LEGENDA/LEGEND

NSS	nivel superior sina top of rail
h	suprainaltarea caii, in mm cant, in mm
AR	aliniament-racordare, punctul de trecere din aliniament in curba progresiva tangent to spiral, transition point from tangent to spiral
RC	racordare-curba, punctul de trecere din curba progresiva in curba circulara spiral to curve, transition point from spiral to circular curve
CR	curba-racordare, punctul de trecere din curba circulara in curba progresiva curve to spiral, transition point from circular curve to spiral
RA	racordare-aliniament, punctul de trecere din curba progresiva in aliniament spiral to tangent, transition point from spiral curve to tangent
Ti	tangenta de intrare point of change from tangent to circular curve
Te	tangenta de iesire point of change from circular curve to tangent
TC	punct de tangenta comuna intre doua curbe circulare common tangent point between two circular curves
R	raza curbei circulare, in m radius of circular curve, in m
T	tangenta curbei circulare, in m tangent of circular curve, in m
B	bisectoarea curbei circulare, in m bisector of circular curve, in m
C	lungimea curbei circulare, in m length of circular curve, in m
LR	lungimea curbei progresive, in m length of spiral, in m
Lh	lungimea rampei suprainaltarii, in m cant ramp length, in m
U	unghiul total de abatere, in grade centesimale total deflection angle, in centesimal degrees
Rv	raza curbei de racordare in plan vertical, in m radius of vertical curve, in m
Bv	bisectoarea curbei de racordare in plan vertical, in m bisector of vertical curve, in m
Tv	tangenta curbei de racordare din plan vertical, in m tangent of vertical curve, in m

CC = Cota capac camin / Manhole cover elevation

CT = Cota fund tub dren / Pipe bottom of collecting pipeline

DN = Diametru nominal tub de dren / Nominal diameter of collecting pipeline

⊕	Camin/Manhole
⊕	Camin cu schimbare de panta/Manhole with change of slope
◉	Camin cu schimbare de diametru sau diametru si panta/ Manhole with change of DN or DN and slope
▯	Camin/Manhole
- - -	Teava metalica de protectie / Metal pipe protection
— — —	Dren / Drain pipe
— — —	Fund sant de beton / Concrete ditch bottom

Acest plan anuleaza si inlocuieste planul nr. PT.03.01.22.SU.201 - 01/01
elaborat la data 01.2013
This layout plan canceled and replaced layout plan no. PT.03.01.22.SU.201 - 01/01
prepared on 01.2013

Verificator / Expert Checker / Expert	Cerința Requirement	Semnatura Signature	Referat / Expertiza Report / Expertise

CHIRICA C. ANTON

BAICU D. MARIN Nr. 06628

European Investment Bank

MINISTERUL TRANSPORTURILOR

BENEFICIAR / BENEFICIARY :

COMPANIA NAȚIONALĂ DE CĂI FERATE "CFR" SA

PROIECTANT / DESIGNER: PÖYRY			Data Date	Semnatura Signature
Aprobat Approved	Şef de echipă Team leader	C. Teodorescu	01.2013	
Verificat Checked	Expert Cheie Key Expert	L. Mărculescu	01.2013	
Subcontractant / Subcontractor VIOTOP				
Aprobat Approved	Adjunct Şef de echipă Deputy Team leader	A.M. Baicu	01.2013	
Proiectat Designed	Inginer Engineer	I. Branciu	01.2013	

"Reabilitarea liniei c.f. Frontier ă - Curtici - Simeria, parte componentă a coridorului IV Pan - European pentru circula ția trenurilor cu viteză maximă de 160 km/h"
Tronsonul 3: Gurasada - Simeria
"Rehabilitation of the Railway Line Border - Curtici - Simeria, component Part of the IV Pan - European Corridor for the Trains Circulation with maximum speed of 160 km/h"
Section 3: Gurasada - Simeria

