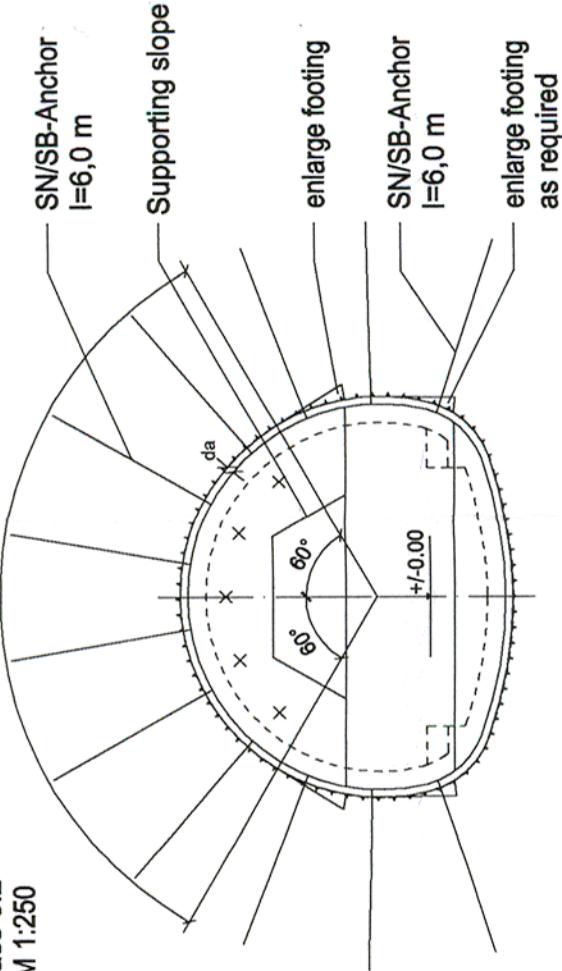
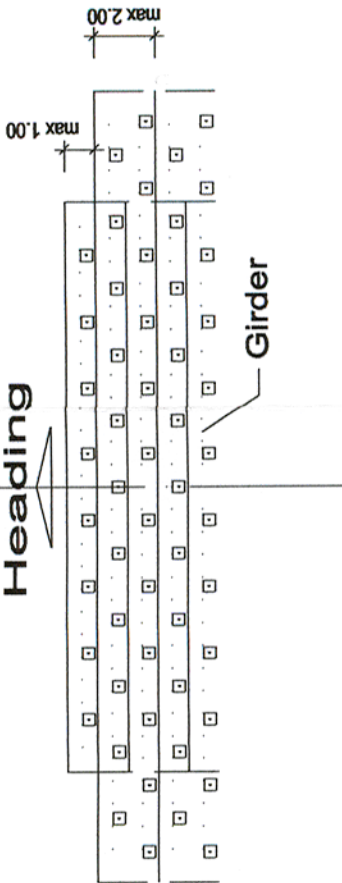


Excavation Class 6.2
Cross Section M 1:250

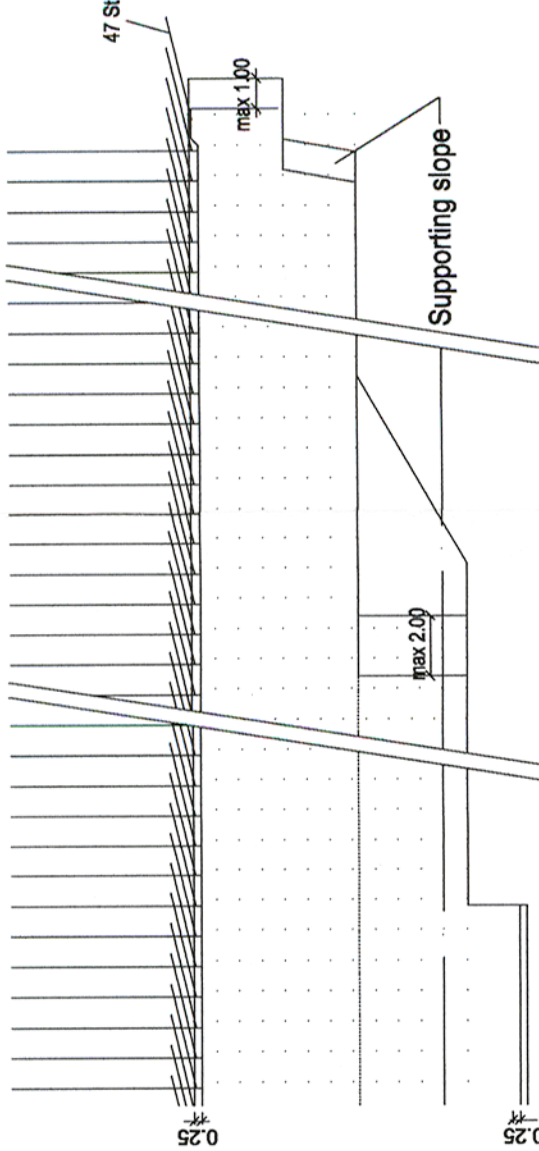
Advance support with spiles



Heading



Execution M 1:250



Longitudinal section M 1:250

1. Crown

- Protruding fuse with spears before each round
- Length of round max. 1,0 m
- with supporting slope and enlarged footing

Reinforcement:

