1.578
Greutate pe diametru(kg)				34.19	38.27
Total otel pentru o grinda de rezemare				73.00	


Harta cheie/KEY MAP

INVESTOR/INVESTITOR
COMPANIA NATIONALA DE AUTOSTRAZI SI DRUMURI NATIONALE DIN ROMANIA

DESIGNER/PROIECTANT
IN ASSOCIATION WITH
prointec
CONSIS PROIECT

PROJECT TITLE / TITLU PROIECT

Technicial assistance for reviewing and updating the existing feasibility study, preparing the detailed design and tender documentation for the rehabilitation of the road section Bucuresti–Adunatii Copaceni and for the construction of the bypasses at Sacueni, Valea lui Mihai and Carei

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VERIFICAT	Ing. Mircea RADULESCU								
MANAGER DE PROIECT	Ing. Mircea RADULESCU								
SEF ECHIPA PROIECTARE	Ing. Armando PEZZONI								
Data	FEBRUARIE 2009								
COD CONTRACT / DIRECTOR				DES.		NUMAR			REV.
PHARE 2005/017-553.04.03	D	E		PS	0	2	1	0	

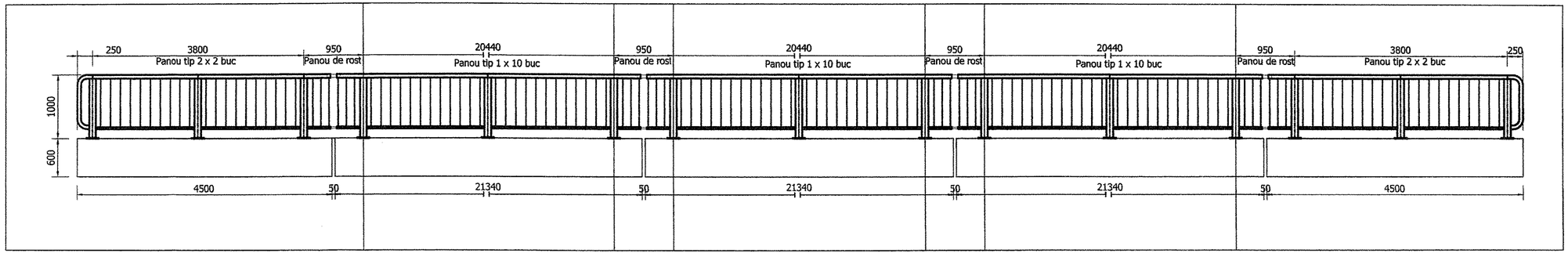
BRIDGE WORKS/LUCRARI DE PODURI

VARIANTA OCOLITOARE SACUENI/
SACUENI BYPASS
PASAJ PESTE LINIA C.F. NR.413
BRIDGE OVER RAILWAY LINE No. 413

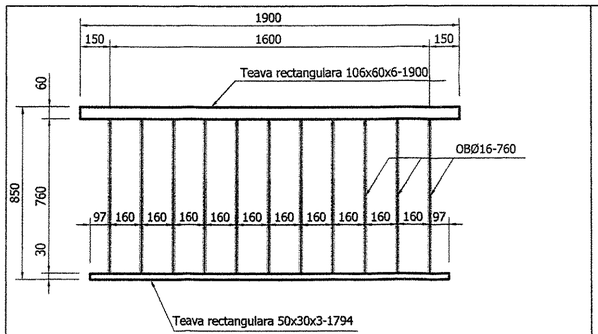
PLAN ARMARE GRINDA DE REZEMARE
BEARING BEAM REINFORCEMENT PLAN
SCARA/SCALE 1:20/ 1:50

DISPOZITIE GENERALA PARAPET PIETONAL / GENERAL ARRANGEMENT OF PEDESTRIAN GUARDRAIL

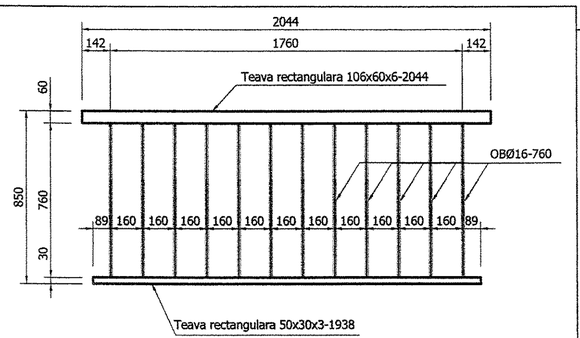
Scara/Scale 1:50



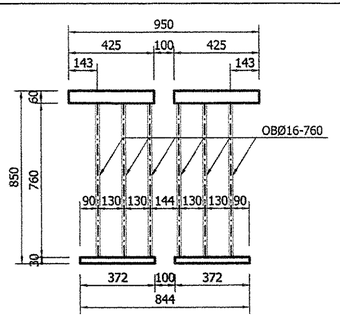
Panou tip2/Panel type2
L=1.70m
Scale 1:20



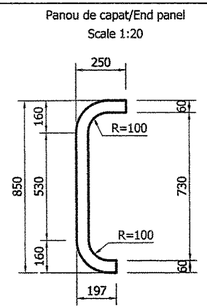
Panou tip1/Panel type1
L=2.01m
Scale 1:20

