

10 Case histories

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- 1 EL TENIENTE (Chile) 2011 -2012**
 - 2 CHENANI NASHRI TUNNEL (India) 2013-2014**
 - 3 AUTOSTRADA BAR BOLJARE (Montenegro) 2015-2016**
 - 4 USBRL railway project India 2017**
 - 5 Mumbay Pune missing link**
 - 6 San Bernardino CH**

PROYECTO NUEVO NIVEL MINA "EL TENIENTE"

Project is construction of two tunnels 9 km long in El Teniente mine, the bigger underground copper mine of the world (around 2500 km of tunnels excavated in last 120 years)

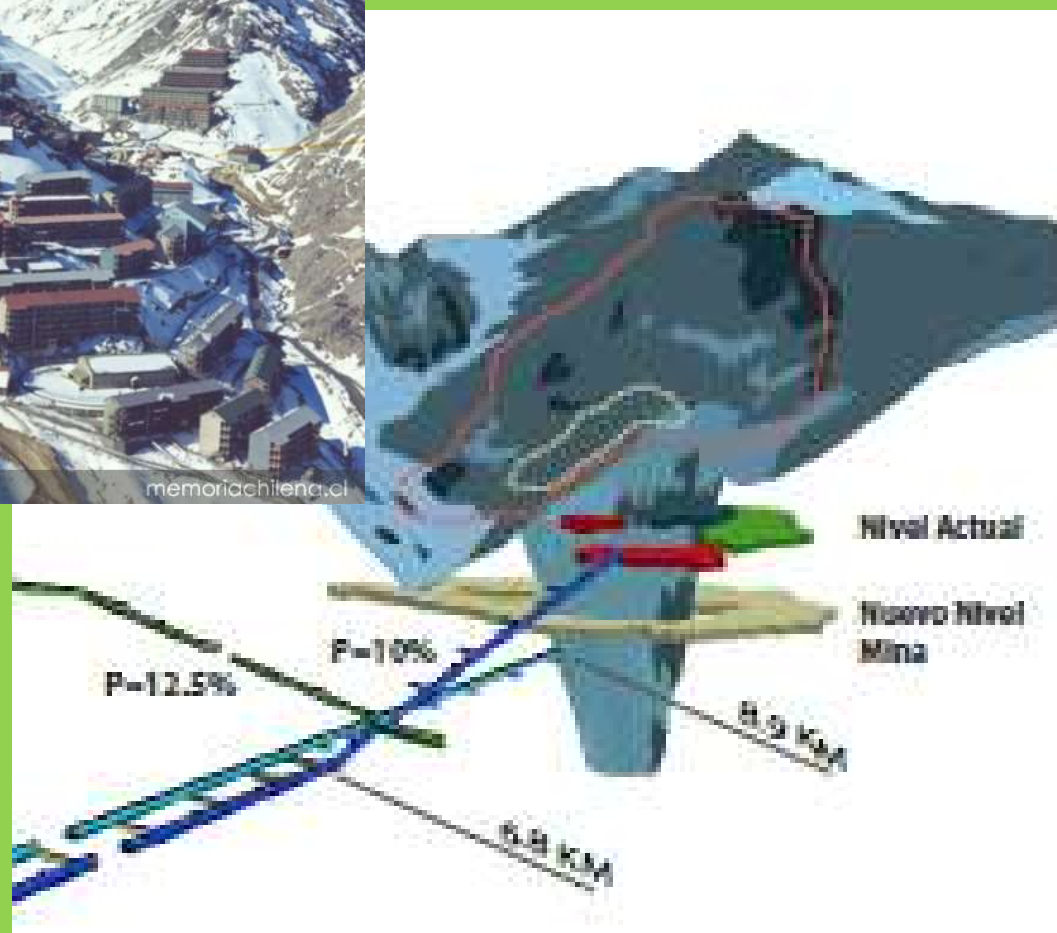
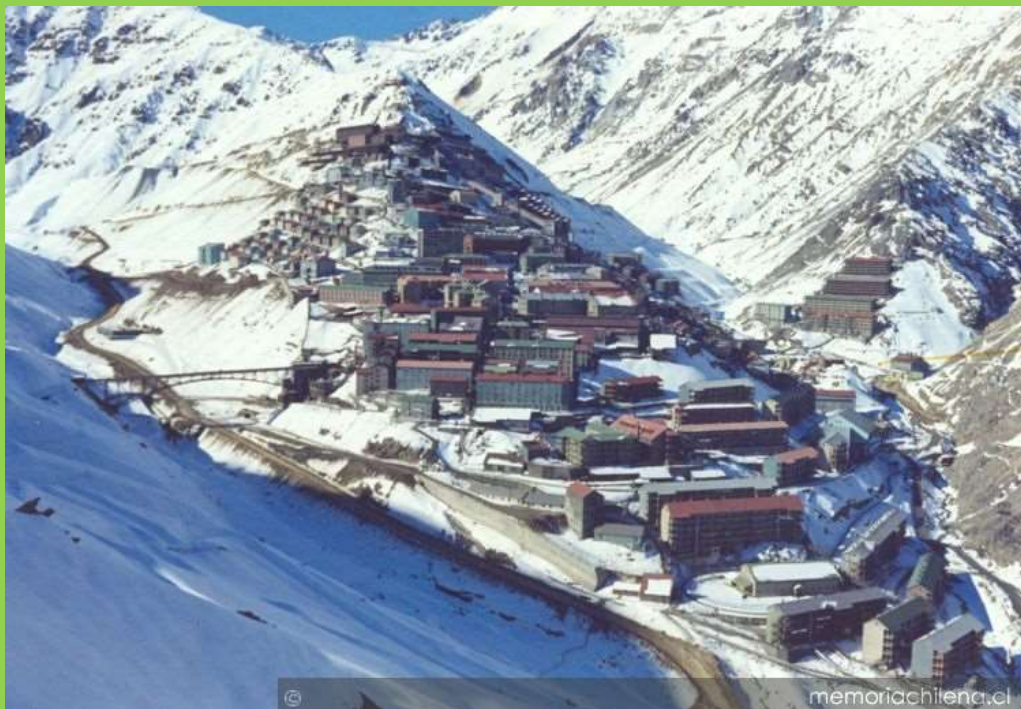
Duty of geodata was verification of geology of tunnel during excavation (face mapping done by contractor) .

