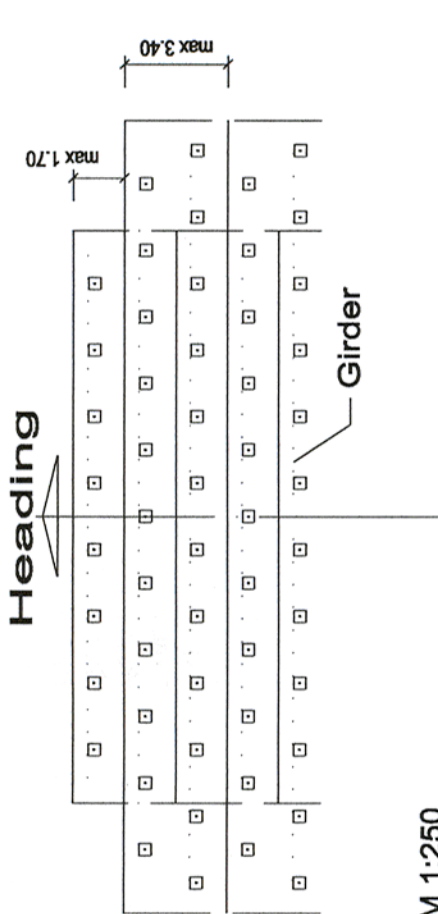
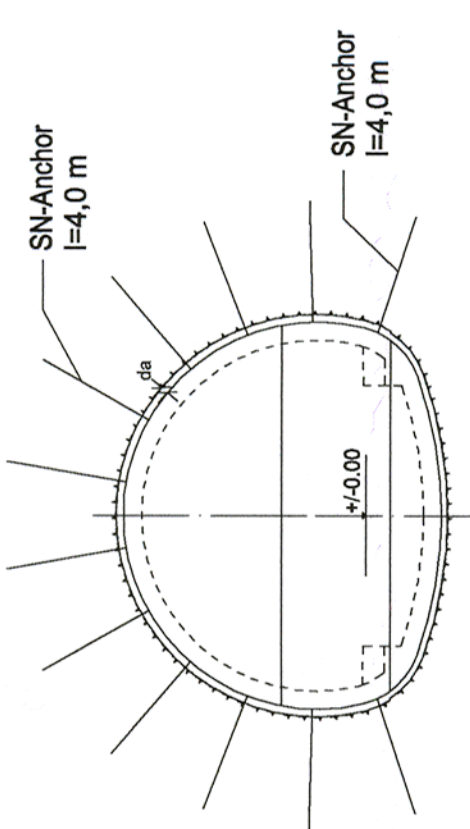
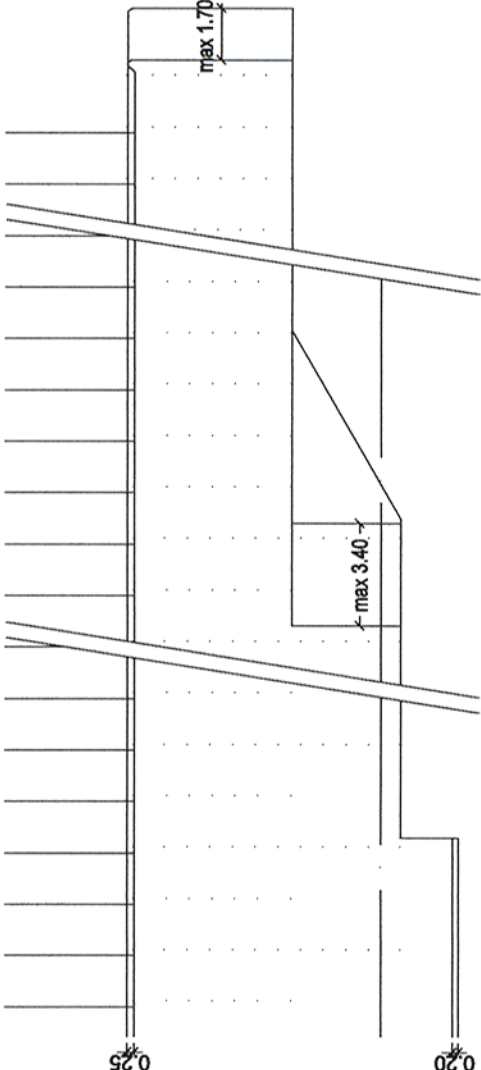




Execution M 1:250



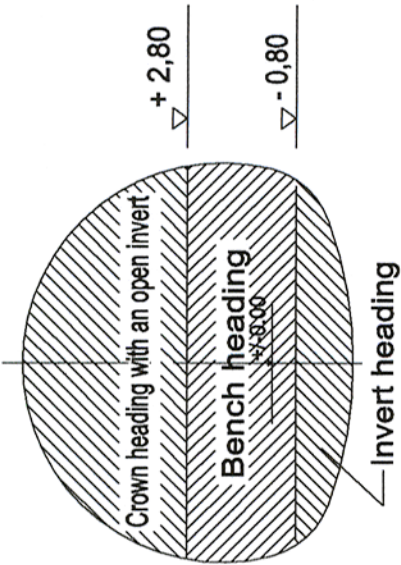
1. Crown
Excavation:
- Length of round max. 1,7 m
Reinforcement:
- Shotcrete after each round
- Steel fabric mats, steel sets, girder, shotcrete after each round
- Systematic anchoring at second round behind heading after each round
2. Bench:
- Trailing max. 200 m behind Crown
Excavation:
- Length of round max. 3.4 m
- half side
Reinforcement:
- Steel fabric mats, shotcrete after each round
- Every second steel set, girder is extended
- Systematic anchoring at first round behind heading after each round
3. Invert:
- Trailing distance not limited or according to measurement results
Excavation:
- Unsupported round length max. 10 m
Reinforcement:
- Steel fabric mats, shotcrete

ORT	Term	UNIT	QUANTITY PER LFM TUNNEL
Crown	Excavation section	m³	53,86
	Steel fabric mats Q 257, 2 Layers, A	m²	36,25
	Steel sets ,girder Typ 1, e=1,7 m	m	10,66
	Shotcrete da=25 cm	m²	17,74
	Anchor l=4,0 m, SN, 150 kN	St	5,00
	Sealing shotcrete face 6 cm	m²	as required
	Spiles with injection drill bolt l=3,5m	St	as required
Bench	Excavation section	m³	47,03
	Steel fabric mats Q 257, 2 Layer	m²	14,83
	Steel sets ,girder Type 1, e=3,4 m	m	2,18
	Shotcrete da=25 cm	m²	7,44
Invert	Anchor l=4,0 m, SN, 150 kN	St	1,76
	Excavation section	m³	17,10
	Steel fabric mats Q 257, 1 Layer	m²	13,00
	Shotcrete da=20 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
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 CĂI FERATE "CFR" SA



PROIECTANT / DESIGNER:

Aprobat
Approved

Sef de echipa
Team leader

Verificat
Checked

Expert Cheile
Key Expert

Aprobat
Approved

Adjunct Sef de echipa
Deputy Team leader

Proiectat
Designed

Inginer
Engineer

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"
Tronsozul 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 4.2

Scara / Scale

1:250

Cod desen / Drawing Code

EC 2

Nr / No

EC 2