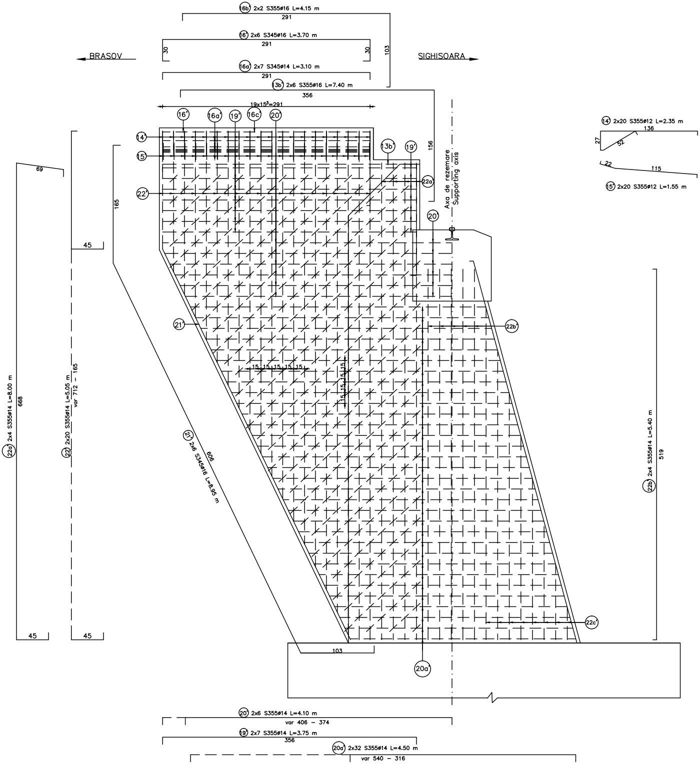
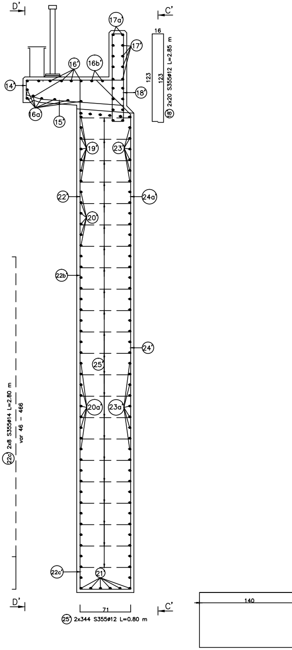
VEDERE D'–D' / D'–D' VIEW
Scara/Scale 1:20



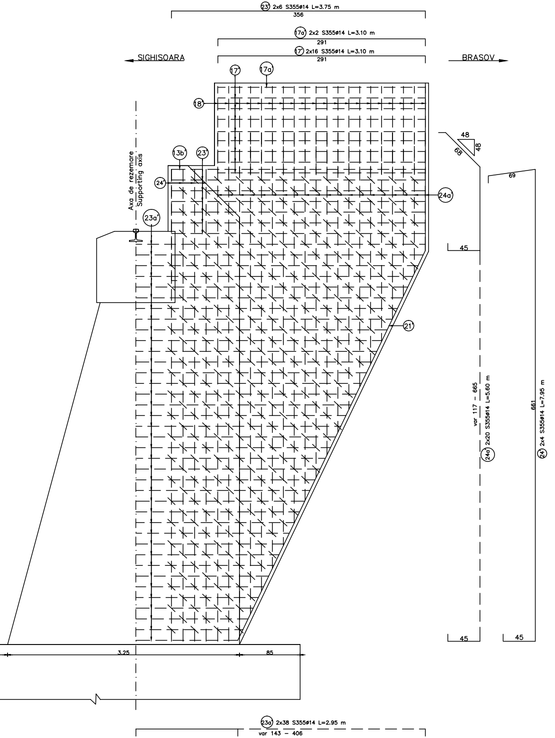
16b' 2x2 S355ø16 L=4.15 m
291
16' 2x6 S345ø16 L=3.70 m
291
30
30
103
16a' 2x7 S345ø14 L=3.10 m
291
13b' 2x6 S355ø16 L=7.40 m
356
19x15⁵=291
156
BRASOV
SIGHISOARA
16'
16a'
19'
16c'
20'
14'
15'
13b'
19'
22a'
22'
20'
Axa de rezemare
Supporting axis
69
165
45
45
45
668
22a' 2x4 S355ø14 L=8.00 m
22' 2x20 S355ø14 L=5.05 m
var 712 – 165
21'
22b'
15 15 15 15 15
15 15 15 15
21' 2x6 S345ø16 L=8.95 m
606
22b' 2x4 S355ø14 L=5.40 m
519
22c'
103
20a'
20' 2x6 S355ø14 L=4.10 m
var 406 – 374
19' 2x7 S355ø14 L=3.75 m
356
20a' 2x32 S355ø14 L=4.50 m
var 540 – 316
14' 2x20 S355ø12 L=2.35 m
136
27
52
22
115
15' 2x20 S355ø12 L=1.55 m