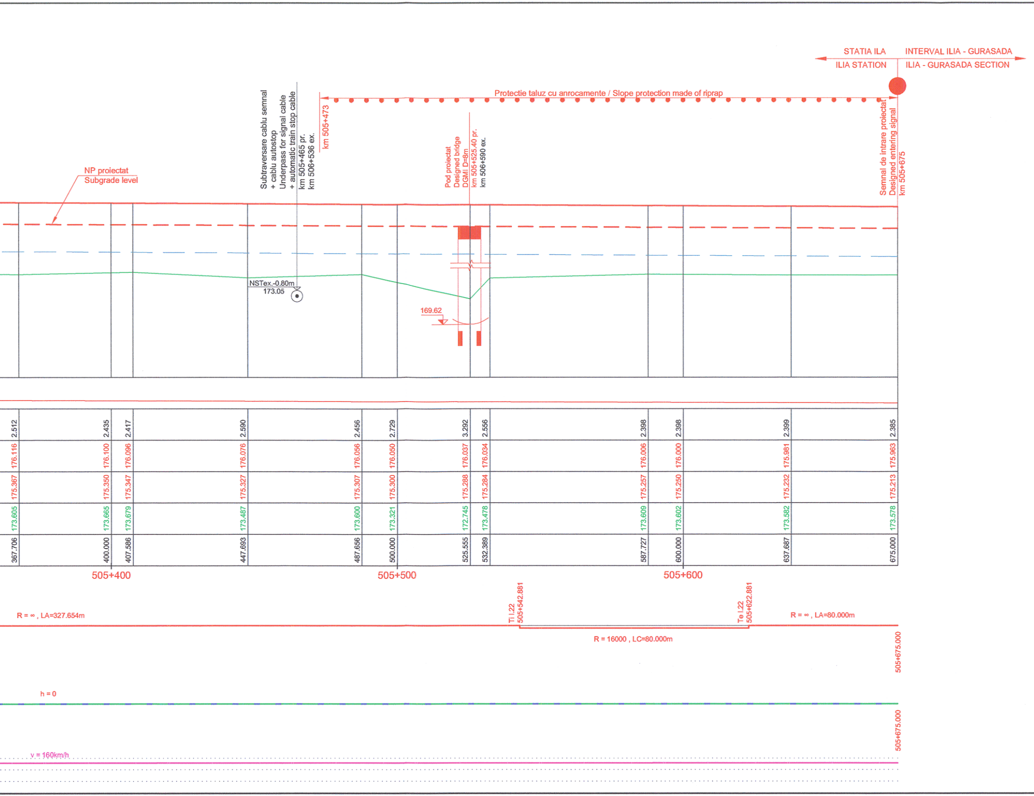
Project 9i
35311.1

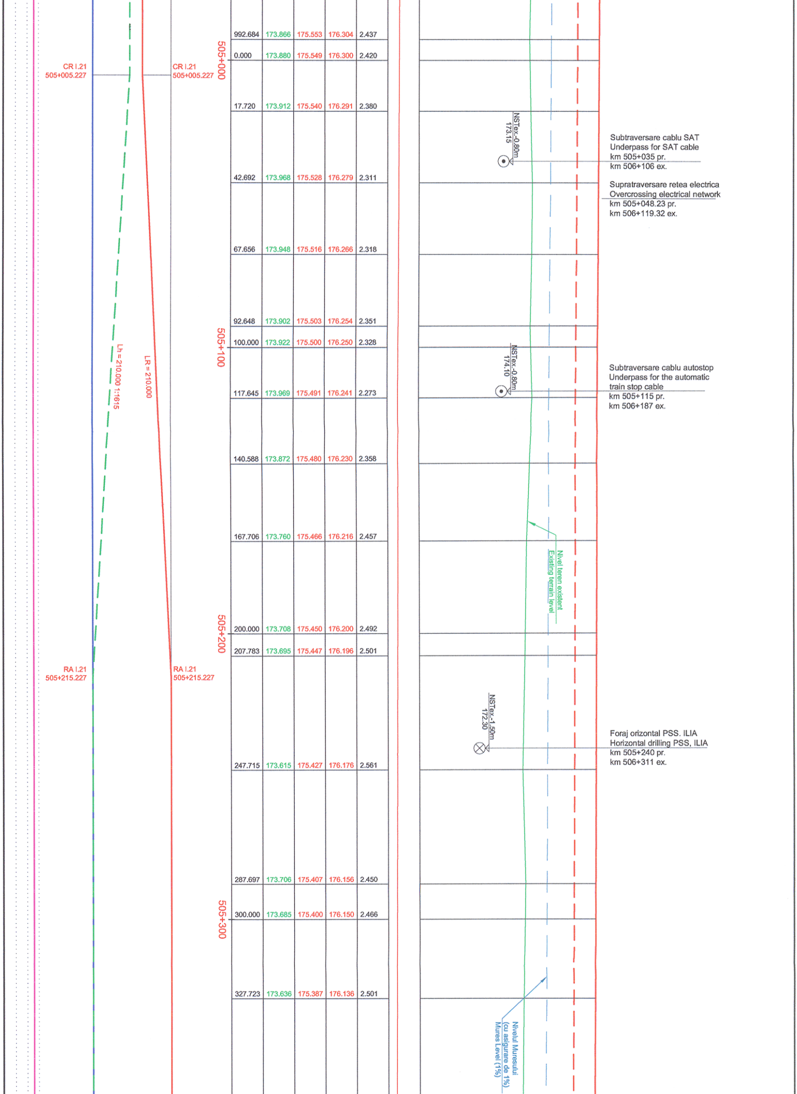
Faza / Phase:
PTH+CS / TD+TS

Denumire desen / Drawing name:

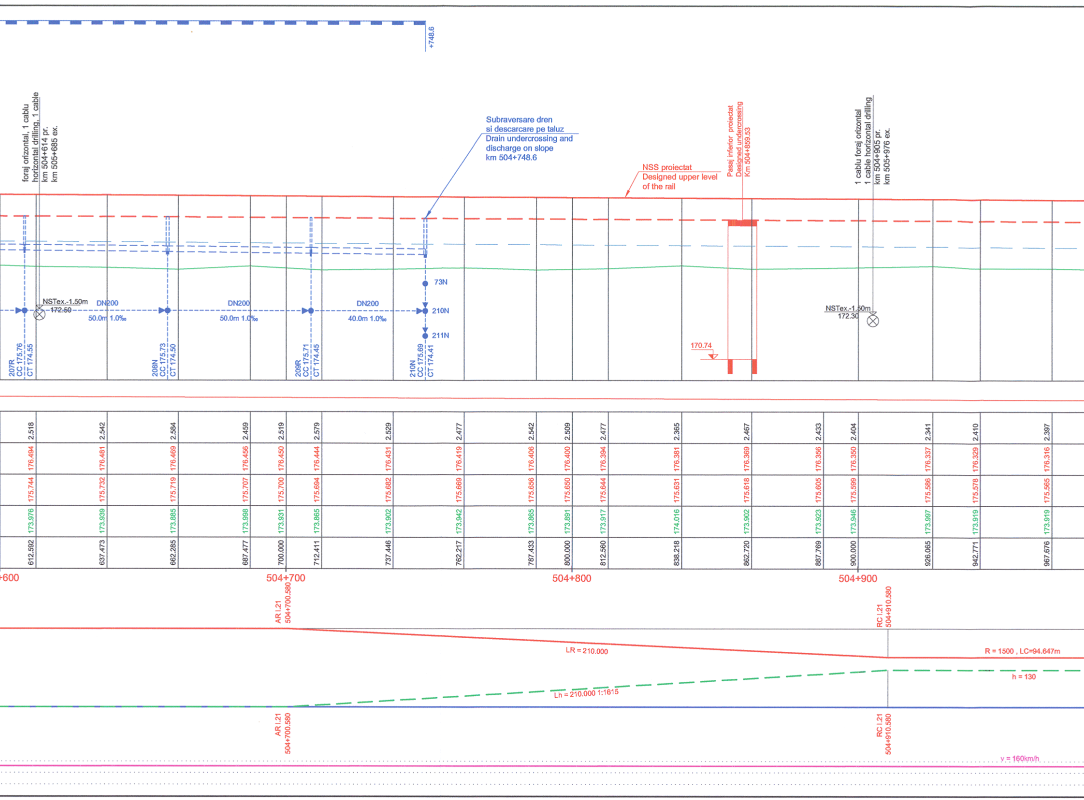
Profil longitudinal fir I - Stația Ilia / Ilia Station - Longitudinal profile track I
km 502+520.00 - km 505+675.00