- temporary crown face with shotcrete after each round
- Tunnel face anchors of 8 m as required
- Shotcrete after each round
- Steel fabric mats, steel sets, lattice girder, shotcrete after each round
- Systematic anchoring at second round behind heading after each round

2. Bench:

- Trailing max. 20 m behind Crown

Excavation:

- Length of round max. 2.0 m
- half side, one round ahead

Reinforcement:

- Steel fabric mats, steel sets, lattice girder, shotcrete after each round
- Systematic anchoring at second round behind heading after each round

3. Invert:

- Trailing distance up to 20 m from the face of the bench

Excavation:

- Unsupported round length max. 4 m

Reinforcement:

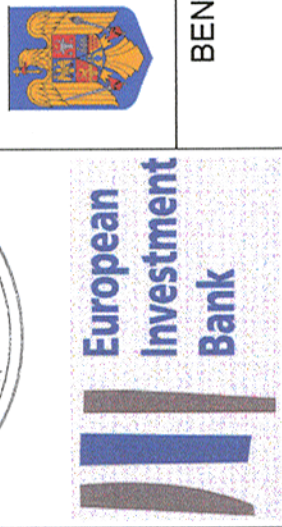
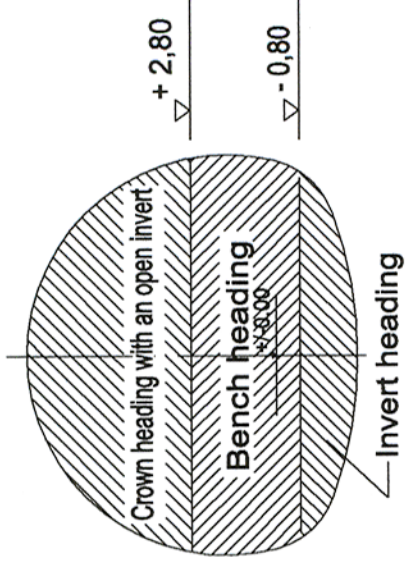
- Steel fabric mats, shotcrete after each round

ORT	Term	UNIT	QUANTITY PER LFM TUNNEL
Crown	Excavation section	m³	53.86
	Steel fabric mats Q257, 2 Layers, A	m²	36.25
	Steel sets, girder Typ 1, e=1,0 m, FS	m	13.94
	Shotcrete da=25 cm	m²	17.74
	Anchor l=6,0 m, SN/SB, 200 kN	St	8.50
	Reinforced shotcrete face 10 cm	m²	38.50
	Tunnel face anchor l=12 m, e=8,0 m	St	as required
Kf Crown-	Spiles with injection drill bott l=3,5 m, e=0,3 m, e=1,0 m	St	47.00
	Arch of shotcrete in invert of crown	as required	as required
Bench	Excavation section	m³	0.70
	Shotcrete d=20 cm	m³	0.70
	Steel (fabric mats, horizontal bars)	kg	35.00
	Excavation section	m³	47.03
Kf Bench	Steel fabric mats Q 257, 2 Layer	m²	14.83
	Steel sets, girder Type 1, e=1,0 m	m	7.42
	Shotcrete da=25 cm	m²	7.44
	Anchor l=6,0 m, SN/SB, 200 kN	St	3.00
Invert	Excavation section	m³	0.50
	Shotcrete da=15 cm	m³	0.50
	Steel (fabric mats, horizontal bars)	kg	35.00
	Excavation section	m³	17.10
Kf Invert	Steel fabric mats Q 257, 2 Layer	m²	25.70
	Shotcrete da=25 cm	m²	12.44

The quantity data are for cross section CS1 with inner shell thickness of 60 cm. In case of inner shell thickness of 40 cm (cross section CS2), the values to adjust.

Legend :

- Kf ... Enlarged footing
- I ... Length
- a ... Distance in transverse direction
- e ... Distance in longitudinal direction
- A ... Connection of the reinforcement between the crown and bench
- SN ... Rock anchor
- SB ... Injection bore anchors
- ... Length of anchor 4 m
- ... Length of anchor 6 m
- × ... Tunnel face anchors with a length 12 m
- Typ 1 ... Girder Gl 100
- Typ 2 ... Girder Gl 120
- FS ... Girder at the foot of the crown



MINISTERUL
TRANSPORTURILOR

BENEFICIAR / BENEFICIARY :



COMPANIA NAȚIONALĂ DE CĂI FERATE "CFR" SA

PROIECTANT / DESIGNER:



Aprobat
Approved

Verificat
Checked

Aprobat
Approved

Proiectat
Designed

Sef de echipa
Team leader

Expert Cheie
Key Expert

Adjunct Sef de echipa
Deputy Team leader

Inginer
Engineer

C. Teodorescu

M. Diegmann

J. Werfling

D. Ciotarnel

Data
Date

Semnatura
Signature

06/2013

06/2013

06/2013

06/2013

Project 9i
35311.1

"Reabilitarea liniei c.f. Frontieră - Curtici - Simeria, parte componentă a coridorului IV Pan - European pentru circulația trenurilor cu viteză maximă de 160 km/h"

"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 2 :km 614-Gurasada

Denumire desen / Drawing name:
EXCAVATION CLASS 6.2

Scara / Scale

1:250

Cod desen / Drawing Code

EC 6

Nr / No

EC 6