

## Grouting Instruction VL4 FIRST GROUT FAN

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

Chainage	1+654.7
Total Inflow face (L/s)	10
Total Inflow Probe holes (L/s)	3.3
Water pressure measured	14 Bar

Mark additional holes with x and number

Erase holes not to be used

1-DRILL HOLES 1 TO 15 WITH ANGLE 15° IN ORDER: 6, 7, 5, 8, 4, 9, 3, 10, 2, 11, 1, 12, 15, 13, 14 AND GROUT

2- GROUT HOLE IN THE FACE USED AS PROBEHOLE N°3

3- DRILL AN ADDITIONAL PROBEHOLE IN THE FACE AS INDICATED IN SKETCH, 27 M LENGTH AND FOLLOWING THE TUNNEL AXIS. IF IT REACHES THE TRIGGER VALUES OF INFLOW AND PRESSURE, DRILL AND GROUT FACE HOLES N°16, 17, 18, 20 & 21.

Design Mix (Type A,B,C, D or E)

A

WCR

0.65

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

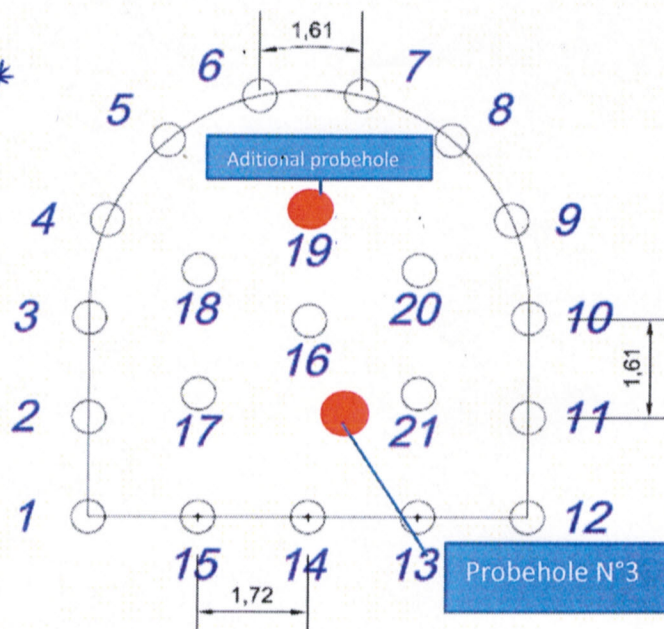
\*\* grouting sequence might be changed

Instructed by:	Andrés Tapia Pardo
Instruction date:	29-04-2016

HOLES 1-15

N° of Grout holes	15
Grout holes length (m)	27
Grout hole angle ref Tunnel axis	15°

Position of Grout holes 1st grout round:



## 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.

Probehole 3 showed 2 l/sec and 9 bars of pressure. STRABAG will drill and grout face holes 17-21.

STRABAG

M. Rosenfeld

Name

Signature

SAM

Andrés Tapia Pardo

Name

Signature