Topic was that according with rock mass class support system (and payment) change . Contratctor was paid according to measurement of what done .

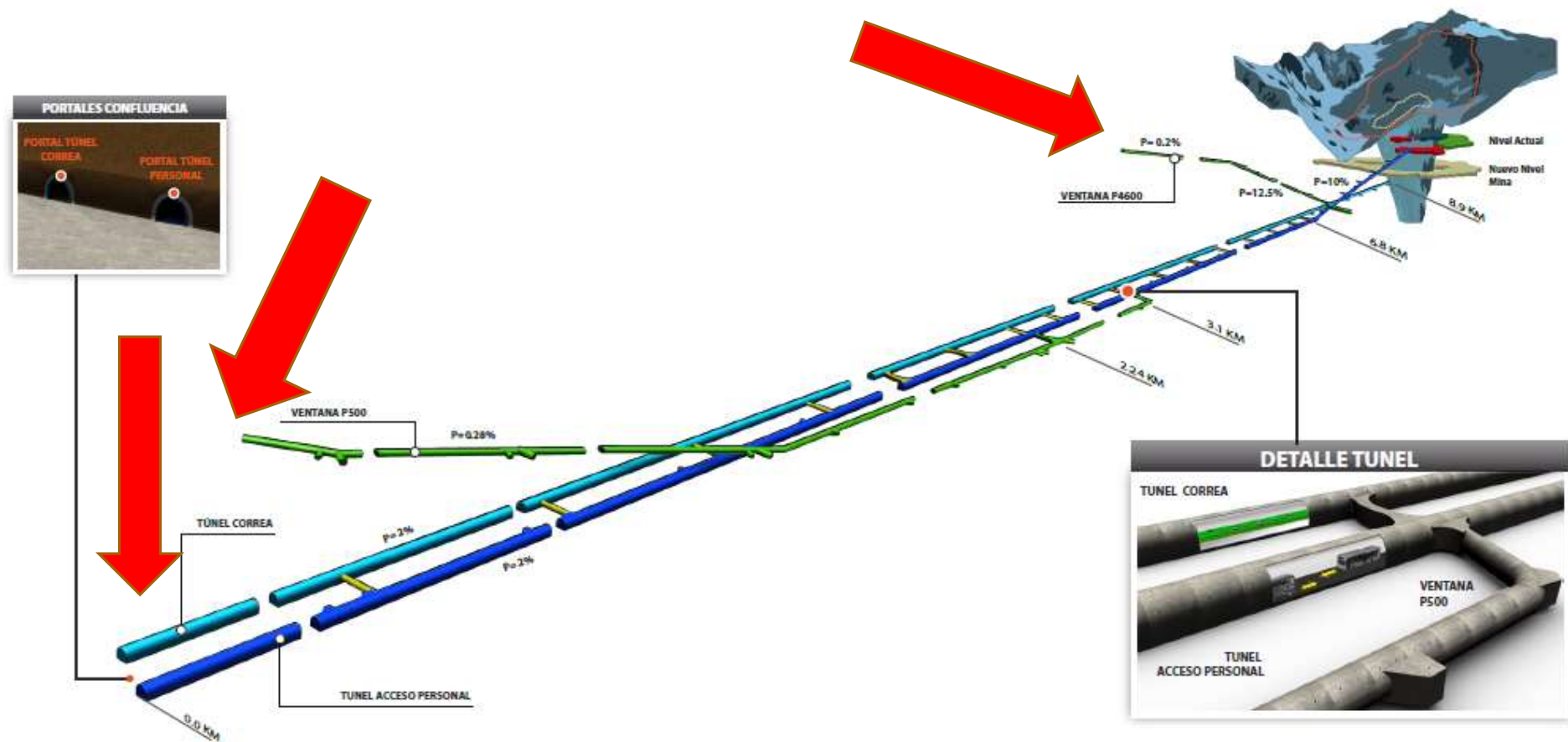
Client was Co.del Co. The state agency that manage all the copper mines of country.