Scara / Scale	Revizia / Revision	Cod desen / Drawing Code	Nr / No
1:1000 ; 1:100	1/05.2013	PT.03.01.22.SU.201	01/01


STATIA ILA
ILIA STATION
INTERVAL ILIA - GURASADA
ILIA - GURASADA SECTION
Protectie taluz cu anrocamente / Slope protection made of riprap
km 505+473
Semnal de intrare proiectat
Designed entering signal
km 505+675
Subtraversare cablu semnal
+ cablu autostop
Underpass for signal cable
+ automatic train stop cable
km 505+465 pr.
km 506+536 ex.
Pod proiectat
Designed bridge
DGMI D=8m
km 505+525.40 pr.
km 506+590 ex.
NP proiectat
Subgrade level
NSTex.-0.80m
173.05
169.62
2.512 176.116 175.367 173.605 367.706
2.435 176.100 175.350 173.665 400.000
2.417 176.096 175.347 173.679 407.586
2.590 176.076 175.327 173.487 447.693
2.456 176.056 175.307 173.600 487.656
2.729 176.050 175.300 173.321 500.000
3.292 176.037 175.288 172.745 525.555
2.556 176.034 175.284 173.478 532.389
2.398 176.006 175.257 173.609 587.727
2.398 176.000 175.250 173.602 600.000
2.399 175.981 175.232 173.582 637.687
2.385 175.963 175.213 173.578 675.000
505+400
505+500
505+600
R = ∞ , LA=327.654m
Ti l.22
505+542.881
Te l.22
505+622.881
R = ∞ , LA=80.000m
R = 16000 , LC=80.000m
505+675.000
h = 0
505+675.000
v = 160km/h