SECTIUNE E'–E' / E'–E' SECTION
Scara/Scale 1:20



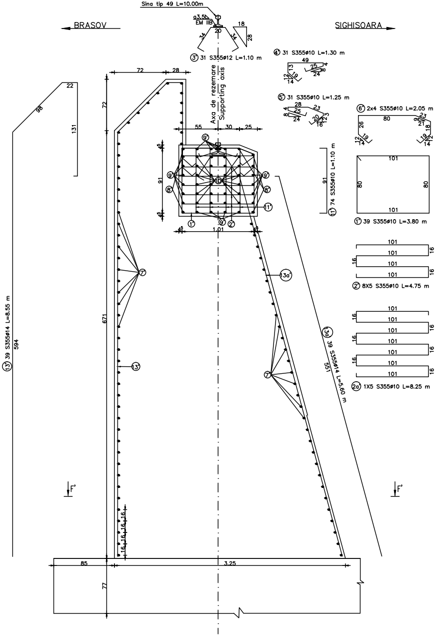
D'
C'
17a'
17'
16'
16b'
14'
18'
16a
15'
16
123
123
18' 2x20 S355ø12 L=2.85 m
19'
23'
22'
24a'
20'
22b'
24'
25'
20a'
23a'
22c' 2x8 S355ø14 L=2.80 m
var 46 – 466
22c'
21'
71
25' 2x344 S355ø12 L=0.80 m
D'
C'
140

VEDERE C'–C' / C'–C' VIEW
Scara/Scale 1:20



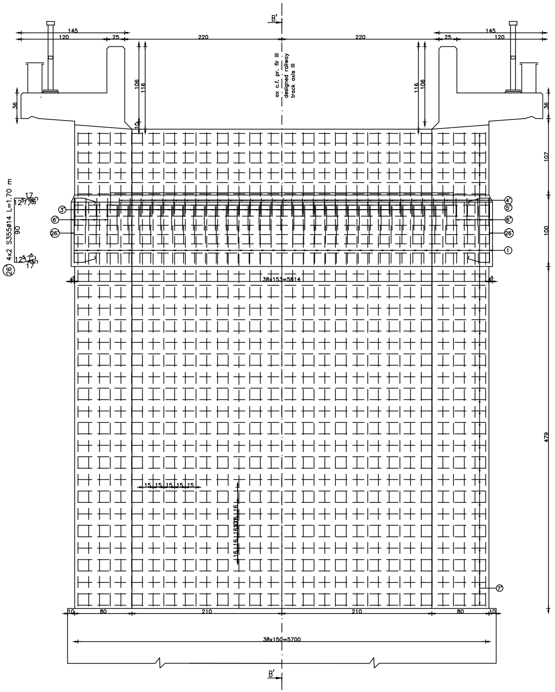
㉓' 2x6 S355ø14 L=3.75 m
356
17a' 2x2 S355ø14 L=3.10 m
291
⑰' 2x16 S355ø14 L=3.10 m
291
SIGHISOARA
BRASOV
⑰'
17a'
⑱'
13b'
㉓'
24'
24a'
23a'
Axa de rezemare
Supporting axis
48
48
68
69
45
21'
var 117 – 665
24a' 2x20 S355ø14 L=5.60 m
661
24' 2x4 S355ø14 L=7.95 m
45
45
3.25
85
23a' 2x38 S355ø14 L=2.95 m
var 143 – 406