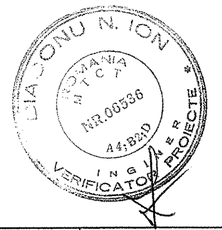


Panou de rost/Joint Panel
L=0.95m
Scale 1:20



Panou de capat/End panel
Scale 1:20





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SEF ECHIPA PROIECTARE	Ing. Armando PEZZONI						
Data	FEBRUARIE 2009						
CONTRACT NO.							
PHARE 2005/017-553.04.03	D	E		PS	0	2	2	0

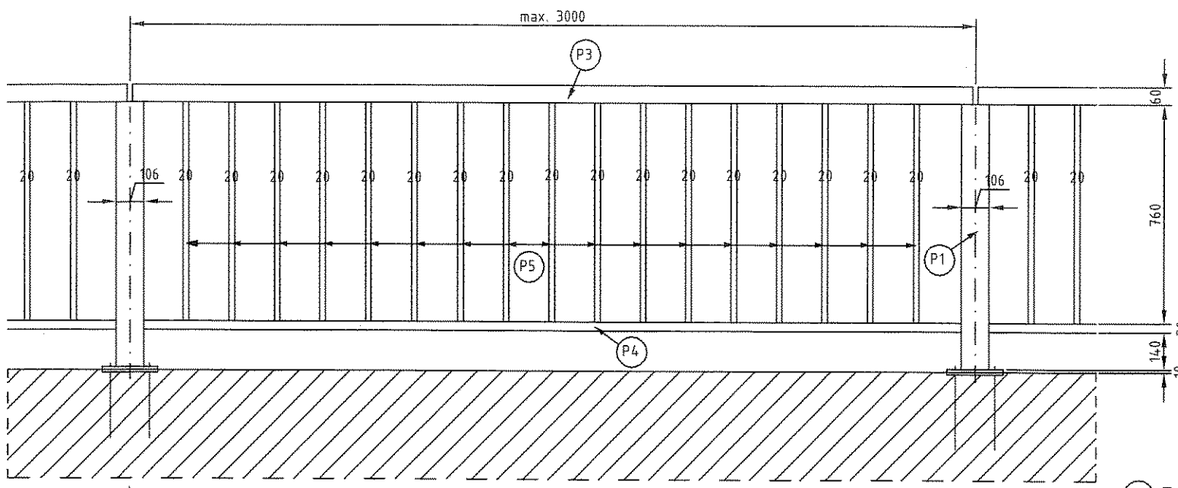
BRIDGE WORKS/LUCRARI DE PODURI

VARIANTA OCOLITOARE CAREI/
CAREI BYPASS
PASAJ PESTE LINIA C.F. NR.412
BRIDGE OVER RAILWAY LINE No. 412

PARAPET PIETONAL.DISPOZITIE GENERALA
PEDESTRIAN GUARDRAIL.GENERAL ARRANGEMENT
SCARA/SCALE 1:100/1:50/1:20

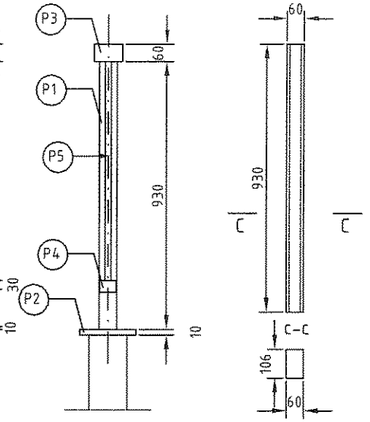
PANOU CURENT Scara1:20

VEDERE B-B



SECTIUNE A-A / SECTION A-A

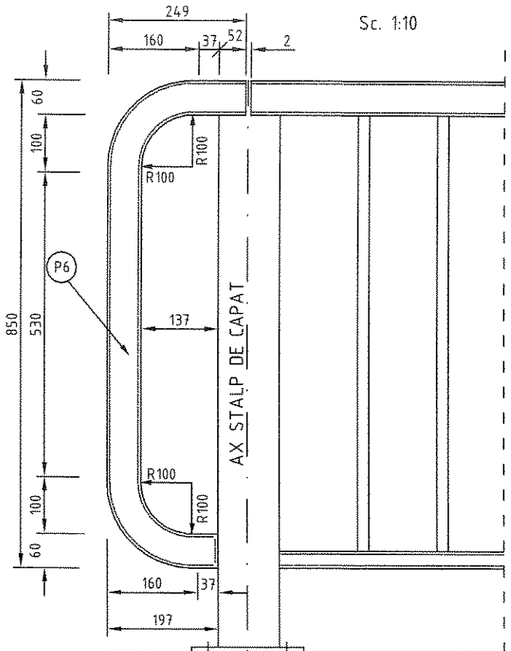
Sc. 1:20

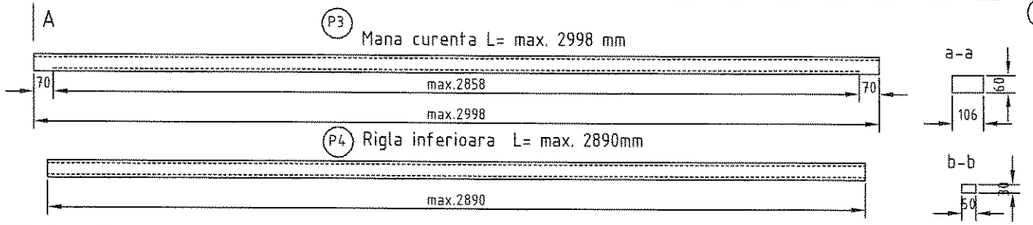


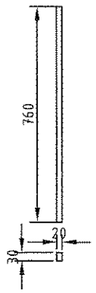
P1 Stalp L=930mm

PIESA DE CAPAT L=1070mm

Sc. 1:10

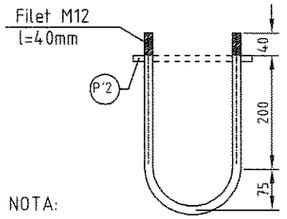






ANCORA

OB37 Φ16 L=716mm



NOTA:

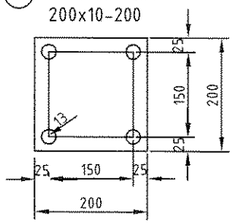
-Placa de prindere P'2 si ancora se vor ingloba in betonul din cornisa trotuarului de pe suprastructura.

MASURATOAREA MATERIALULUI METALIC PE PANOURI

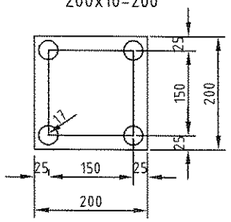
STEEL QUANTITY ON EACH PANEL

Panou tip Panel	Nr. No.	Denumirea Name	Nr. buc. No. piece	Dimensiune Dimension	Lungime Length	Kg/ml	G (t)
Panou tip1 Panel type 1	P3	Mana curenta	1	106x60x6	2044	13.78	28.17