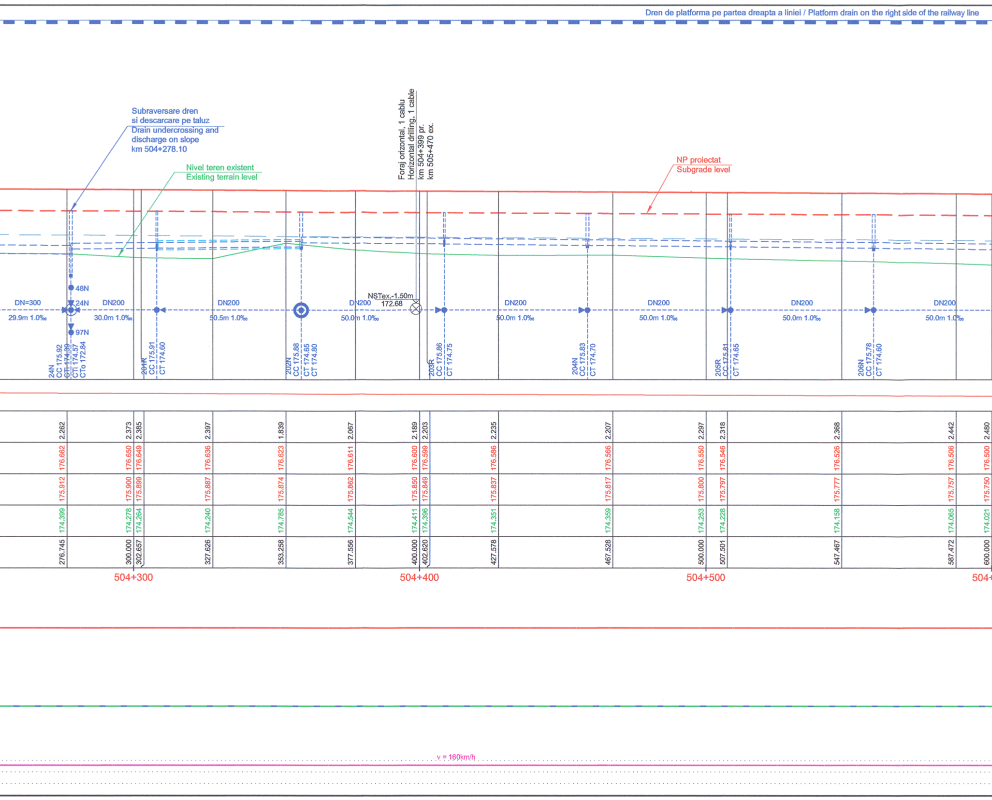

CR I.21
505+005.227
CR I.21
505+005.227
Lh = 210.000 1:1615
LR = 210.000
RA I.21
505+215.227
RA I.21
505+215.227
505+000
505+100
505+200
505+300
NSTex.-0.80m
173.15
Subtraversare cablu SAT
Underpass for SAT cable
km 505+035 pr.
km 506+106 ex.
Supratraversare retea electrica
Overcrossing electrical network
km 505+048.23 pr.
km 506+119.32 ex.
NSTex.-0.80m
174.10
Subtraversare cablu autostop
Underpass for the automatic
train stop cable
km 505+115 pr.
km 506+187 ex.
Nivel teren existent
Existing terrain level
NSTex.-1.50m
172.30
Foraj orizontal PSS. ILIA
Horizontal drilling PSS, ILIA
km 505+240 pr.
km 506+311 ex.
Nivelul Muresului
(cu asigurare de 1%)
Mures Level (1%)

992.684	173.866	175.553	176.304	2.437
0.000	173.880	175.549	176.300	2.420
17.720	173.912	175.540	176.291	2.380
42.692	173.968	175.528	176.279	2.311
67.656	173.948	175.516	176.266	2.318
92.648	173.902	175.503	176.254	2.351
100.000	173.922	175.500	176.250	2.328
117.645	173.969	175.491	176.241	2.273
140.588	173.872	175.480	176.230	2.358
167.706	173.760	175.466	176.216	2.457
200.000	173.708	175.450	176.200	2.492
207.783	173.695	175.447	176.196	2.501
247.715	173.615	175.427	176.176	2.561
287.697	173.706	175.407	176.156	2.450
300.000	173.685	175.400	176.150	2.466
327.723	173.636	175.387	176.136	2.501

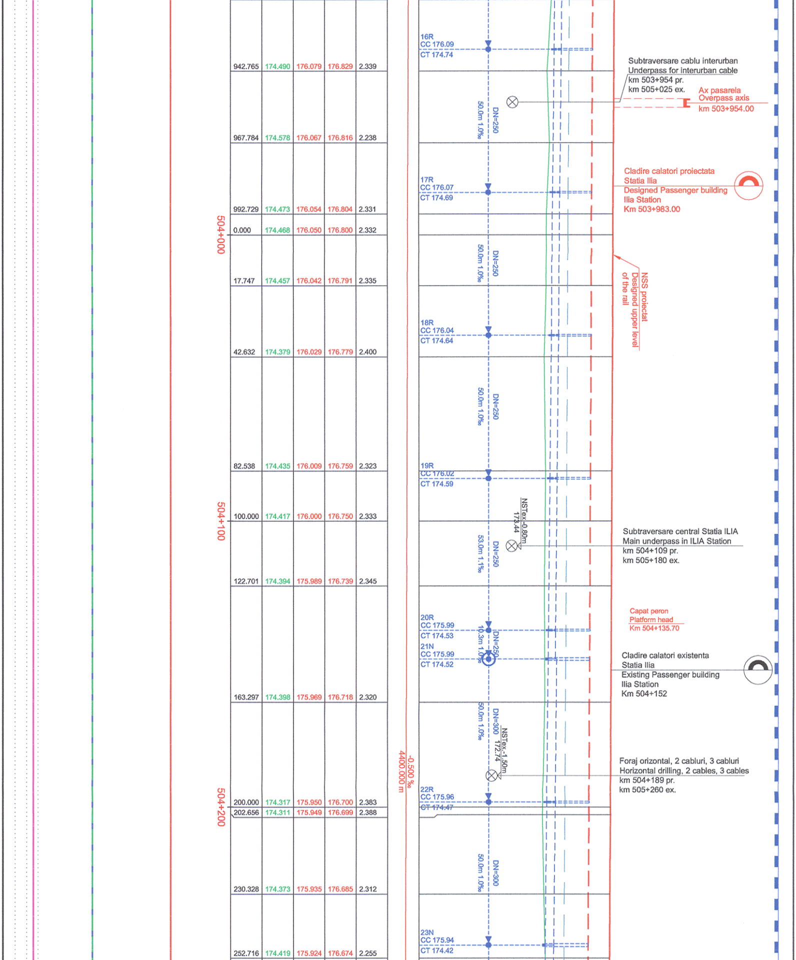

+748.6
foraj orizontal, 1 cablu
horizontal drilling, 1 cable
km 504+614 pr.
km 505+685 ex.
Subraversare dren
si descarcare pe taluz
Drain undercrossing and
discharge on slope
km 504+748.6
NSS proiectat
Designed upper level
of the rail
Pasaj inferior proiectat
Designed undercrossing
Km 504+859.53
1 cablu foraj orizontal
1 cable horizontal drilling
km 504+905 pr.
km 505+976 ex.
NSTex.-1.50m
172.50
DN200
50.0m 1.0‰
DN200
50.0m 1.0‰
DN200
40.0m 1.0‰
73N
210N
211N
NSTex.-1.50m
172.30
170.74
207R
CC 175.76
CT 174.55
208N
CC 175.73
CT 174.50
209R
CC 175.71
CT 174.45
210N
CC 175.69
CT 174.41
+600
504+700
504+800
504+900
AR I.21
504+700.580
RC I.21
504+910.580
LR = 210.000
R = 1500 , LC=94.647m
h = 130
Lh = 210.000 1:1615
AR I.21
504+700.580
RC I.21
504+910.580
v = 160km/h