SECTIUNE TRANSVERSALA B'–B'
B'–B' SECTION CROSS SECTION
Scara/Scale 1:20

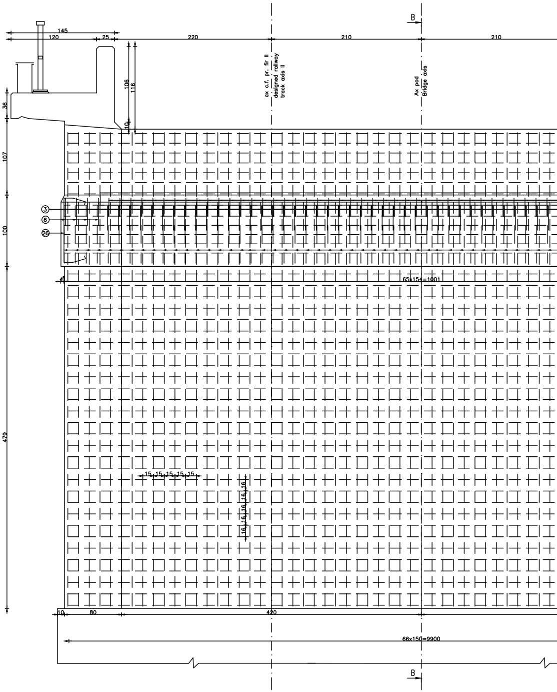


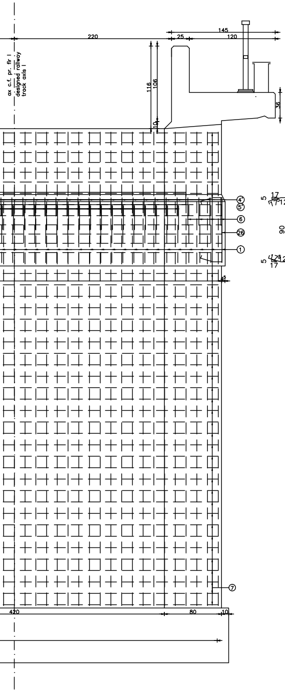
Sina tip 49 L=10.00m
a3.5
EM IIB
20
34
34
18
28
③' 31 S355ø12 L=1.10 m
④' 31 S355ø10 L=1.30 m
49
13
25
4
12
19
14
24
8
⑤' 31 S355ø10 L=1.25 m
28
23
4
25
8
24
20
3
12
16
⑥' 2x4 S355ø10 L=2.05 m
80
23
9
21
26
18
12
19
14
19
12
14
BRASOV
SIGHISOARA
72
28
72
Axa de rezemare
Supporting axis
55
30
25
98
22
131
⑨'
⑨'
⑨'
⑨'
⑩'
⑧'
⑧'
⑪'
①'
②'
4.5
91
4.5
4.5
1.01
4.5
91
⑪' 74 S355ø10 L=1.10 m
101
80
80
101
①' 39 S355ø10 L=3.80 m
101
101
101
101
16
16
16
②' 8X5 S355ø10 L=4.75 m
101
101
101
101
101
101
101
16
16
16
16
16
16
2a' 1X5 S355ø10 L=8.25 m
⑦'
⑦'
13a'
13a' 39 S355ø14 L=5.60 m
551
671
⑬'
⑬' 39 S355ø14 L=8.55 m
594
16
16
16
16
F'
F'
85
3.25
77

