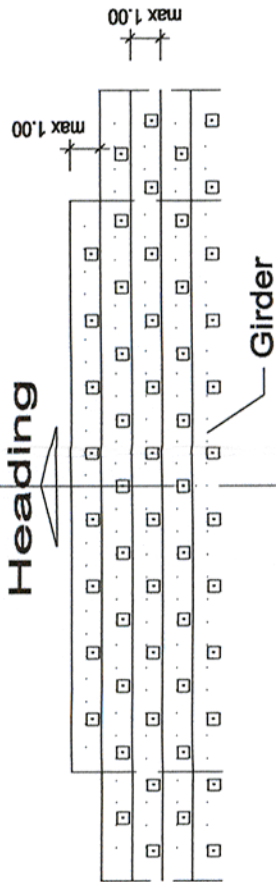
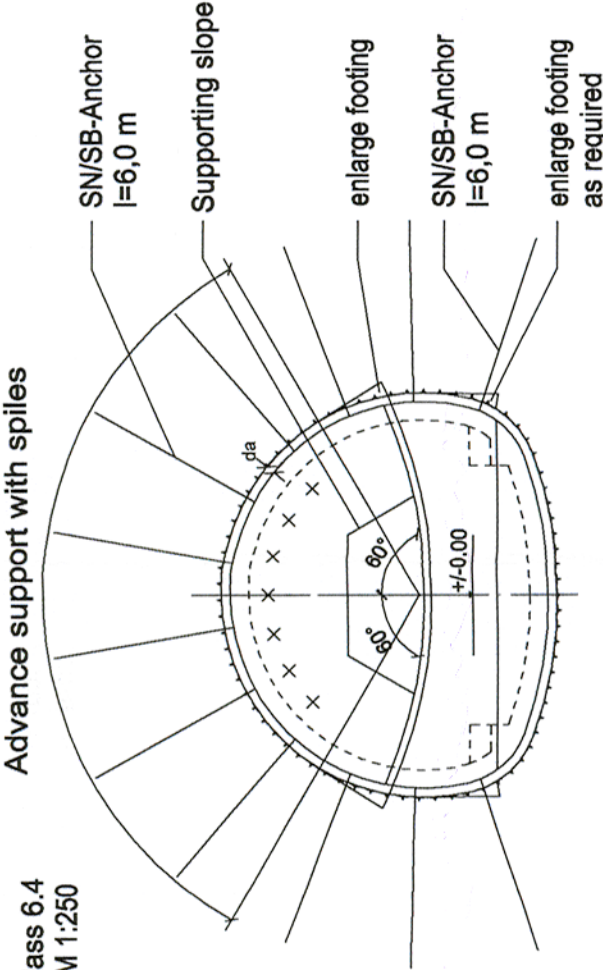
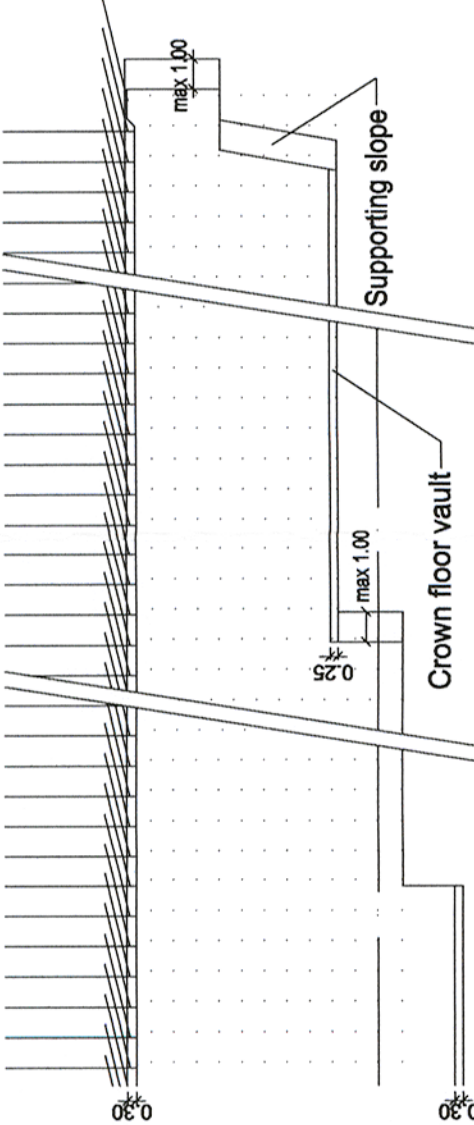