	P4	Rigla inferioara	1	50x30x3	1938	3.58	6.94
	P5	Zabrelute	12	Φ 16	760	1.578	14.39
Total							49.50
Panou tip2 Panel type2	P3	Mana curenta	1	106x60x6	1900	13.78	26.18
	P4	Rigla inferioara	1	50x30x3	1794	3.58	6.42
	P5	Zabrelute	11	Φ 16	760	1.578	13.19
Total							45.80
Panou de rost Joint panel	P3	Mana curenta	1	106x60x6	950	13.78	13.09
	P4	Rigla inferioara	1	50x30x3	744	3.58	2.66
	P5	Zabrelute	6	Φ 16	760	1.578	7.20
Total							22.95
Piesa de capat End	P6	Mana curenta	1	106x60x6	1156	13.78	15.93
Total							15.93
Stalp	P1	Teava	1	106x60x6	930	13.6	12.65
	P7	Placuta	1	50x30x3	220	5.7	1.25
	P8	Placuta	1	Φ 16	220	3.8	0.84
	P9	Ancora		Φ25	666	3.853	2.57
Total							17.30

P2 Placa de baza 200x10-200



P'2 Placa prindere 200x10-200



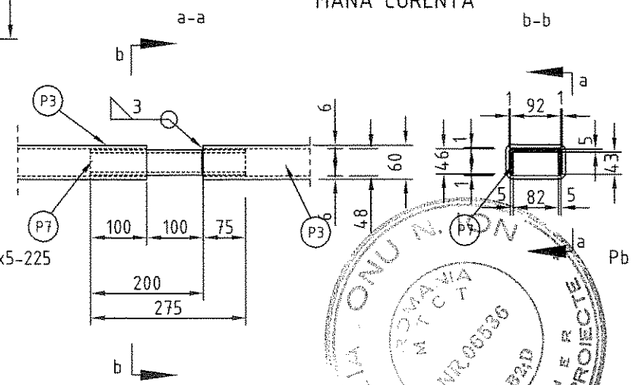
TOTAL MATERIAL METALIC

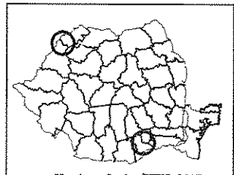
METALL QUANTITY

Denumirea Name	Nr. buc. No. piece	Kg/ml	G (kg)
Panou tip 1/Panel type 1	30	49.5	1485.00
Panou tip 2/Panel type 2	4	45.8	183.20
Panou de rost/Joint panel	4	22.95	91.80
Piesa capat/End panel	2	15.93	31.86
Stalp/Stanchion	39	17.3	674.70
Total pe o lisa			2466.56
Total pod/Total on bridge			**4933**

DETALIU CONTINUIZARE PARAPET LA ROST

MANA CURENTA





Harta cheie/KEY MAP

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SEF ECHIPA PROIECTARE	Ing. Armando PEZZONI
Data	IULIE 2008
DIRECTOR	