ELEVATIE A'–A' / A'–A' ELEVATION
Scara/Scale 1:20

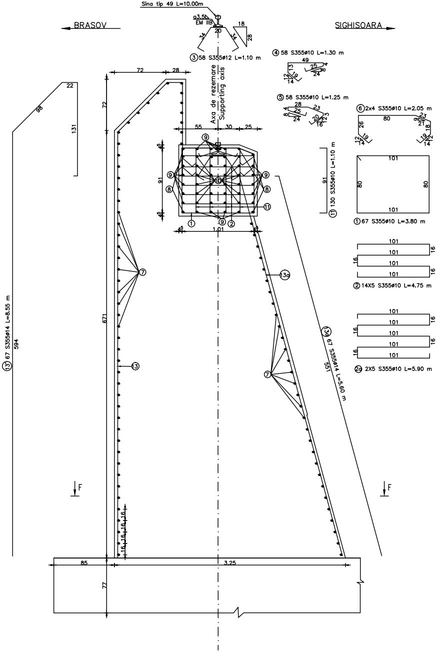

B'
145
120
25
220
220
25
145
120
106
116
116
106
36
36
ax c.f. pr. fir III
designed railway
track axis III
10
107
100
479
4x2 S355ø14 L=1.70 m
17
12⁵
17⁵
5
90
12⁵
17
5
17
5
26'
3'
6'
26'
4'
5'
6'
26'
1
4⁵
38x153=5814
4⁵
15 15 15 15 15
16 16 16 16 16 16
7'
10
80
210
210
80
10
38x150=5700
B'

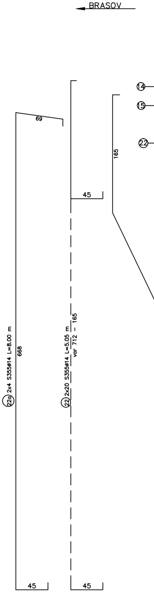
ELEVATIE A–A / A–A ELEVATION
Scara/Scale 1:20


B
145
120
25
220
210
210
106
116
36
ax c.f. pr. fir II
designed railway
track axis II
Ax pod
Bridge axis
10
107
100
479
3
6
26
4⁵
65x154=1001
15 15 15 15 15
16 16 16 16 16 16
10
80
420
66x150=9900
B


ax c.f. pr. fir I
designed railway track axis I
220
145
25
120
116
106
10
36
④
⑤
⑥
㉖
①
⑦
5
17
17
12
90
5
17
12
5
4x2 S355ø14 L=1.70 m
45
420
80
10

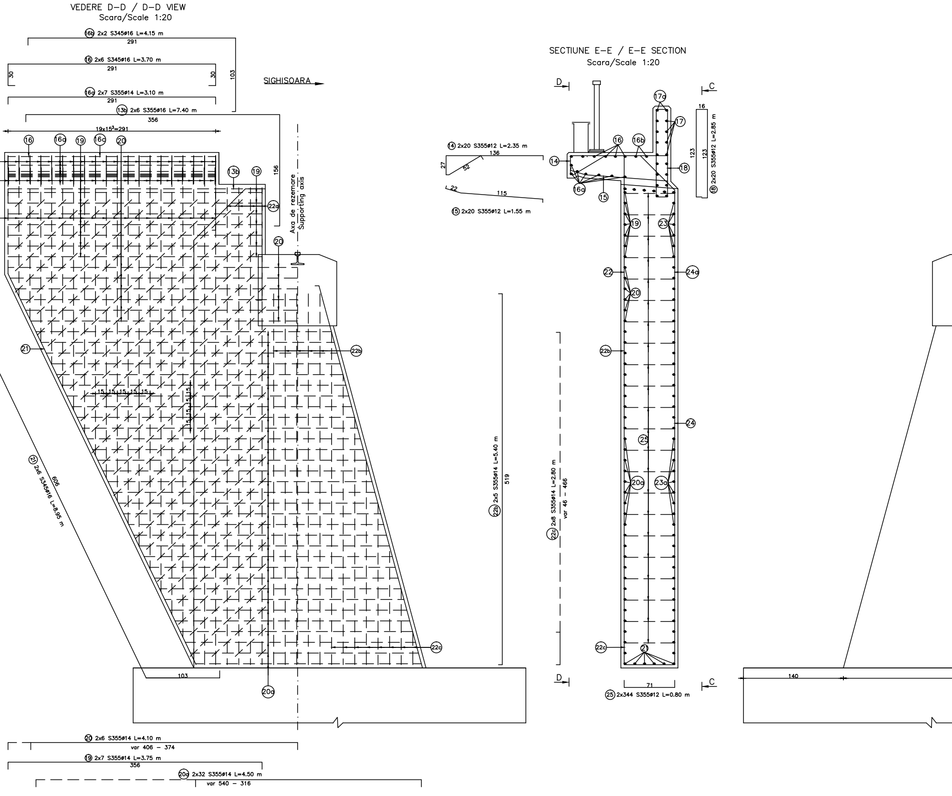
SECTIUNE TRANSVERSALA B-B
B-B SECTION CROSS SECTION
Scara/Scale 1:20