Excavation Class 6.4
Cross Section M 1:250



Execution M 1:250



Longitudinal section M 1:250

1. Crown

- Protruding fuse with spears before each round
- Excavation:
 - Length of round max. 1.0 m
 - with supporting slope and enlarged footing - invert arch
- Reinforcement:
 - temporary crown face with shotcrete after each round
 - Tunnel face anchors of 8 m
 - Shotcrete after each round
 - Steel fabric mats, steel sets, girder, shotcrete after each round
 - Systematic anchoring at second round behind heading after each round
 - Arch of shotcrete in invert of crown after each excavation section

2. Bench:

- Trailing max. 20 m behind Crown
- Excavation:
 - Length of round max. 1.0 m
 - in full width with excavation section of shotcrete arch in invert of crown
- Reinforcement:
 - Steel fabric mats, shotcrete after each round
 - Systematic anchoring at second round behind heading after each round

3. Invert:

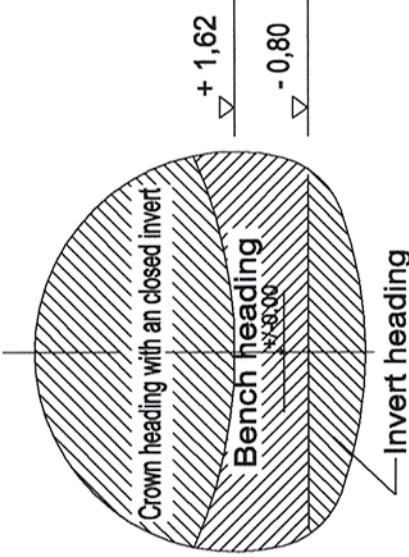
- Trailing distance up to 8 m from the face of the bench
- Excavation:
 - Unsupported round length max. 2 m
- Reinforcement:
 - Steel fabric mats, shotcrete after each round

ORT	Term	UNIT	QUANTITY PER LFM TUNNEL
Crown	Excavation section	m³	64,22
	Steel fabric mats Q 335, 2 Layers, A	m²	35,47
	Steel sets, girder Typ 1, e=1,0 m, FS	m	17,88
	Shotcrete da=30 cm	m²	17,88
	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	0,875
	Spiles with injection drill bolt l=3,5 m, a=0,3 m, e=1,0 m	St	47,00
	Shotcrete da=15 cm	m²	13,40
	Steel fabric mats 2 x Q 257, 2 Layer	m²	26,80
Crown SG	Excavation section	m³	0,50
	Shotcrete da=15 cm	m³	0,50
Kf	Steel (fabric mats, horizontal bars)	kg	35,00
	Excavation section	m³	37,97
	Steel fabric mats Q 257, 2 Layer	m²	15,48
	Steel sets, girder Type 2, e=1,0 m	m	7,74
	Shotcrete da=30 cm	m²	7,74
	Anchor l=6,0 m, SN/SB, 200 kN	St	3,00
	Excavation section	m³	18,42
Bench	Steel fabric mats Q 257, 2 Layer	m²	25,86
	Shotcrete da=30 cm	m²	12,93
Invert	Excavation section	m³	18,42
	Shotcrete da=30 cm	m²	12,93

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
- 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



PROIECTANT / DESIGNER:



Semnatura
Signature

Data
Date

Aprobat
Approved

Sef de echipa
Team leader

Verificat
Checked

Expert Cheie
Key Expert

Aprobat
Approved

Adjunct Sef de echipa
Deputy Team leader

Proiectat
Designed

Inginer
Engineer

C. Teodorescu

M. Diegmann

J. Werfling

D. Ciotarnel

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"
Tronsonul 2: km 614-Gurasada
"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 8

Nr / No

EC 8