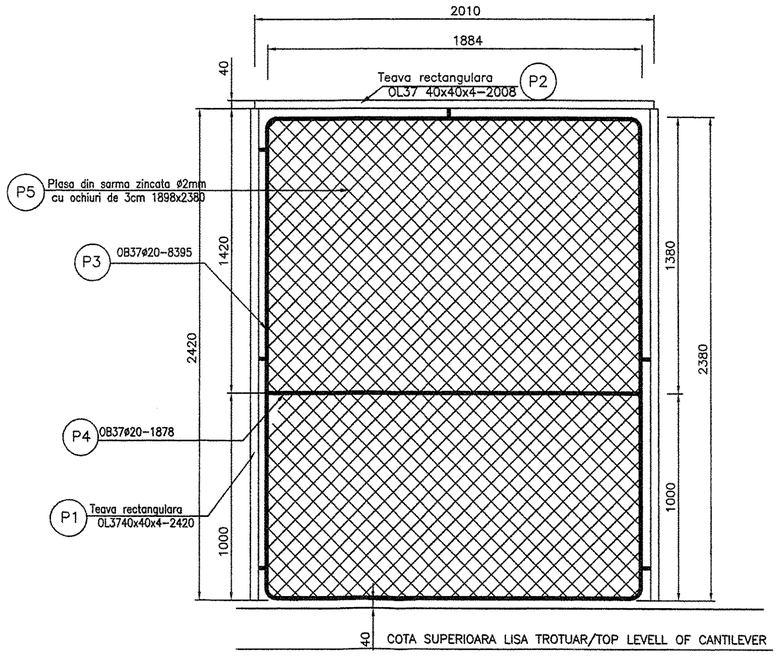
PHARE 2005/017-553.04.03	DES.			NUMAR			REV.
	D	E		SF	0	2	3	0

BRIDGE WORKS/LUCRARI DE PODURI

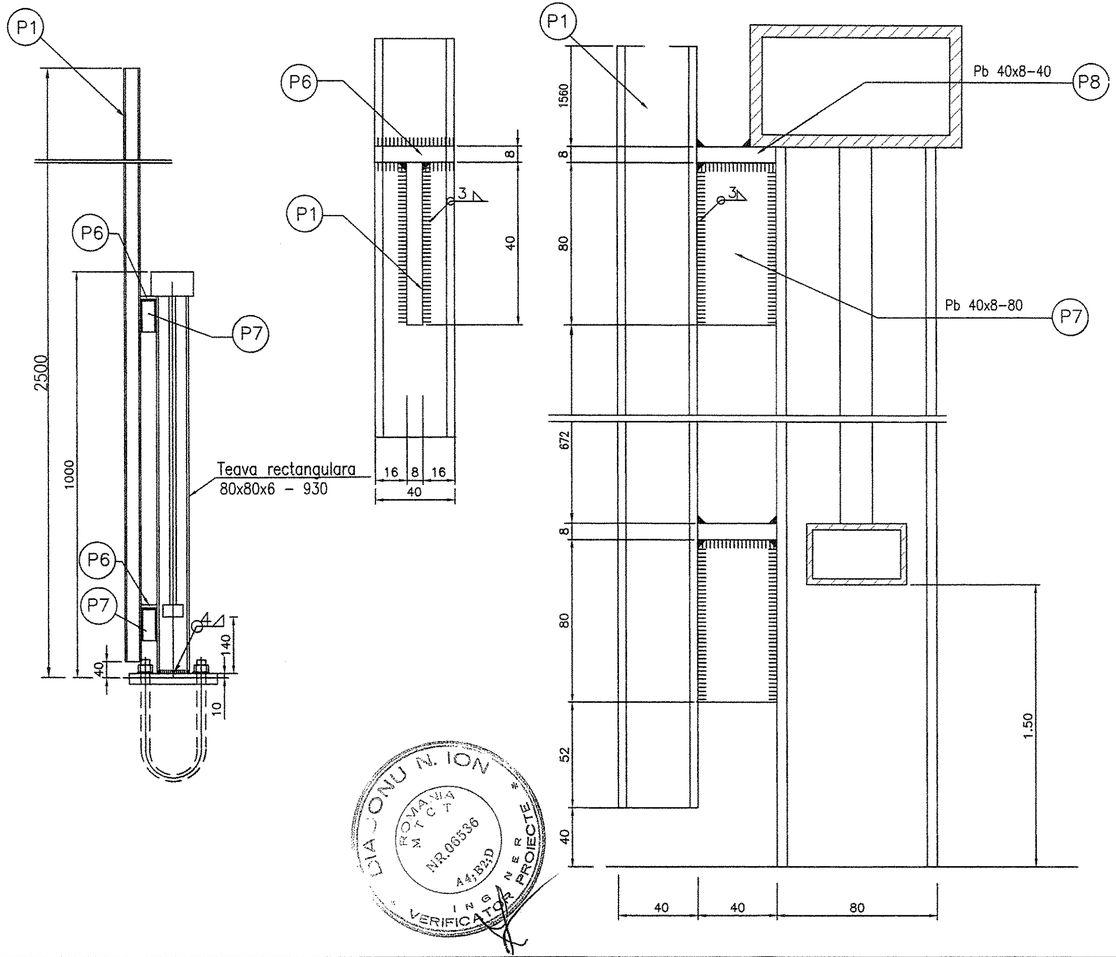
VARIANTA OCOLITOARE CAREI/
CAREI BYPASS
PASAJ PESTE LINIA C.F. NR.412
BRIDGE OVER RAILWAY LINE No. 412
PARAPET PIETONAL.DETALII DE UZINARE
PEDESTRIAN GUARDRAIL.WORKING DETAILS