Sina tip 49 L=10.00m
g3.5b
EM IIB
BRASOV
SIGHISOARA
③58 S355ø12 L=1.10 m
20
34
34
18
28
④ 58 S355ø10 L=1.30 m
49
13
12
19
14
25
24
⑤ 58 S355ø10 L=1.25 m
28
25
24
23
20
16
⑥2x4 S355ø10 L=2.05 m
80
26
12
19
14
23
21
18
12
14
Axa de rezemare
Supporting axis
72
28
72
55
30
25
22
98
131
⑨
⑩
⑧
⑪
①
②
91
45
1.01
⑪ 130 S355ø10 L=1.10 m
91
101
80
80
101
①67 S355ø10 L=3.80 m
101
16
② 14X5 S355ø10 L=4.75 m
②a 2X5 S355ø10 L=5.90 m
⑬a
⑦
⑬
⑬' 67 S355ø14 L=8.55 m
594
671
⑬a 67 S355ø14 L=5.60 m
551
F
F
16
85
3.25
77


BRASOV
⑭
⑮
㉒
69
165
45
㉒a 2x4 S355ø14 L=8.00 m
668
㉒ 2x20 S355ø14 L=5.05 m
var 712 - 165
45
45

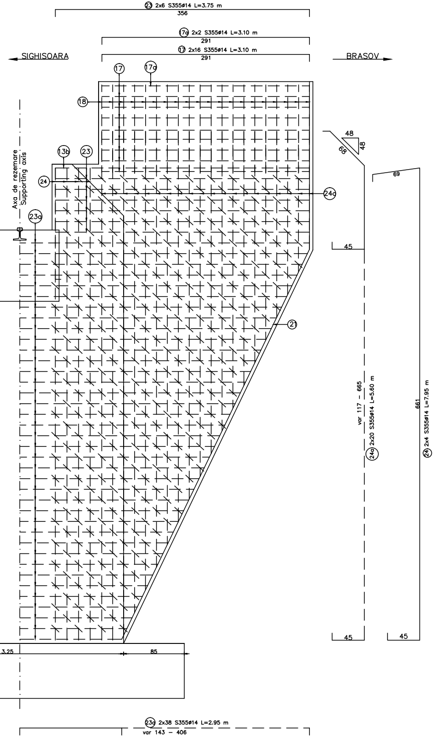
VEDERE D-D / D-D VIEW
Scara/Scale 1:20

SECTIUNE E-E / E-E SECTION
Scara/Scale 1:20



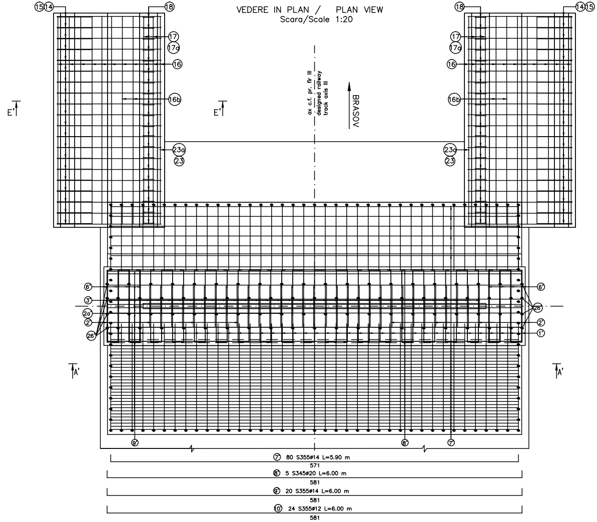
(16b) 2x2 S345ø16 L=4.15 m
291
(16) 2x6 S345ø16 L=3.70 m
291
30
30
103
(16a) 2x7 S355ø14 L=3.10 m
291
(13b) 2x6 S355ø16 L=7.40 m
356
SIGHISOARA
19x15³=291
16
16a
19
16c
20
13b
19
156
22a
Axa de rezemare
Supporting axis
20
22b
21
15 15 15 15 15
15 15 15 15
(21) 2x6 S345ø16 L=8.95 m
606
(22b) 2x5 S355ø14 L=5.40 m
519
22c
103
20a
(20) 2x6 S355ø14 L=4.10 m
var 406 – 374
(19) 2x7 S355ø14 L=3.75 m
356
(20a) 2x32 S355ø14 L=4.50 m
var 540 – 316
(14) 2x20 S355ø12 L=2.35 m
136
27
52
22
115
(15) 2x20 S355ø12 L=1.55 m
D
C
17a
17
16
16b
14
18
16a
15
16
123
123
(18) 2x20 S355ø12 L=2.85 m
19
23
22
24a
20
22b
24
25
20a
23a
(22c) 2x8 S355ø14 L=2.80 m
var 46 – 466
22c
21
D
C
71
(25) 2x344 S355ø12 L=0.80 m
140