Contract was EPC on basis of preliminary design

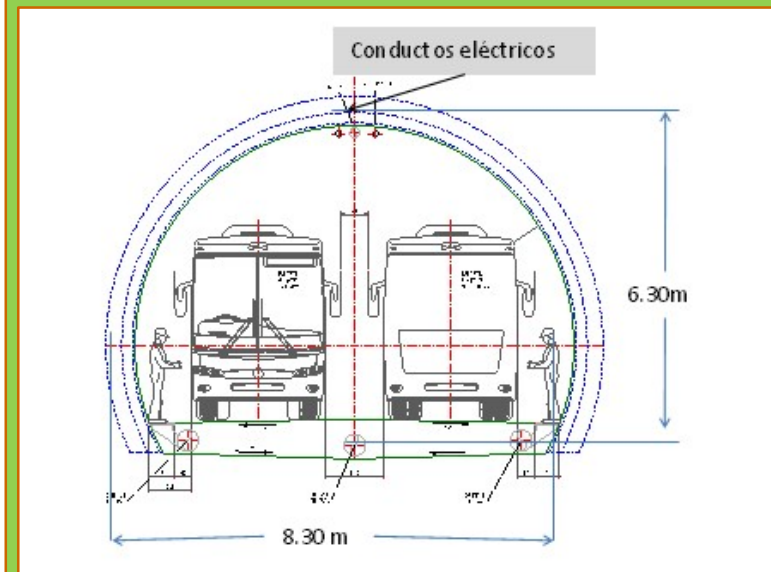
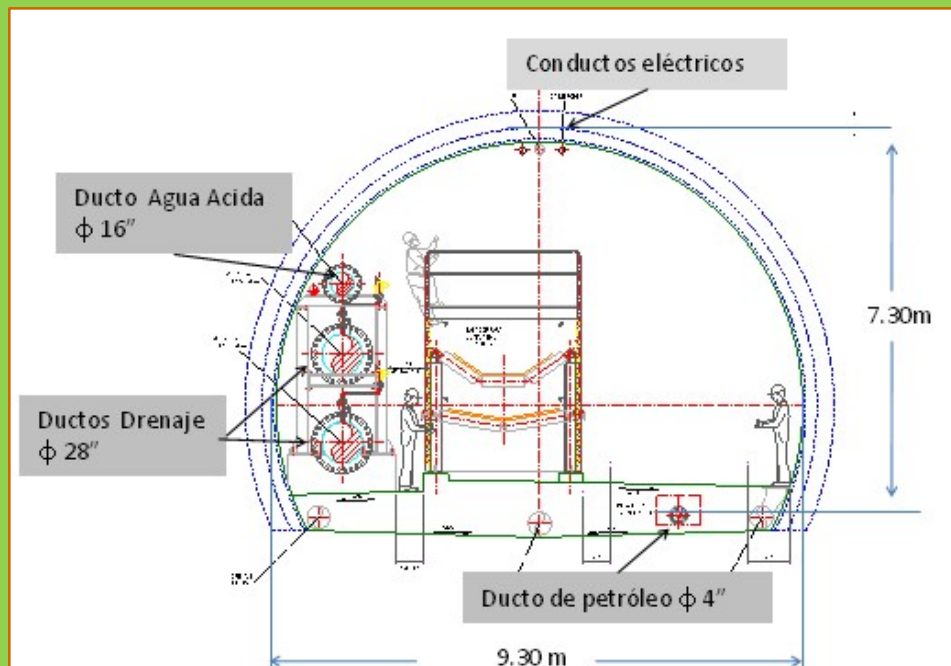
PROYECTO NUEVO NIVEL MINA "EL TENIENTE"



