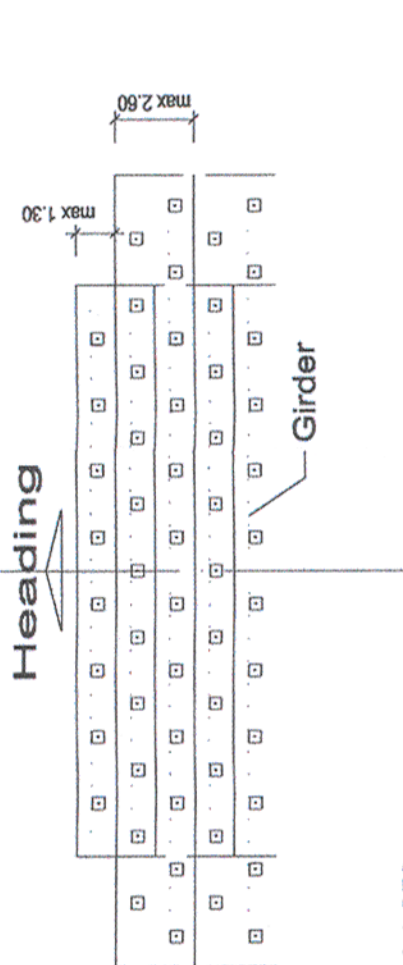
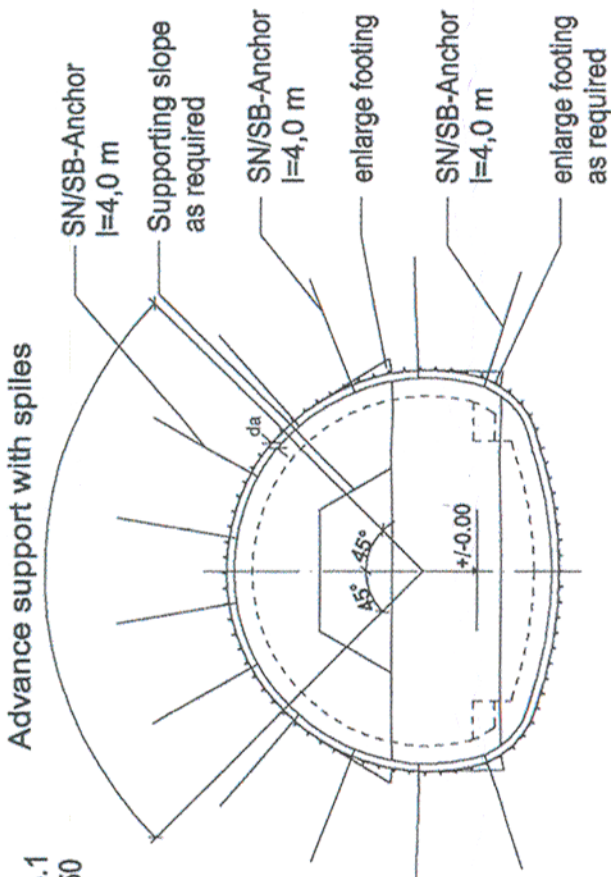
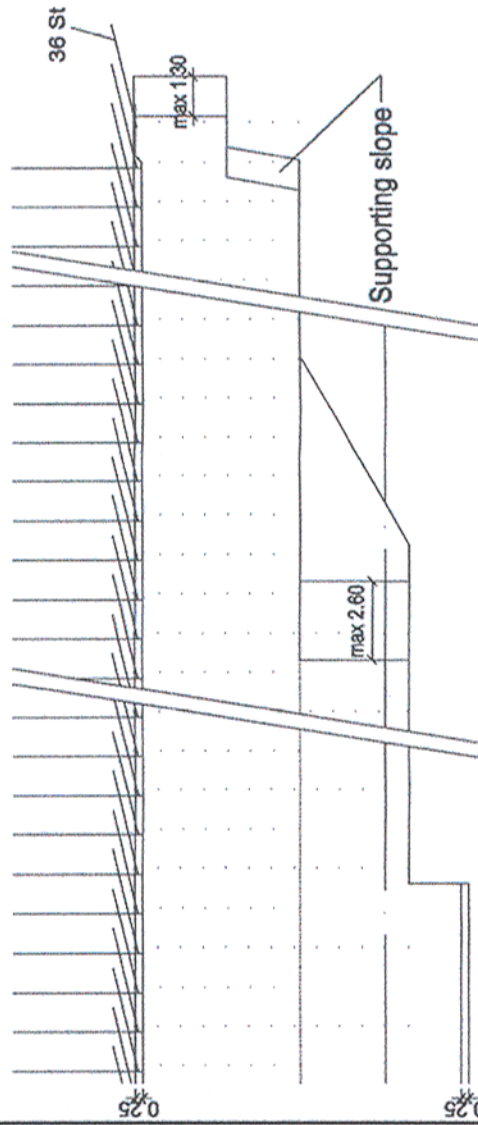