2.518	2.542	2.584	2.459	2.519	2.579	2.529	2.477	2.542	2.509	2.477	2.365	2.467	2.433	2.404	2.341	2.410	2.397
176.494	176.481	176.469	176.456	176.450	176.444	176.431	176.419	176.406	176.400	176.394	176.381	176.369	176.356	176.350	176.337	176.329	176.316
175.744	175.732	175.719	175.707	175.700	175.694	175.682	175.669	175.656	175.650	175.644	175.631	175.618	175.605	175.599	175.586	175.578	175.565
173.976	173.939	173.885	173.998	173.931	173.865	173.902	173.942	173.865	173.891	173.917	174.016	173.902	173.923	173.946	173.997	173.919	173.919
612.592	637.473	662.285	687.477	700.000	712.411	737.446	762.217	787.433	800.000	812.560	838.218	862.720	887.769	900.000	926.065	942.771	967.676

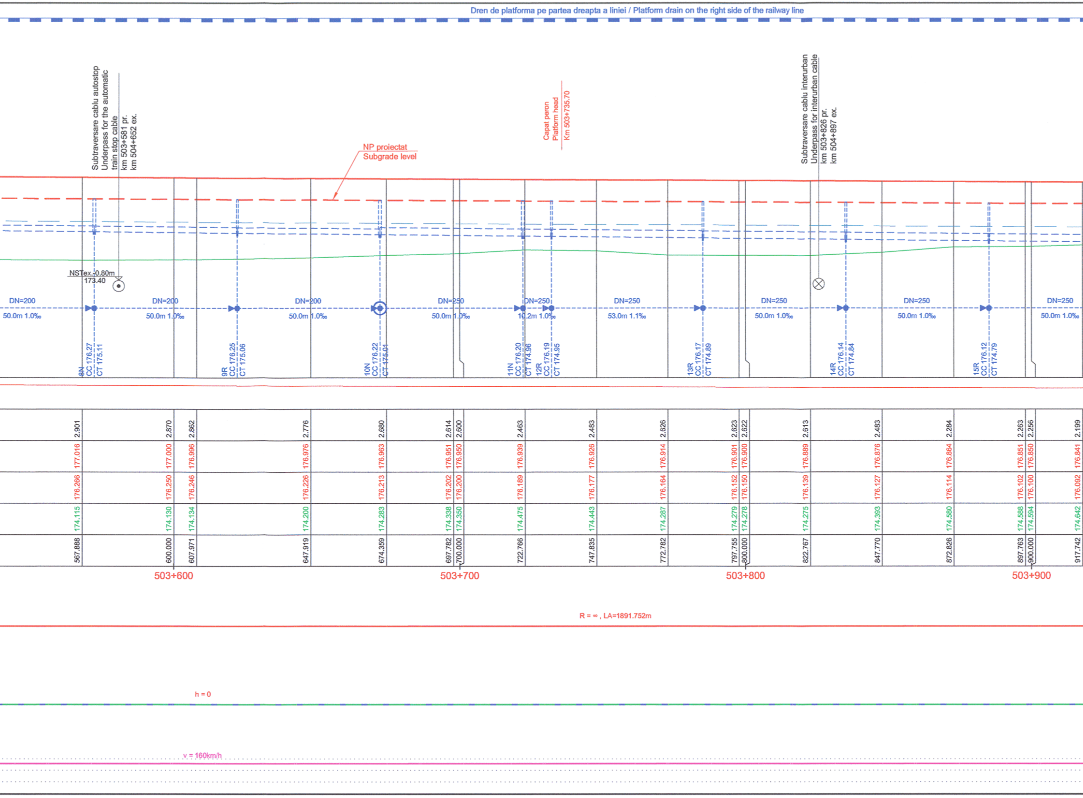
Dren de platforma pe partea dreapta a liniei / Platform drain on the right side of the railway line


Subraversare dren
si descarcare pe taluz
Drain undercrossing and
discharge on slope
km 504+278.10
Nivel teren existent
Existing terrain level
Foraj orizontal, 1 cablu
Horizontal drilling, 1 cable
km 504+399 pr.
km 505+470 ex.
NP proiectat
Subgrade level
48N
24N
97N
DN=300
29.9m 1.0‰
DN200
30.0m 1.0‰
DN200
50.5m 1.0‰
DN200
50.0m 1.0‰
NSTex.-1.50m
172.68
DN200
50.0m 1.0‰
DN200
50.0m 1.0‰
DN200
50.0m 1.0‰
DN200
50.0m 1.0‰
24N
CC 175.92
CTi 174.39
CTi 174.57
CTo 172.84
204R
CC 175.91
CT 174.60
202N
CC 175.88
CT 174.65
CT 174.80
203R
CC 175.86
CT 174.75
204N
CC 175.83
CT 174.70
205R
CC 175.81
CT 174.65
206N
CC 175.78
CT 174.60
504+300
504+400
504+500
504+
v = 160km/h

2.262	2.373	2.385	2.397	1.839	2.067	2.189	2.203	2.235	2.207	2.297	2.318	2.368	2.442	2.480
176.662	176.650	176.649	176.636	176.623	176.611	176.600	176.599	176.586	176.566	176.550	176.546	176.526	176.506	176.500
175.912	175.900	175.899	175.887	175.874	175.862	175.850	175.849	175.837	175.817	175.800	175.797	175.777	175.757	175.750
174.399	174.278	174.264	174.240	174.785	174.544	174.411	174.396	174.351	174.359	174.253	174.228	174.158	174.065	174.021
276.745	300.000	302.657	327.626	353.258	377.556	400.000	402.620	427.578	467.528	500.000	507.501	547.467	587.472	600.000