PROYECTO NUEVO NIVEL MINA "EL TENIENTE"



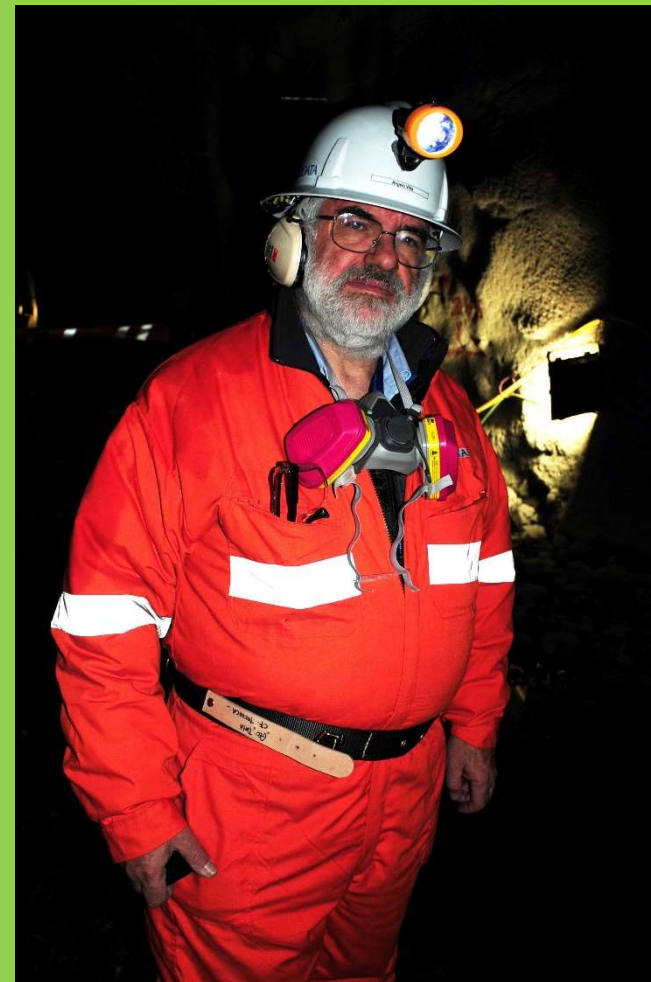
PROYECTO NUEVO NIVEL MINA "EL TENIENTE"



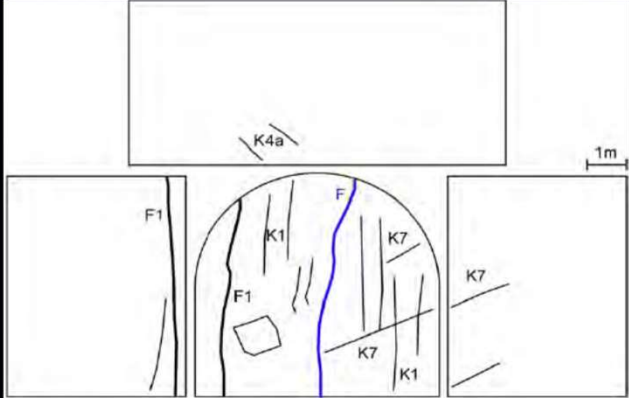

PROYECTO NUEVO NIVEL MINA "EL TENIENTE"