Scara/Scale 1:20;1:10

PANOU DE PROTECTIE
SAFETY PANEL
Scale 1:20



DETALIU DE PRINDERE A PANOULUI DE PROTECTIE DE STILPUL DE PARAPET
SAFETY PANEL. FIXING DETAIL ON STANCHIONS
Scale 1:20



Masuratoare material metalic pentru un panou
Metall quantity for one panel

TIPUL PANOULUI	Nr.	DENUMIREA	NR.BUC.	DIMENSIUNI	LUNGIME	Kg/ml	G ; KG
PANOU TIP 1	P1	Stalp	2	40x40x4	2420	4.37	10.58
	P2	Lisa	1	40x40x4	2008	4.37	8.78
	P3	Rama	1	ø20	8395	2.466	20.71
	P4	Rigidizare	1	ø20	1879	2.466	4.64
	P5	Plasa de sarma	1	2mm 3x3cm	2380X1884	1.72	7.72
	P6	Platbanda	2	40x8x40	40	2.51	0.20
	P7	Platbanda	2	40x8x80	80	2.51	0.4
TOTAL							53.03

Metall quantity for entire bridge

DENUMIREA	NR.BUC.	KG/BUC	GREUTATE
Panou tip1	28	53.03	1485


Harta cheie/KEY MAP

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SEF ECHIPA PROIECTARE	Ing. Armando PEZZONI	
Data	IULIE 2008	
cod control		

FAZA / PHASE: PHARE 2005/017-553.04.03 | D | E | | PT | 0 | 2 | 4 | 0 | (DES. / NUMAR / REV.)

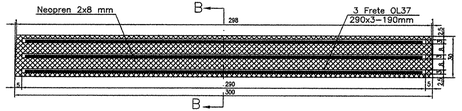
BRIDGE WORKS/LUCRARI DE PODURI

VARIANTA OCOLITOARE CAREI/
CAREI BYPASS
PASAJ PESTE LINIA C.F. NR.412
BRIDGE OVER RAILWAY LINE No. 412

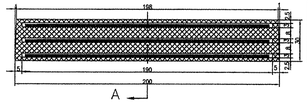
PANOU DE PROTECTIE DIN PLASA DE SARMA
PROTECTION PANEL BY WIRE-MESH
Scara/Scale 1:20

APARAT DE REAZEM DIN NEOPREN TIP 5 NEOPREN BEARING TYPE 5

SECTIUNE A–A SECTION A–A



SECTIUNE B–B SECTION B–B

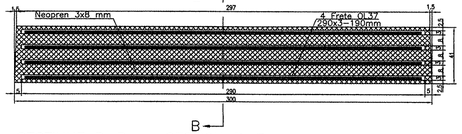


APARAT DE REAZEM TIP 5 – NEOPREN BEARING TYPE 5

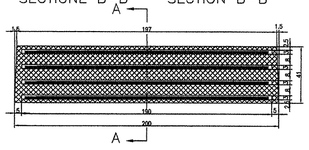
CONSUMURI : Neopren = 1,76Kg.
Armaturi = 3,89Kg.
GREUTATE APARAT : = 5,65Kg/buc.

APARAT DE REAZEM DIN NEOPREN TIP 6 NEOPREN BEARING TYPE 6

SECTIUNE A–A SECTION A–A



SECTIUNE B–B SECTION B–B

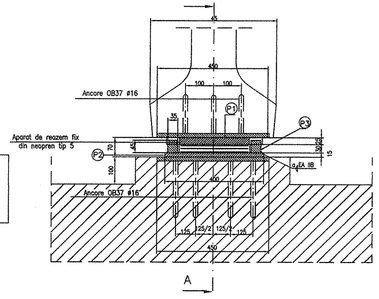


APARAT DE REAZEM TIP 6 – NEOPREN BEARING TYPE 6

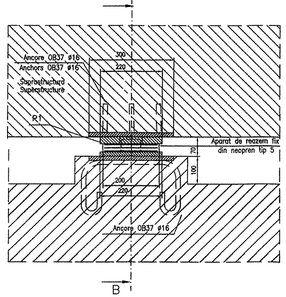
CONSUMURI : Neopren = 2,42Kg.
Armaturi = 5,19Kg.
GREUTATE APARAT : = 7,61Kg/buc.

