

**ALTO MAIPO****OWNER'S INSTRUCTION**  
Section 2.29  
PHAM-PLN12-INS-0003

Contract:	<input type="checkbox"/> AM-CO610/620B <input checked="" type="checkbox"/> AM-CO630/620A	SI 6332/ N° 0495
Scope Segment Description:	TCS (Tunnel cable shaft)	
Location:	Ch: 0+005,5 VLS to TCS. Time for Compliance: Immediately	

Contractor shall immediately proceed with the Work described below, in accordance with the terms and conditions of the Contract. This instruction is limited to maximum of 1000 UF or USD \$ 50,000., and without impact on the lump sums or schedule (except for Equivalent Times in the BOQ).

**Instruction:** The contractor is here with instructed to systematically grout the remaining tunnel. The grout curtains shall have an overlap of 6M. However, the OE will issue a separate grout instruction for each curtain. The grouting shall be carried out as described in the following:

- the holes shall be drilled as indicated in the attached sketch. Drill holes 1-15 shall be drilled with an 15° angle to the tunnel axis
- Drill the primary round (holes 1, 9, 3, 11, 5, 13, 7, 15) and grout
- Drill the secondary round (holes 2, 10, 4, 12, 6, 14, 8) and grout
- Drill holes 16, 17, 18, 19, 20, 21 parallel to the tunnel axis and grout in the last holes (16-21) packers shall be installed at 10 M depth

Note:

- 1) out of the primary round hole N°3 shall be used and logged as exploratory hole and used to carry out a Lugeon test.

Owner estimate of impact is: Per Units in BOQ ☒ ; or cost ; &/or Time

If Contractor believes that this instruction constitutes a Change, Contractor shall promptly provide Notice according to Section 11 of the Contract.

Contractor comments (if any): IN THE HOLES 16-21 PACKER SHALL BE INSTALLED AT 6,0 m DEPTH!

Issued by		Received by Contractor	
Name:	Ricardo Riquelme	Name:	ANTONIA DECHMAN
Sign:		Sign:	Antonina Dechman
Designation:	Geologist	Designation:	ENG. GEOL
Date:	17/10/15	Date:	17/10/2015
Time:	15:00	Time:	15:05

(original): Contractor

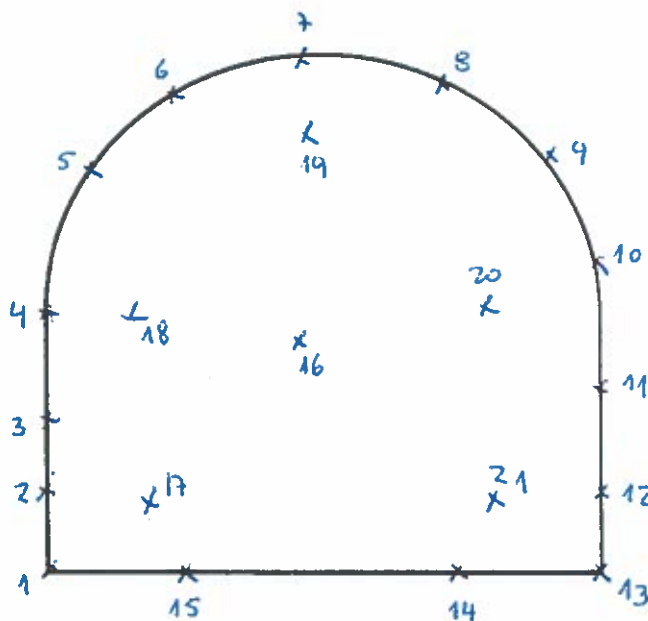
Tunnel	VLS to TCS (Tunnel cable shaft)
Instruction N°	495

Geologist	EZEQUIO HERNANDEZ JAZZ
Date:	17/10/15

Chainage	0+005,5
Total Inflow face	
Total Inflow Probe hole	
Water pressure measured	

	Holes	1-15	16-21
N° of Grout holes		15	6
Grout curtain length		24m	24m
Grout curtain angle ref Tunnel axis		15°	0°

Position of Grout holes:



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

## 1. Max. Grout takes

WCR	Liter grout	Kg Cement
0,6	1842	2000

2. Max. pressure [bar] at closure	50
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3. Allowable flow rate at closure:	< 1l/min/m
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4. Actions to be taken if closure criteria are not met:	No use plasticizer (tamcem 65B) Lower WCR = 0,4 max 300 kg cement, if not stop pressure lower WCR = 0,35 max 300 kg cement
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EZEQUIO HERNANDEZ J.

Name

Signature

ANTONIA DEČMAN Antonia Dečman