

## Grouting Instruction VL4 FIRST GROUT FAN

Tunnel	VL4 (W=6,9-H=6,9)
Instruction N°	572

Chainage	1+176,8
Total Inflow face	
Total Inflow Probe hole	3,2
Water pressure measured	4 bar

Mark additional holes with x and number

Erase holes not to be used

1- DRILL HOLES: 1 TO 15 WITH ANGLE 15°

PRIMARY ROUND: 2,8,14,6,12,4,10,15 AND GROUT  
 SECONDARY ROUND: 1,7,13,5,11,3,9 AND GROUT

2- DRILL HOLES IN ORDER: 17,19,21,18,20,16  
 PARALLEL TO THE TUNNEL AND GROUT.

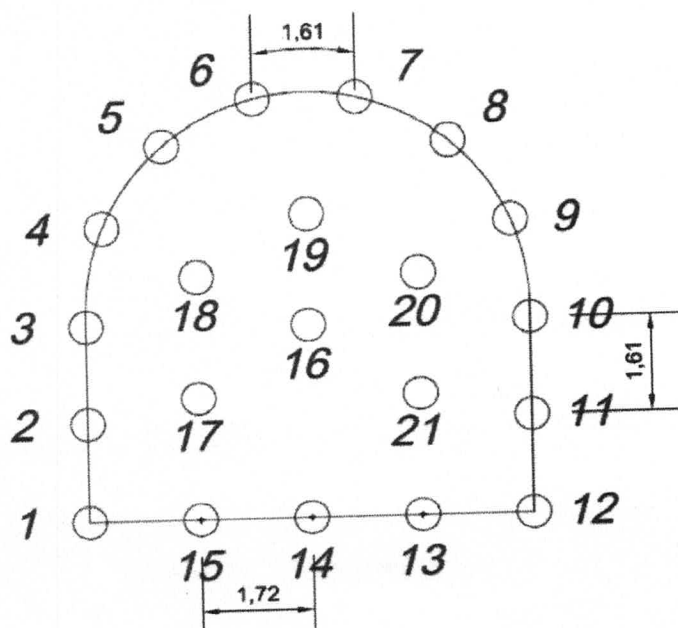
THE PACKER SHOULD BE INSTALLED BETWEEN 1,5  
 AND 3,0 M (DEPENDING OF ROCK MASS  
 CONDITION, REF LEAKAGE)

Instructed by:	I MARTINEZ
Instruction date:	20-01-2016

HOLES 1-15 16-21

N° of Grout holes	15	6
Grout holes length (m)	24	24
Grout hole angle ref Tunnel axis	15	0

Position of Grout holes 1st grout round:



Design Mix (Type A,B,C, D or E)	A
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WCR	0,65
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Closure criteria

Pmax	25*
Vmax (l/m borehole)	85
GIN	1000

\*IF GROUNDWATER PRESSURE IS  
 HIGHER THAN 10 BAR THEN APPLY  
 GROUT PRESSURE OF 2,5 TIMES  
 GROUNDWATER PRESSURE

## NOTES:

- 1-DRILL GROUTING HOLES TO THE FULL DEPTH AS INSTRUCTED, EVEN WITH SIGNIFICANT DISCHARGE (>2.5 l/sec)
- 2- THE MAXIMUM INCREASE OF GROUTING PRESSURE SHALL BE NOT MORE THAN 2,5 BAR PER MINUTE.
- 3- DRY HOLE SHALL NOT BE REDRILLED OR REGROUTED.

STRABAG

FRANCISCO FERNANDEZ

Name

Signature

20/01/2016  
3:00

SAM

I MARTINEZ

Name

Signature