VEDERE C–C / C–C VIEW
Scara/Scale 1:20



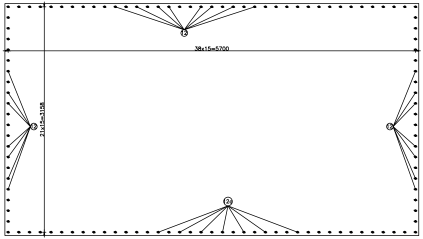
㉓ 2x6 S355ø14 L=3.75 m
356
17a 2x2 S355ø14 L=3.10 m
291
⑰ 2x16 S355ø14 L=3.10 m
291
SIGHISOARA
BRASOV
⑰
17a
⑱
Axa de rezemare
Supporting axis
13b
㉓
㉔
24a
23a
㉑
48
48
68
69
45
var 117 – 665
24a 2x20 S355ø14 L=5.60 m
661
㉔ 2x4 S355ø14 L=7.95 m
45
45
3.25
85
23a 2x38 S355ø14 L=2.95 m
var 143 – 406

VEDERE IN PLAN / PLAN VIEW
Scara/Scale 1:20



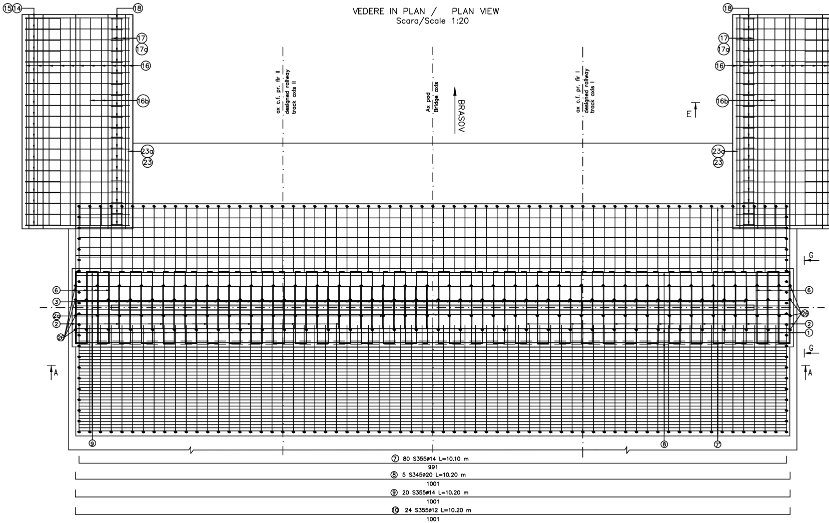
⑮⑭
⑱
⑰
17a
⑯
16b
23a
㉓
E'
E'
ax c.f. pr. fir III
designed railway track axis III
BRASOV
6'
3'
2a'
2'
26'
1'
A'
A'
9'
8'
7'
⑦ 80 S355ø14 L=5.90 m
571
⑧ 5 S345ø20 L=6.00 m
581
⑨ 20 S355ø14 L=6.00 m
581
⑩ 24 S355ø12 L=6.00 m
581