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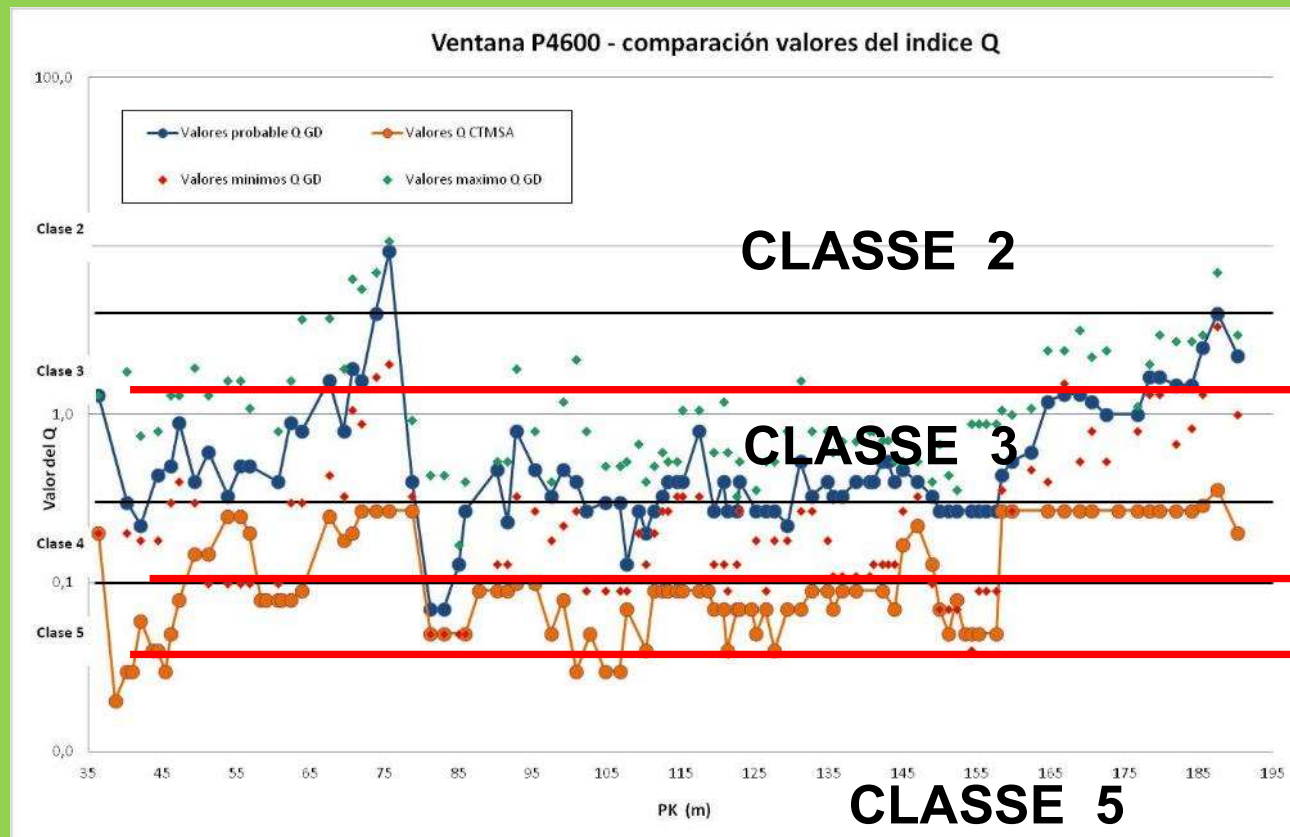
PROYECTO NUEVO NIVEL MINA "EL TENIENTE"

GEODATA ENGINEERING		PROYECTO NUEVO NIVEL MINA "EL TENIENTE" TUNELES DE ACCESO		CODELCO	
ID Túnel: P4600	Ficha No.: 142	Fecha: 16/07/2012	Hora: 15:50:00	Por: LFR	
PRINCIPALES CARACTERISTICAS DE LA SECCIÓN DE EXCAVACIÓN Y TUNEL					
ID Frente de Excavación	Frente principal	Cobertura (m)	94		
Distancia del Frente al Portal (m)	142.3	Método de excavación empleado	P&T y mec.		
Progresiva del Frente (km)	-	Sección de túnel excavado (m ²)	46.34		
Sección tipo instalada	5	Sección tipo a instalar	5		
Longitud del último avance (m)	1.3	Dist. al frente últimos pernos (m)	1.8		
Longitud sin soporte (m)	1.3	Dist. al frente último marco (m)	2.3		
Tiempo sin soporte (h)	2	Dist. al frente de contrabóveda (m)	0		
Intervenciones de estabilización frente: <input type="checkbox"/> Pre-enfilaje: <input type="checkbox"/> Consolidación: <input type="checkbox"/>					
<input type="checkbox"/> Drenajes: <input type="checkbox"/> Perforación exploratoria: <input type="checkbox"/> Shotcrete: <input type="checkbox"/>					
Observaciones: <u>levantamiento hecho despues la acufiadura</u>					
DESCRIPCIÓN DE LA FRENTE DE EXCAVACIÓN					
					