Excavation Class 6.1  
Cross Section M 1:250



Execution M 1:250



Longitudinal section M 1:250

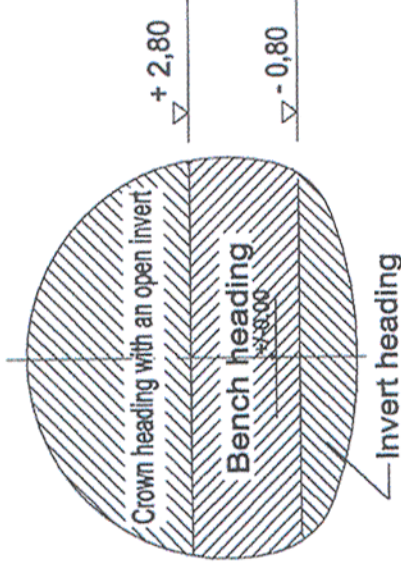
1. Crown
  - Protruding fuse with spears before each round
- Excavation:
  - Length of round max. 1,3 m
- Reinforcement:
  - Shotcrete sealing of the tunnel face after each round
  - Shotcrete after each round
  - Pre-molded concrete steel mats, steel sets, girder, shotcrete after each knocking off the soffit after each round
  - Systematic anchoring at second round behind heading after each round
2. Bench:
  - Trailing max. 60 m behind Crown
- Excavation:
  - Length of round max. 2.6 m
  - half side
- Reinforcement:
  - Steel fabric mats, shotcrete after each round
  - Every second steel set, girder is extended
  - Systematic anchoring at second round behind heading after each round
3. Invert:
  - Trailing distance up to 100 m from the face of the bench or according to measurement results
- Excavation:
  - Unsupported round length max. 10 m
- Reinforcement:
  - Steel fabric mats, shotcrete after each round

ORT	Term	UNIT	QUANTITY PER LFM TUNNEL
Crown	Excavation section	m <sup>3</sup>	53,86
	Steel fabric mats Q257, 2 Layers, A	m <sup>2</sup>	36,25
	Steel sets, girder, Typ 1, e=1,3 m	m	13,94
	Shotcrete da=25 cm	m <sup>2</sup>	17,74
Bench	Anchor l=4,0 m, SN/SB, 200 kN	St	6,54
	Sealing shotcrete face 6 cm	m <sup>2</sup>	30,00
	Spiles with injection drill bolt l=3,5 m, a=0,3 m, e=1,3 m	St	27,69
	Excavation section	m <sup>3</sup>	0,70
Invert	Shotcrete da=20 cm	m <sup>2</sup>	0,70
	Steel (fabric mats, horizontal bars)	kg	35,00
	Excavation section	m <sup>2</sup>	47,03
	Steel fabric mats Q 257, 2 Layer	m <sup>2</sup>	14,83
Bench	Steel sets, girder, Type 1, e=2,6 m	m	2,85
	Shotcrete da=25 cm	m <sup>2</sup>	7,44
	Anchor l=4,0 m, SN/SB, 200 kN	St	2,31
	Enlarged foot bench	as required	
Invert	Excavation section	m <sup>3</sup>	0,50
	Shotcrete da=15 cm	m <sup>2</sup>	0,50
Invert	Steel (fabric mats, horizontal bars)	kg	35,00
	Excavation section	m <sup>3</sup>	17,10
Invert	Steel fabric mats Q 257, 2 Layer	m <sup>2</sup>	25,70
	Shotcrete da=25 cm	m <sup>2</sup>	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
- l ... 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
- x ... Tunnel face anchors with a length 12 m
- Typ 1 ... Girder GI 100
- Typ 2 ... Girder GI 120
- FS ... Girder at the foot of the crown



MINISTERUL TRANSPORTURILOR

BENEFICIAR / BENEFICIARY :



COMPANIA NAȚIONALĂ DE CĂLĂTORIE "CFR" SA



PROIECTANT / DESIGNER:

Sef de echipa Team leader

Expert Cheie Key Expert

Adjunct Sef de echipa Deputy Team leader

Proiectat Designed

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 6.1

Scara / Scale  
1:250

Cod desen / Drawing Code  
EQ 5

Nr / No  
EQ 5

EC 5