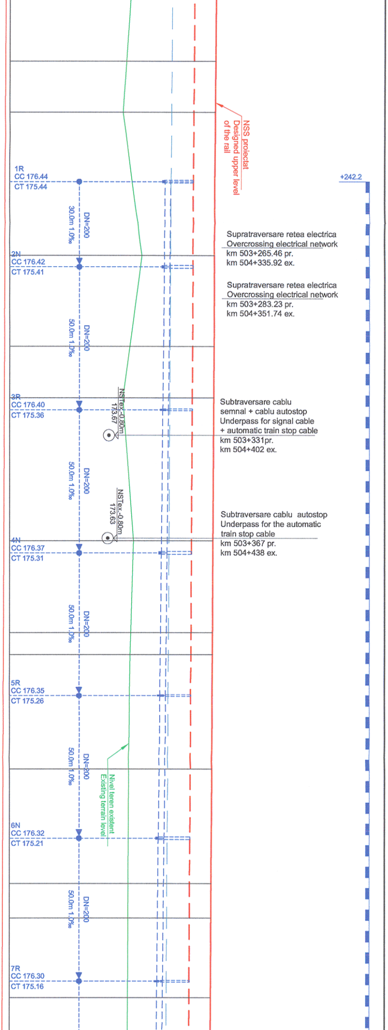

16R
CC 176.09
CT 174.74
Subtraversare cablu interurban
Underpass for interurban cable
km 503+954 pr.
km 505+025 ex.
Ax pasarela
Overpass axis
km 503+954.00
DN=250
50.0m 1.0‰
17R
CC 176.07
CT 174.69
Cladire calatori proiectata
Statia Ilia
Designed Passenger building
Ilia Station
Km 503+983.00
504+000
DN=250
50.0m 1.0‰
NSS proiectat
Designed upper level
of the rail
18R
CC 176.04
CT 174.64
DN=250
50.0m 1.0‰
19R
CC 176.02
CT 174.59
504+100
NSTex.-0.80m
173.44
DN=250
53.0m 1.1‰
Subtraversare central Statia ILIA
Main underpass in ILIA Station
km 504+109 pr.
km 505+180 ex.
Capat peron
Platform head
Km 504+135.70
20R
CC 175.99
CT 174.53
DN=250
10.3m 1.0‰
21N
CC 175.99
CT 174.52
Cladire calatori existenta
Statia Ilia
Existing Passenger building
Ilia Station
Km 504+152
DN=300
50.0m 1.0‰
NSTex.-1.50m
172.74
Foraj orizontal, 2 cabluri, 3 cabluri
Horizontal drilling, 2 cables, 3 cables
km 504+189 pr.
km 505+260 ex.
-0.500 ‰
4400.000 m
504+200
22R
CC 175.96
CT 174.47
DN=300
50.0m 1.0‰
23N
CC 175.94
CT 174.42

942.765	174.490	176.079	176.829	2.339
967.784	174.578	176.067	176.816	2.238
992.729	174.473	176.054	176.804	2.331
0.000	174.468	176.050	176.800	2.332
17.747	174.457	176.042	176.791	2.335
42.632	174.379	176.029	176.779	2.400
82.538	174.435	176.009	176.759	2.323
100.000	174.417	176.000	176.750	2.333
122.701	174.394	175.989	176.739	2.345
163.297	174.398	175.969	176.718	2.320
200.000	174.317	175.950	176.700	2.383
202.656	174.311	175.949	176.699	2.388
230.328	174.373	175.935	176.685	2.312
252.716	174.419	175.924	176.674	2.255


Dren de platforma pe partea dreapta a liniei / Platform drain on the right side of the railway line
Subtraversare cablu autostop
Underpass for the automatic
train stop cable
km 503+581 pr.
km 504+652 ex.
NP proiectat
Subgrade level
Capat peron
Platform head
Km 503+735.70
Subtraversare cablu interurban
Underpass for interurban cable
km 503+826 pr.
km 504+897 ex.
NSTex.-0.80m
173.40
DN=200
50.0m 1.0‰
DN=200
50.0m 1.0‰
DN=200
50.0m 1.0‰
DN=250
50.0m 1.0‰
DN=250
10.2m 1.0‰
DN=250
53.0m 1.1‰
DN=250
50.0m 1.0‰
DN=250
50.0m 1.0‰
DN=250
50.0m 1.0‰
8N
CC 176.27
CT 175.11
9R
CC 176.25
CT 175.06
10N
CC 176.22
CT 175.01
11N
CC 176.20
CT 174.96
12R
CC 176.19
CT 174.95
13R
CC 176.17
CT 174.89
14R
CC 176.14
CT 174.84
15R
CC 176.12
CT 174.79
503+600
503+700
503+800
503+900
R = ∞ , LA=1891.752m
h = 0
v = 160km/h

2.901	2.870	2.862	2.776	2.680	2.614	2.600	2.463	2.483	2.626	2.623	2.622	2.613	2.483	2.284	2.263	2.256	2.199
177.016	177.000	176.996	176.976	176.963	176.951	176.950	176.939	176.926	176.914	176.901	176.900	176.889	176.876	176.864	176.851	176.850	176.841
176.266	176.250	176.246	176.226	176.213	176.202	176.200	176.189	176.177	176.164	176.152	176.150	176.139	176.127	176.114	176.102	176.100	176.092
174.115	174.130	174.134	174.200	174.283	174.338	174.350	174.475	174.443	174.287	174.279	174.278	174.275	174.393	174.580	174.588	174.594	174.642
567.888	600.000	607.971	647.919	674.359	697.782	700.000	722.766	747.835	772.782	797.755	800.000	822.767	847.770	872.826	897.763	900.000	917.742