VEDERE F'–F' / F'–F' VIEW
Scara/Scale 1:20



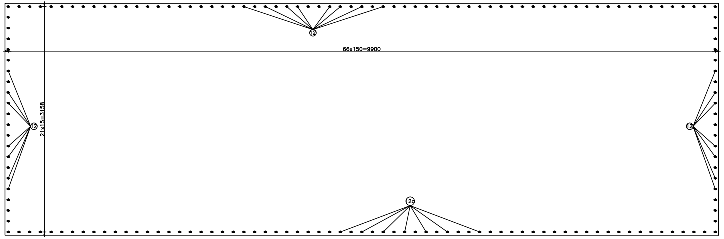
⑫
38x15=5700
21x15=3158
⑫
⑫
12a

VEDERE IN PLAN / PLAN VIEW
Scara/Scale 1:20



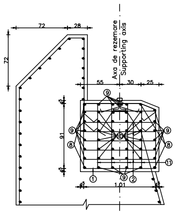
⑮⑭
⑱
⑰
⑰a
⑯
⑯b
㉓a
㉓
ax c.f. pr. fir II
designed railway track axis II
Ax pod
Bridge axis
BRASOV
ax c.f. pr. fir I
designed railway track axis I
E
G
A
⑥
③
②a
②
㉖
①
⑨
⑧
⑦
⑦ 80 S355ø14 L=10.10 m
991
⑧ 5 S345ø20 L=10.20 m
1001
⑨ 20 S355ø14 L=10.20 m
1001
⑩ 24 S355ø12 L=10.20 m
1001

VEDERE F-F / F-F VIEW
Scara/Scale 1:20



⑫
66x150=9900
21x15=3158
⑫
⑫
⑫a

VEDERE G-G / G-G VIEW
Scara/Scale 1:20



72
28
72
Axa de rezemare
Supporting axis
55
30
25
⑨
45
91
45
⑨
⑧
⑩
⑨
⑧
⑪
①
⑨
②
45
1.01
45

EXTRAS DE ARMATURA PENTRU O CULEE LINIA I si II TABLE FOR REINFORCEMENTS FOR SINGLE ABUTMENT RAILWAY TRACK I AND II								
				S355			S345	
Marca	Diametru	Lung. / [m]	Nr. buc	ø10	ø12	ø14	ø16	ø20
1	10	3.80	67	254.60				
2	10	4.75	70	332.50				
2a	10	5.90	10	59.00				
3	12	1.10	58		63.80			
4	10	1.30	58	75.40				
5	10	1.25	58	72.50				
6	10	2.05	8	16.40				
7	14	10.10	80			808.00		
8	20	10.20	5					51
9	14	10.20	20			204.00		
10	12	10.20	24		244.80			
11	10	1.10	130	143.00				
13	14	8.55	67			672.85		
13a	14	5.60	67			375.20		
13b	16	7.40	12				88.80	
14	12	2.35	40		94.00			
15	12	1.55	40		62.00			
16	16	3.70	12				44.40	
16a	16	4.15	14				58.10	
16b	14	3.10	4			12.40		
17	14	3.10	32			99.20		
17a	14	3.10	4			12.40		
18	12	2.85	40		114.00			
19	14	3.75	14			52.50		
20	14	4.10	12			49.20		
20a	14	4.50	64			288.00		
21	16	8.95	12				107.40	
22	14	5.05	40			202.00		
22a	14	8.00	8			64.00		
22b	14	5.40	10			54.00		
22c	14	2.80	16			44.80		
23	14	3.75	12			45.00		
23a	14	2.95	76			224.20		
24	14	7.95	8			63.60		
24a	14	5.60	40			224.00		
25	12	0.80	688		550.40			
26	14	1.70	12			20.40		
Lungimi totale pe diametre		(m)		953.40	1129.00	3415.75	298.70	51
Masa pe metru liniar		(kg/ml)		0.617	0.888	1.208	1.578	2.466
Masa pe diametre		(Kg)		588.25	1002.55	4126.23	471.35	125.766
Masa pe tip de otel		(Kg)		5717.03			597.11	
Masa totala tablier		(Kg)		6314.14				
Spor		5%		315.71				
				TOTAL 6650 Kg				

TOTAL POD (2 CULEI): 2 x 6650kg=13300.00kg
TOTAL BRIDGE (2 ABUTMENTS): 2 x 6650kg=13300.00kg