ESQUEMA GEOESTRUCTURAL			FOTOGRAFIA		

LEYENDA

PROYECTO NUEVO NIVEL MINA "EL TENIENTE"

Q DI BARTON VA DOVE TI PORTA IL CUORE



CHENANI NASHRI TUNNEL

Project consist one road tunnel and one escape tunnel length 9 km each.

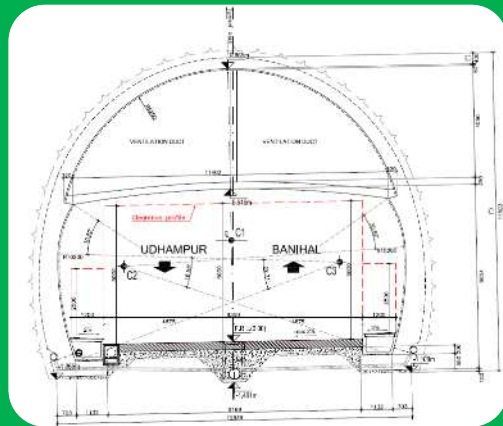
The tunnel bypass Patintop pass, almost 3000 m. high , in the unique connection road between India and Kashmir shortening 30 km the road and

Client is the indian Government trough a concesionarie that will operate the tunnel for 30 years .

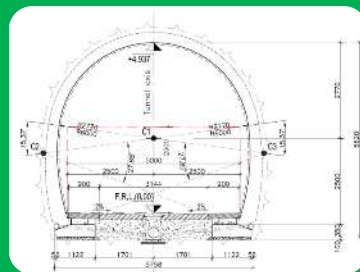
Contractor build the tunnel with a EPC contract lump sum based on a preliminary design (DPR)

Duty of Geodata was preparation of design «ready for construction» and assistance during constrution on contractor's side

