



Project: Radomiro Tomic Aqueduct (Chile)

Description: A new 48" pressure water impulsion line, 160 km long, with total 3000 m hydraulic head, including 5 pumping station, to perform desalinated water transfer, (1715 l/s) from the Pacific Ocean Cost (near Tocopilla - Chile) to the CODELCO Radomiro Tomic Copper Mine (near Calama - Chile)

Type of service: Geologic and geotechnic evaluations, investigation plan and Method statement for the construction of the impulsion line and of the pumping stations

Client: ASTALDI Spa – Sucursal Chile, for a CODELCO tender

Period: July – October 2013

Role: Expertise and support on the assessment of the geological and geotechnical framework and method statement for the civil works and earth works organization

- Activities:**
- Site visit in Chile, scouting of the feasibility of excavation methods for an high slope sector of the impulsion line;
 - Assessment of the geological – geotechnical conditions regarding the excavability of terrains and soils;
 - Planning and BOQ of additional geological and geotechnical investigations to be performed in the next design stage, after tender;
 - Rockfall risk assessment in the high slope sector of the impulsion line using a numerical 2D model (RocFall)
 - Editing of investigation plan documents;
 - Participation in the Method statement and editing of part of the Method statement tender report;

Work value: 600 million US\$ (estimated)

RESUMEN ESCENARIOS									
TRAMO	DEPK	APK	Longitud	Escenario Optimista					Correspondencia con Clases Codeco
				1- Suelto	2- ripable + mantillo	3- Caliche	4- explosivo	total	
EB-1	0+000	0+000		100,0%	0,0%	0,0%	0,0%	100%	
Tramo 1	Subida Farellon	0+000	2+600	2800	35,8%	67,6%	0,0%	16,6%	100%
Tramo 2	Fin Subida Farellon - EB2	2+600	4+035	1235	20,0%	70,0%	0,0%	10,0%	100%
EB-2	4+035	4+035		25,0%	65,0%	0,0%	10,0%	100%	
Tramo 3	EB2 - EB3	4+035	8+4733	80717	#R#F#	#R#F#	#R#F#	#R#F#	#R#F#
EB-3	8+4733	8+4733		#R#F#	#R#F#	#R#F#	#R#F#	#R#F#	
Tramo 4	EB3 - EB4	8+4733	110+125	25392	71,0%	18,2%	0,0%	1,7%	100%
EB-4	110+125	110+125		90,0%	20,0%	0,0%	0,0%	100%	
Tramo 5	EB4 - EB5	110+125	120+940	10815	80,0%	20,0%	0,0%	0,0%	100%
EB-5	120+940	120+940		50,0%	50,0%	0,0%	0,0%	100%	
Tramo 6	EB5 - ET	120+940	159+362	38222	68,7%	31,2%	0,1%	0,0%	100%
ET	159+362	159+362		10,0%	90,0%	0,0%	0,0%	100%	

Criteri Scenario Optimista		Criteri Scenario Pesimista	
Suelto = Clase III-IV Codeco con escavatore + potente	Suelto = Clase III-IV Codeco con escavatore ordinario	Ripable = Clase II e V Codeco con Ripper e escavatore + potente	Ripable = Clase II e V Codeco con Ripper e escavatore + potente
Stima classi con valutazione visiva da immagini Google Earth + controllo con dati calcolati (che sono raramente poco rappresentative perche non sufficientemente densi) + verifica in sito	Stima classi con valutazione visiva da immagini Google Earth + controllo con dati calcolati (che sono raramente considerabile abbastanza sterribili e applicazione della SEM)	Stima grado di fratturazione e alterazione roccia superficiale elevata e standard sempre rispetto classi verificata in sito	