APARAT DE REAZEM FIX TIP 5
FIXED BEARING DEVICES TYPE 5

SECTIUNE B–B SECTION B–B

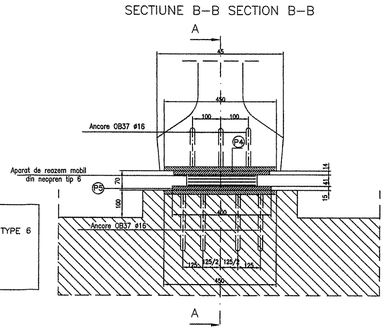


SECTIUNE A–A SECTION A–A

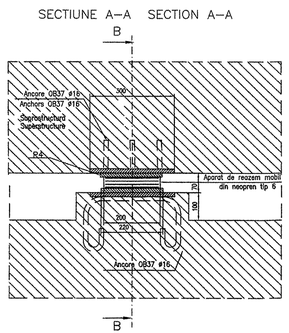


APARAT DE REAZEM MOBIL TIP 6
MOBILE BEARING DEVICES TYPE 6

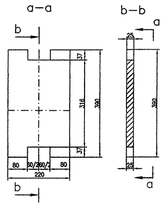
SECTIUNE B–B SECTION B–B



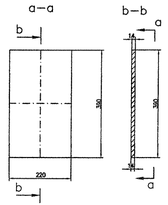
SECTIUNE A–A SECTION A–A



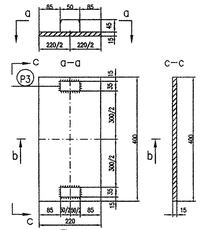
P1 PLACUTA 220X25–390
STEEL PLATE



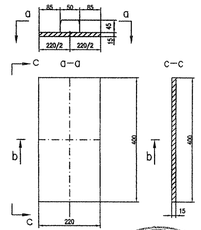
P4 PLACUTA 220X25–390
STEEL PLATE



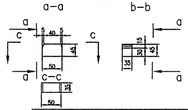
P2 PLACUTA 220X15–400
STEEL PLATE



P5 PLACUTA 220X15–400
STEEL PLATE



P3 TACHET
STEELE PLATE



MASURATOAREA PIESELOR METALICE PENTRU 1 APARAT DE REAZEM FIX
QUANTITY OF STEEL FOR 1 FIXED BEARING

M	DENUMIRE PIESA	DIMENSIUNI (mm)	NR. BUC.	GR./BUC. (kg)	GREUTATE TOTALA (kg)	SE CONFECTIONEAZA DIN:
P1	Placuta superioara	220x25x390	1	19.00	19.00	Tabla groasa OL37
P2	Placuta inferioara	220x15x400	1	11.65	11.65	STAS 505/86
P3	Tachet	35x50x45	2	0.86	1.72	STAS 500/1–89;500/2–80
	TOTAL MATERIAL METALIC PT. 1 APARAT DE REAZEM FIX				32.37	

MASURATOAREA PIESELOR METALICE PENTRU 1 APARAT DE REAZEM MOBIL
QUANTITY OF STEEL FOR 1 MOBILE BEARING

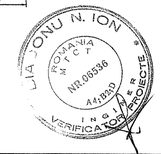
M	DENUMIRE PIESA	DIMENSIUNI (mm)	NR. BUC.	GR./BUC. (kg)	GREUTATE TOTALA (kg)	SE CONFECTIONEAZA DIN:
P4	Placuta superioara	220x14x390	1	10.64	10.64	Tabla groasa OL37
P5	Placuta inferioara	220x15x400	1	11.65	11.65	STAS 505/86
	TOTAL MATERIAL METALIC PT. 1 APARAT DE REAZEM MOBIL				22.29	

TOTAL MATERIAL METALIC POD QUANTITY OF STEEL FOR THE BRIDGE

	TOTAL/AP.REAZEM (kg)	NR.AP.REAZEM	TOTAL POD (kg)
	MAT.METALIC		MAT.METALIC
APARATE DE REAZEM MOBILE	22.29	24	534.96
APARATE DE REAZEM FIXE	32.37	24	776.88
TOTAL MATERIAL METALIC			1311.84

MASURATOAREA CORDONULUI DE SUDURA
QUANTITY OF WELDING

PIESE SOLIDARIZATE	L cordon (mm)	Nr. cordon	Lung.totala (mm)	δ cordon (mm)	OBSERVATII	
P2 cu P3	170	2	340	5	cordon simplu	Electrozii folositi la sudura sunt: EL 50 B conf. STAS 1125/91
P1 (P4) cu Placa grinda	480	1	170	10	cordon simplu	
P2 (P5) cu Placa bancheta	480	1	170	10	cordon simplu	
Lungime totala cordon de sudura (m)			1.30m x 48aparate=62.40m			




Harta obiect/KEY MAP

INVESTOR/INVESTITOR COMPANIA NATIONALA DE AUTOSTRAZI SI DRUMURI NATIONALE DIN ROMANIA

DESIGNER/PROIECTANT prointec

PROJECT TITLE / TITLU PROIECT

Technical assistance for reviewing and updating the existing feasibility study, preparing the detailed design and tender documentation for the rehabilitation of the road section Bucuresti – Giurgiu and the construction of the road section of the bypasses at Socasani, Video Sat Mihai and Corel

Asistenta tehnica pentru revizuirea si actualizarea Studiului de Fezabilitate existent, elaborarea Proiectului Tehnic la nivel de Detalii de Executie, a Documentatiei de Atribuire pentru reabilitarea sectiunii Bucuresti – Giurgiu si pentru construirea variantelor ocolitoare Socasani, Video Sat Mihai si Corel

VERIFICATOR PROIECT	Ing. Dumitru Ion DIACONU	
DESENAT	Ing. Catalin MOMARLEANU	
PROIECTAT	Ing. Bogdan MIHAESCU	
VERIFICAT	Ing. Mircea RADULESCU	
MANAGER DE PROIECT	Ing. Mircea RADULESCU	
SEF ECHIPA PROIECTARE	Ing. Armanda PEZZONI	
DATA	FEBRUARIE 2009	