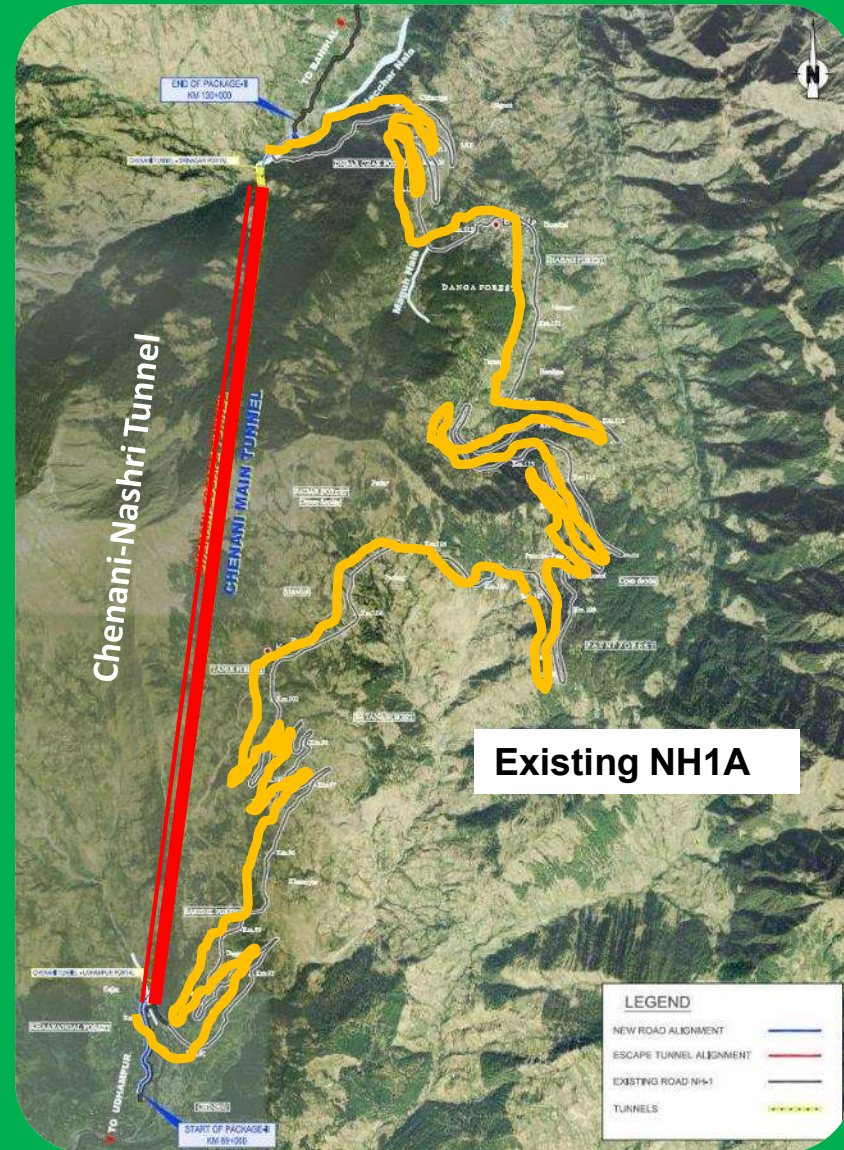
CHENANI NASHRI



Main tunnel



Escape tunnel



CHENANI NASHRI

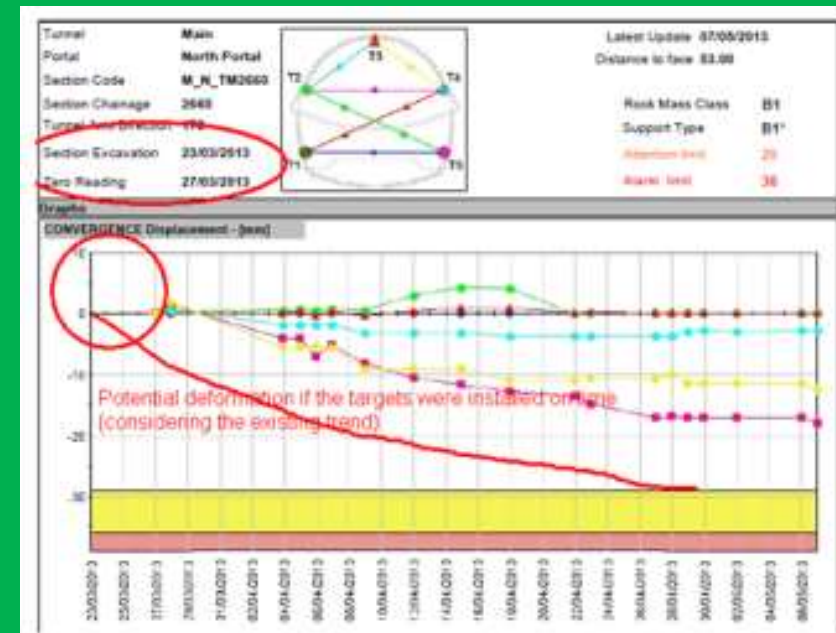
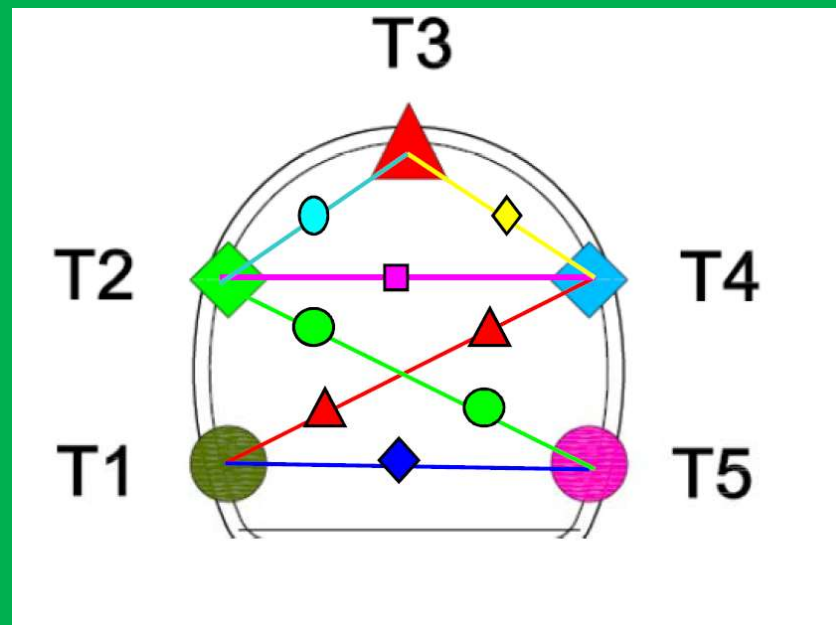
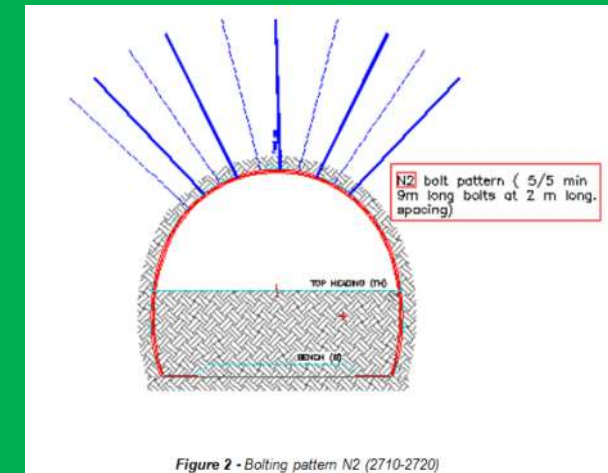
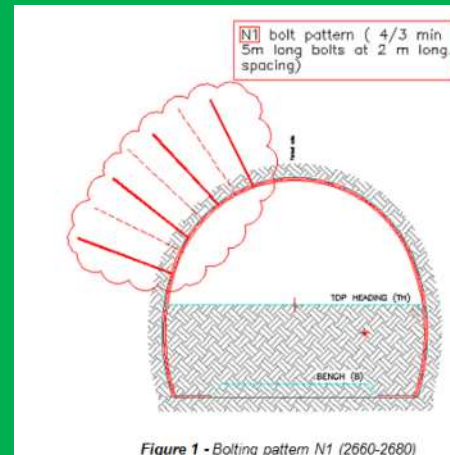