EXTRAS DE ARMATURA PENTRU O CULEE LINIA III TABLE FOR REINFORCEMENTS FOR SINGLE ABUTMENT RAILWAY TRACK III								
				S355			S345	
Marca	Diametru	Lung. / [m]	Nr. buc	ø10	ø12	ø14	ø16	ø20
1'	10	3.80	67	254.60				
2'	10	4.75	70	332.50				
2a'	10	8.25	10	82.50				
3'	12	1.10	58		63.80			
4'	10	1.30	58	75.40				
5'	10	1.25	58	72.50				
6'	10	2.05	8	16.40				
7'	14	5.90	80			472.00		
8'	20	6.00	5					30
9'	14	6.00	20			120.00		
10'	12	6.00	24		144.00			
11'	10	1.10	130	143.00				
13'	14	8.55	67			572.85		
13a'	14	5.60	67			375.20		
13b'	16	7.40	12				88.80	
14'	12	2.35	40		94.00			
15'	12	1.55	40		62.00			
16'	16	3.70	12				44.40	
16a'	16	4.15	14				58.10	
16b'	14	3.10	4			12.40		
17'	14	3.10	32			99.20		
17a'	14	3.10	4			12.40		
18'	12	2.85	40		114.00			
19'	14	3.75	14			52.50		
20'	14	4.10	12			49.20		
20a'	14	4.50	64			288.00		
21'	16	8.95	12				107.40	
22'	14	5.05	40			202.00		
22a'	14	8.00	8			64.00		
22b'	14	5.40	10			54.00		
22c'	14	2.80	16			44.80		
23'	14	3.75	12			45.00		
23a'	14	2.95	76			224.20		
24'	14	7.95	8			63.60		
24a'	14	5.60	40			224.00		
25'	12	0.80	688		550.40			
26'	14	1.70	12			20.40		
Lungimi totale pe diametre		(m)		976.90	1028.20	2995.75	298.70	30
Masa pe metru liniar		(kg/ml)		0.617	0.888	1.208	1.578	2.466
Masa pe diametre		(Kg)		602.75	913.04	3618.87	471.35	73.98
Masa pe tip de otel		(Kg)		5134.65			545.33	
Masa totala tablier		(Kg)		5679.98				
Spor		5%		284.00				
				TOTAL 6000 Kg				

TOTAL POD (2 CULEI): 2 x 6000kg=12000.00kg
TOTAL BRIDGE (2 ABUTMENTS): 2 x 6000kg=12000.00kg

Beton: Concrete:	– C30/37 suprastructura/superstructure
Tipul grinzilor: Beams type:	– grinzi metalice sudate/steel welded girders
Otel pentru grinzi: Steel for the beams:	– (OL 37–EP) S275J_3G_3 (EN 10025/2004)
Armatura: Reinforcement:	– S355;S345
Strat de acoperire: Concrete cover	– min. 4cm expunere in aer/air exposed

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NOTA/NOTE

Pentru mentinerea pozitiei corecte in timpul betonarii, se vor monta distantieri minim 4buc./m².
Distantierii trebuie legati cu sarma de carcasa de armatura.

In order to maintain the correct position during concreting, minimum 4pcs./m² distance pieces shall be mounted.
The distance pieces shall be connected to the reinforcing framework, using wire.

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

GUVERNUL ROMANIEI
ROMANIAN GOVERNMENT

PROIECT FINANȚAT DE UNIUNEA EURO
EUROPEAN UNION FINANCED PR

CLIENT / CLIENT

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

ITALFERR GRUPPO FERROVIE DELLO STATO
Joint Venture leader

Scott Wilson

OBERMEYER PLANEN + BERATEN GmbH

TECNIC Consulting Engineers

CONSULTANT / CONSULTANT

			Data Date	Semnătură Signature
Aprobat Approved	Şef proiect Project manager	R. Liuzza		
Aprobat Approved	Coordonator Secţiune 1 Section 1 Coordinator	C. Gambelli		
Verificat Checked	Expert Cheie Checking Expert	V. Kallidromitis		

SUBCONTRACTANT / SUBCONTRACTOR

AREX COMPANY

Aprobat Approved	Responsabil Subconsultant Subconsultant Responsible	A.Stanciu - Dinulescu	02.2012	
Întocmit Elaborated	Proiectant Designer	Mihai Ady Nicolae	02.2012	

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

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

Faza / Phase:
D.E. / E.D.

Denumire desen / Drawing Title :

POD Km.270+262.472 /PLAN ARMARE CULEI
BRIDGE Km.270+262.472 /ABUTMENTS REINFORCEMENT PLAN

Codificare / Codification System	Scara / Scale 1:20	LOT / LOT	Nr. / No 01 / 01
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594x5300