BRIDGE WORKS/LUCRARI DE PODURI

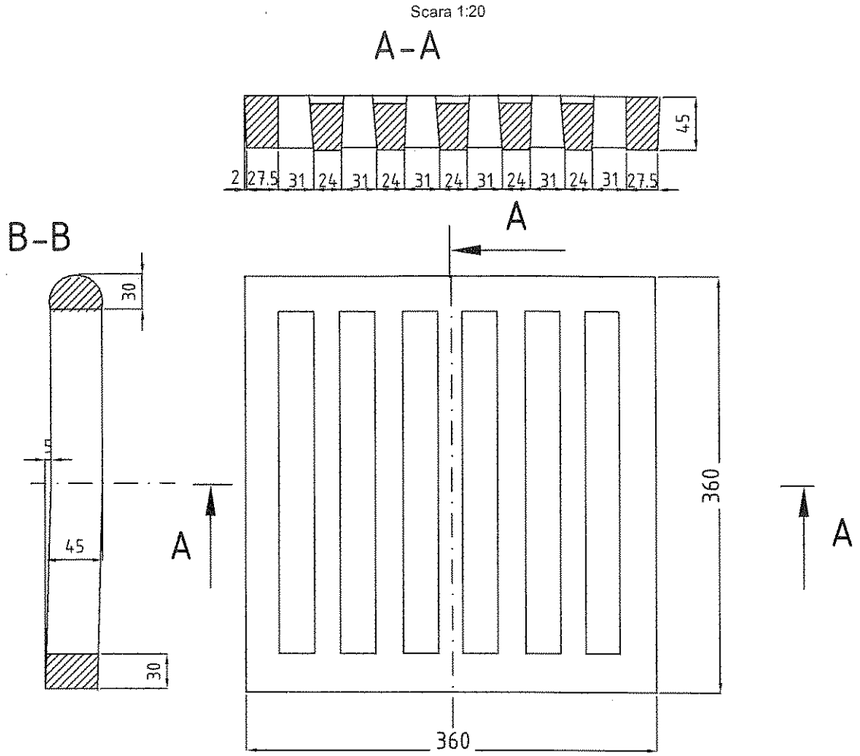
VARIANTA OCOLITOARE CAREI/
CAREI BYPASS
PASAJ PESTE LINIA C.F. NR.412
BRIDGE OVER RAILWAY LINE No. 412