503+200	200.000	174.075	176.450	177.200	3.125
	217.936	173.957	176.441	177.191	3.234
	268.142	174.629	176.416	177.166	2.537
503+300	300.000	174.202	176.400	177.150	2.948
	317.899	173.962	176.391	177.141	3.179
	367.875	174.332	176.366	177.116	2.784
503+400	400.000	174.239	176.350	177.100	2.861
	407.757	174.216	176.347	177.096	2.880
	447.896	174.160	176.326	177.076	2.916
	487.968	174.154	176.306	177.056	2.902
503+500	500.000	174.148	176.300	177.050	2.902
	527.925	174.135	176.286	177.036	2.902

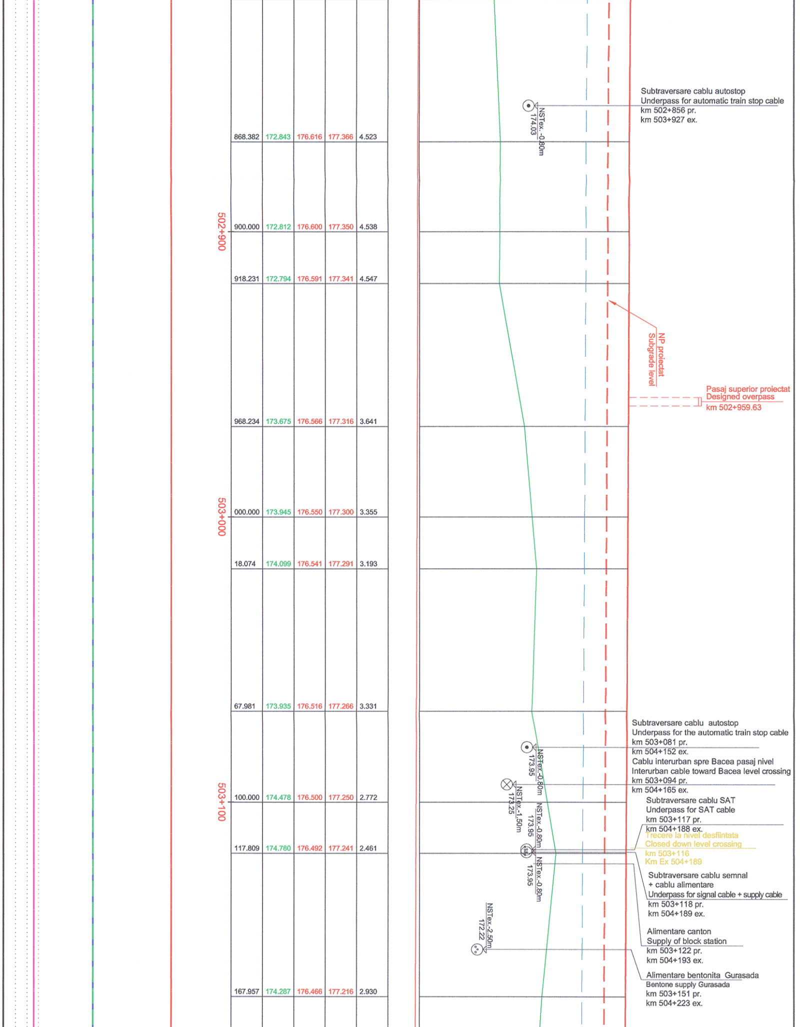

NSS proiectat
Designed upper level
of the rail
+242.2
1R
CC 176.44
CT 175.44
DN=200
30.0m 1.0‰
2N
CC 176.42
CT 175.41
DN=200
50.0m 1.0‰
3R
CC 176.40
CT 175.36
NSTex.-0.80m
173.67
DN=200
50.0m 1.0‰
NSTex.-0.80m
173.63
4N
CC 176.37
CT 175.31
DN=200
50.0m 1.0‰
5R
CC 176.35
CT 175.26
DN=200
50.0m 1.0‰
Nivel teren existent
Existing terrain level
6N
CC 176.32
CT 175.21
DN=200
50.0m 1.0‰
7R
CC 176.30
CT 175.16

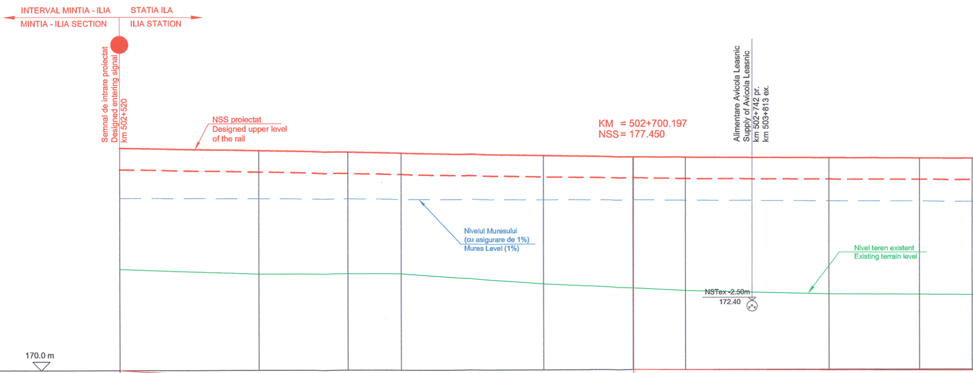
Supratraversare retea electrica
Overcrossing electrical network
km 503+265.46 pr.
km 504+335.92 ex.

Supratraversare retea electrica
Overcrossing electrical network
km 503+283.23 pr.
km 504+351.74 ex.

Subtraversare cablu
semnal + cablu autostop
Underpass for signal cable
+ automatic train stop cable
km 503+331pr.
km 504+402 ex.

