

Grouting Instruction L1 FIRST GROUT FAN

Tunnel	L1 (W=8,2-H=8,65)
Instruction N°	572

Chainage	0+247,8
Total Inflow face	
Total Inflow Probe hole	
Water pressure measured	

Mark additional holes with x and number

Erase holes not to be used

1- DRILL HOLES: 1 TO 18 WITH ANGLE 15°

PRIMARY ROUND:	17, 16, 18, 15, 1, 14, 3, 12, 5, 10, 7, 8
	AND GROUT
SECONDARY ROUND:	2, 13, 4, 11, 6, 9 AND GROUT

2- DRILL HOLES IN ORDER: 20, 23, 21, 22, 19
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)

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

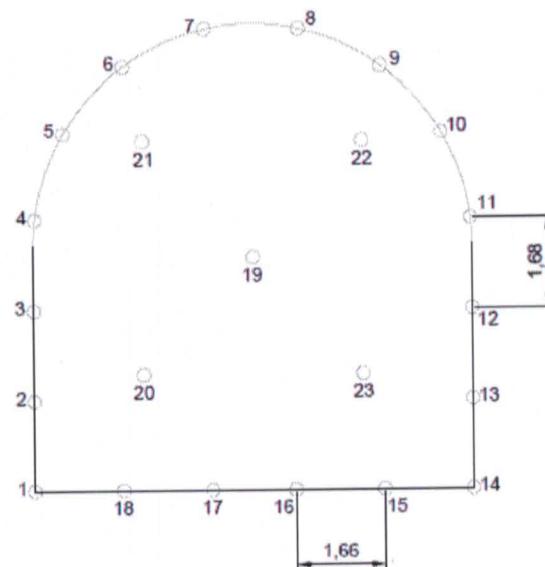
*IT THE WATER PRESSURE IS HIGHER
THAN 10 BAR, THEN APPLY A GROUT
PRESSURE OF 2.5 TIMES THE
GROUNDWATER PRESSURE.

Instructed by:	ERNESTO HERNANDEZ JARA
Instruction date:	27-12-15

HOLES 1-18 19-23

N° of Grout holes	18	5
Grout holes length (m)	24	24
Grout hole angle ref Tunnel axis	15	0

Position of Grout holes 1st grout round:



NOTES:

- 1- IN CASE SUDDEN HIGH WATER INFLOW (>2.5L/SEC) IS ENCOUNTERED GROUTING SHALL BE CONDUCTED WITH THE MINIMUM POSSIBLE TO PUMP W/C RATIO ABOUT 0,45 ONCE THE HOLE WAS DRILLED TO ITS FINAL LENGTH AS PER OWNER'S INSTRUCTION. THE GROUT PRESSURE SHALL BE 15 BAR ABOVE THE GROUNDWATER PRESSURE
- 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.

ERNESTO HERNANDEZ JARA
Name Signature