APARATE DE REAZEM
BEARING DEVICES
SCARA/SCALE 1:2/ 1:10

FAZA/PHASE	NUMAR/NO.	REV.
PHARE 2005/017-553.04.03	D E	PS 0 2 5 0

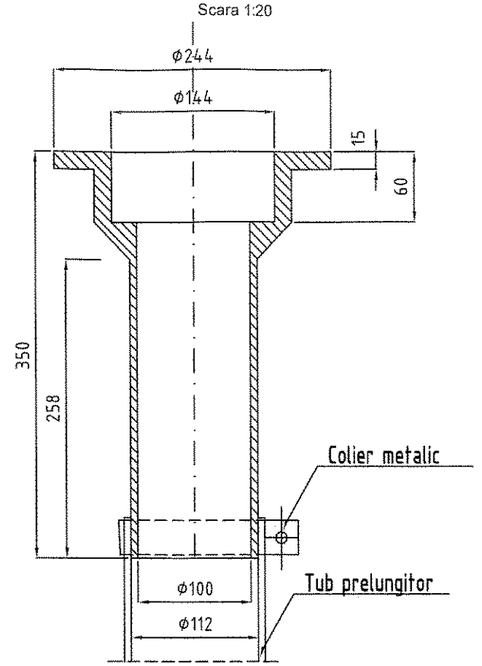
GRATAR

Scara 1:20



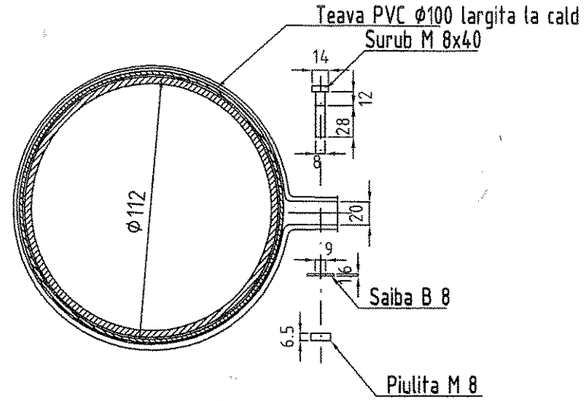
PALNIE DE EVACUARE

Scara 1:20

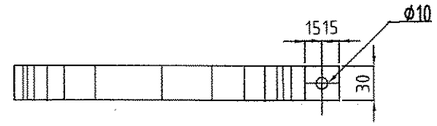


DETALIU DE PRINDERE TUB PVC

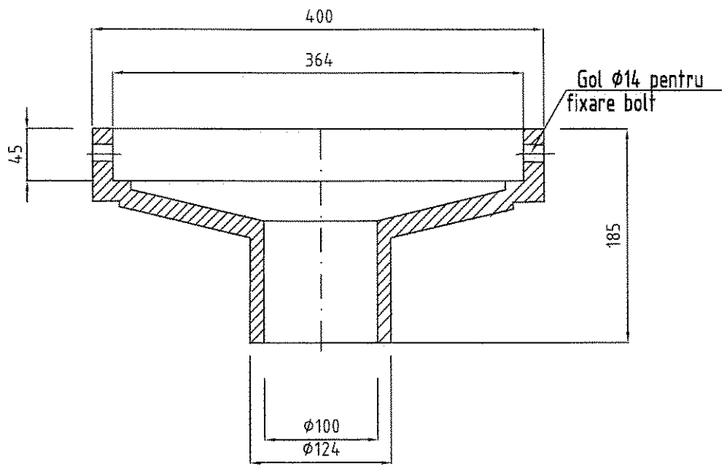
Scara 1:2



COLIER METALIC 3X30X435

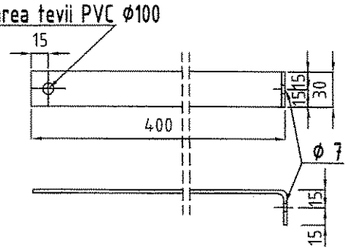


RAMA GRATARULUI



BRIDA 3X30X400

ϕ10 se executa dupa pozarea tevii PVC ϕ100



VERIFICATOR PROIECT
ROMANIA M.T.C.T. NR.06536 44,820
Ing. Dumitru Ion DIACONU
VERIFICATOR PROIECTE

INVESTOR/INVESTITOR

COMPANIA NATIONALA DE AUTOSTRAZI SI DRUMURI NATIONALE DIN ROMANIA

DESIGNER/PROIECTANT

IN ASSOCIATION WITH

prointec

CONNESS PROJECT

PROJECT TITLE / TITLU PROIECT

Technicial assistance for reviewing and updating the existing feasibility study, preparing the detailed design and tender documentation for the rehabilitation of the road section Bucuresti-Adunatii Copaceni and for the construction of the bypasses at Sacuieni, Valea lui Mihai and Carei

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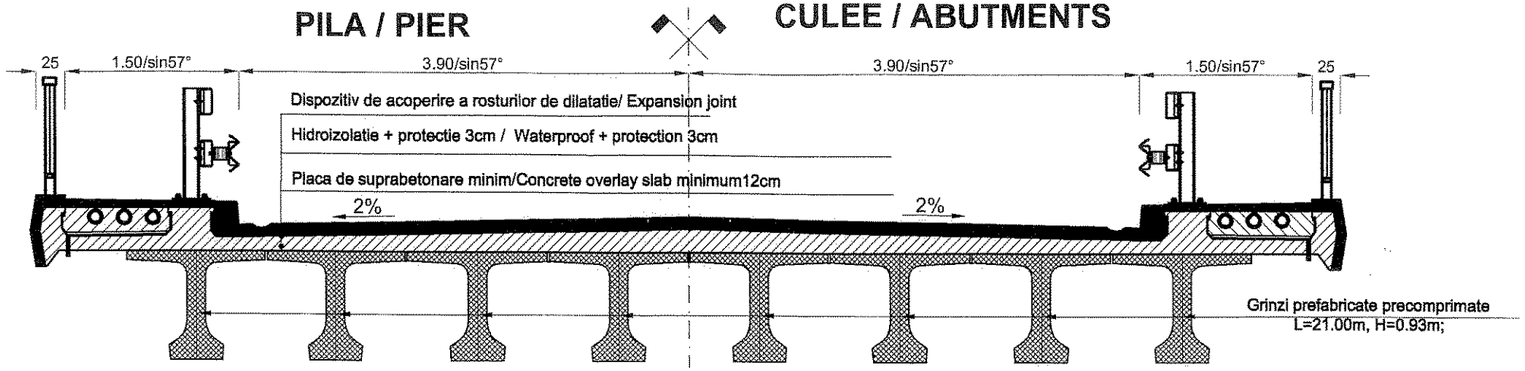
MANAGER DE PROIECT	Ing. Mircea RADULESCU	
SEF ECHIPA PROIECTARE	Ing. Armando PEZZONI	
Data	FEBRUARIE 2009	
CIS CONTRACT / SECTOR	DES. PS	NUMAR 0 2 6 0	REV. 0

BRIDGE WORKS/LUCRARI DE PODURI

VARIANTA OCOLITOARE CAREI/
CAREI BYPASS
PASAJ PESTE LINIA C.F. NR.412
BRIDGE OVER RAILWAY LINE No. 412
GURA DE SCURGERE. DETALII
OUTLET. DETAILS
SCARA/SCALE 1:2/ 1:20

SECTIUNI TRANSVERSALE / CROSS SECTIONS

SCARA/SCALE 1:50



Caracteristici ale dispozitivului pentru acoperirea rostului de dilatatie:

- Rost etans.
- Deplasarea totala maxima Δlmax.=20mm
- Garantie minima 10 ani.

Expansion joint features:

- Water tide joint.
- Total displacement Δlmax.=20mm
- 10 years minimum garantee.

INVESTOR/INVESTITOR

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SEF ECHIPA PROIECTARE	Ing. Armando PEZZONI
Data	FEBRUARIE 2009
CEO CONTRACT DIRECTOR	

PHARE 2005/017-553.04.03

DES.	NUMAR	REV.
DE	PS 0 2 7	0

BRIDGE WORKS/LUCRARI DE PODURI

VARIANTA OCOLITOARE CAREI/
CAREI BYPASS
PASAJ PESTE LINIA C.F. NR.412
BRIDGE OVER RAILWAY LINE No. 412
DISPOZITIV ACOPERIRE ROST DE DILATATIE
EXPANSION JOINT
SCARA/SCALE 1:50