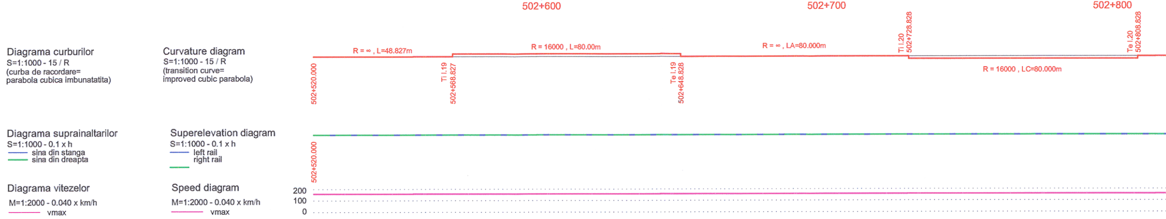
Subtraversare cablu autostop
Underpass for the automatic
train stop cable
km 503+367 pr.
km 504+438 ex.


Subtraversare cablu autostop
Underpass for automatic train stop cable
km 502+856 pr.
km 503+927 ex.
NSTex.-0.80m
174.03
868.382 | 172.843 | 176.616 | 177.366 | 4.523
502+900
900.000 | 172.812 | 176.600 | 177.350 | 4.538
918.231 | 172.794 | 176.591 | 177.341 | 4.547
NP proiectat
Subgrade level
Pasaj superior proiectat
Designed overpass
km 502+959.63
968.234 | 173.675 | 176.566 | 177.316 | 3.641
503+000
000.000 | 173.945 | 176.550 | 177.300 | 3.355
18.074 | 174.099 | 176.541 | 177.291 | 3.193
67.981 | 173.935 | 176.516 | 177.266 | 3.331
Subtraversare cablu autostop
Underpass for the automatic train stop cable
km 503+081 pr.
km 504+152 ex.
NSTex.-0.80m
173.95
Cablu interurban spre Bacea pasaj nivel
Interurban cable toward Bacea level crossing
km 503+094 pr.
km 504+165 ex.
NSTex.-1.50m
173.25
503+100
100.000 | 174.478 | 176.500 | 177.250 | 2.772
Subtraversare cablu SAT
Underpass for SAT cable
km 503+117 pr.
km 504+188 ex.
NSTex.-0.80m
173.95
Trecere la nivel desfiintata
Closed down level crossing
km 503+116
Km Ex 504+189
117.809 | 174.780 | 176.492 | 177.241 | 2.461
Subtraversare cablu semnal
+ cablu alimentare
Underpass for signal cable + supply cable
km 503+118 pr.
km 504+189 ex.
NSTex.-0.80m
173.95
Alimentare canton
Supply of block station
km 503+122 pr.
km 504+193 ex.
NSTex.-2.50m
172.22
Alimentare bentonita Gurasada
Bentone supply Gurasada
km 503+151 pr.
km 504+223 ex.
167.957 | 174.287 | 176.466 | 177.216 | 2.930


INTERVAL MINTIA - ILIA
MINTIA - ILIA SECTION
STATIA ILA
ILIA STATION
Semnal de intrare proiectat
Designed entering signal
km 502+520
NSS proiectat
Designed upper level
of the rail
KM = 502+700.197
NSS = 177.450
Alimentare Avicola Leasnic
Supply of Avicola Leasnic
km 502+742 pr.
km 503+813 ex.
Nivelul Muresului
(cu asigurare de 1%)
Mures Level (1%)
Nivel teren existent
Existing terrain level
NSTex -2.50m
172.40
170.0 m

Profil longitudinal - Firul I
Longitudinal profile - Track I

Declivitati ‰ / Lungimi (m)	Gradient ‰ / Lengths (m)											
		-1.857 ‰ 700.000 m										
Diferente pe verticala (m) intre NSS proiectat si nivel teren existent	Vertical distances (m) between designed NSS and existing terrain level	4.238	4.327	4.264	4.226	4.500	4.595	4.596	4.676	4.777	4.778	4.779
Nivel superior sina - linia proiectata (in curbe pe firul interior)	Top of rail -designed line (in curves on inner rail)	177.785	177.694	177.636	177.601	177.509	177.450	177.450	177.441	177.416	177.400	177.391
Nivel platforma c.f. - linia proiectata	Subgrade level - designed line	177.035	176.944	176.886	176.852	176.759	176.716	176.716	176.691	176.666	176.650	176.641
Nivel teren existent	Existing terrain level	173.547	173.367	173.372	173.375	173.009	172.855	172.854	172.765	172.639	172.622	172.612
Kilometraj	Kilometer position	520.000	568.775	600.000	618.649	668.629	700.000	700.197	718.281	768.467	800.000	818.437


502+600
502+700
502+800
Diagrama curburilor
S=1:1000 - 15 / R
(curba de racordare=
parabola cubica imbunatatita)
Curvature diagram
S=1:1000 - 15 / R
(transition curve=
improved cubic parabola)
R = ∞ , L=48.827m
R = 16000 , L=80.00m
R = ∞ , LA=80.000m
R = 16000 , LC=80.000m
502+520.000
Ti I.19
502+568.827
Te I.19
502+648.828
Ti I.20
502+728.828
Te I.20
502+808.828
Diagrama suprainaltarilor
S=1:1000 - 0.1 x h
sina din stanga
sina din dreapta
Superelevation diagram
S=1:1000 - 0.1 x h
left rail
right rail
502+520.000
Diagrama vitezelor
M=1:2000 - 0.040 x km/h
vmax
Speed diagram
M=1:2000 - 0.040 x km/h
vmax
200
100
0