CHENANI NASHRI



CHENANI NASHRI

Monitoring and countermeasures



CHENANI NASHRI



BAR BOLJARE HIGHWAY:

Four lanes highway connection between Belgrado (Serbia) and harbour of Bar (Montenegro) .

The ongoing lot is around 40 km with a lot of bridges and tunnels . Total 32 tunnels (almost half of the length) and one bridge length 900 m. with maximum height 16 m. pier.

Client is Montenegrin government through a concessionaire that will operate the road

Contractor operates through a EPC contract lump sum on basis of a preliminary design as per **FIDIC yellow book**.

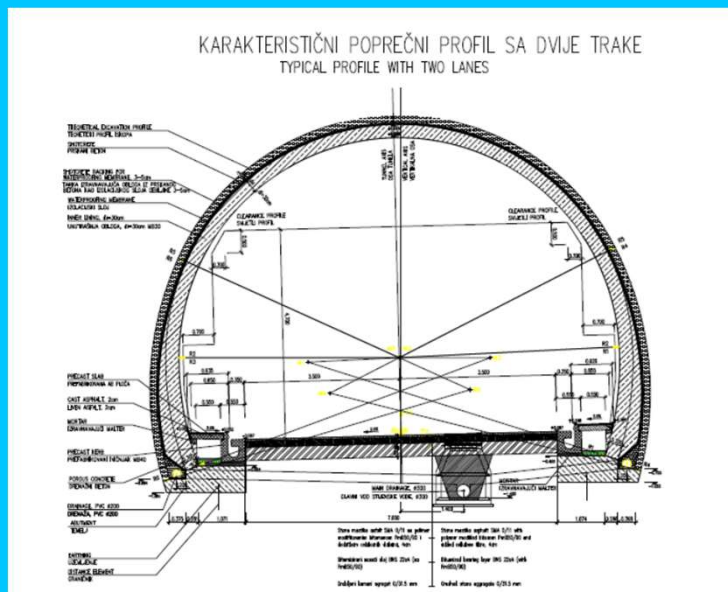
FIDIC rules and local rules conflict

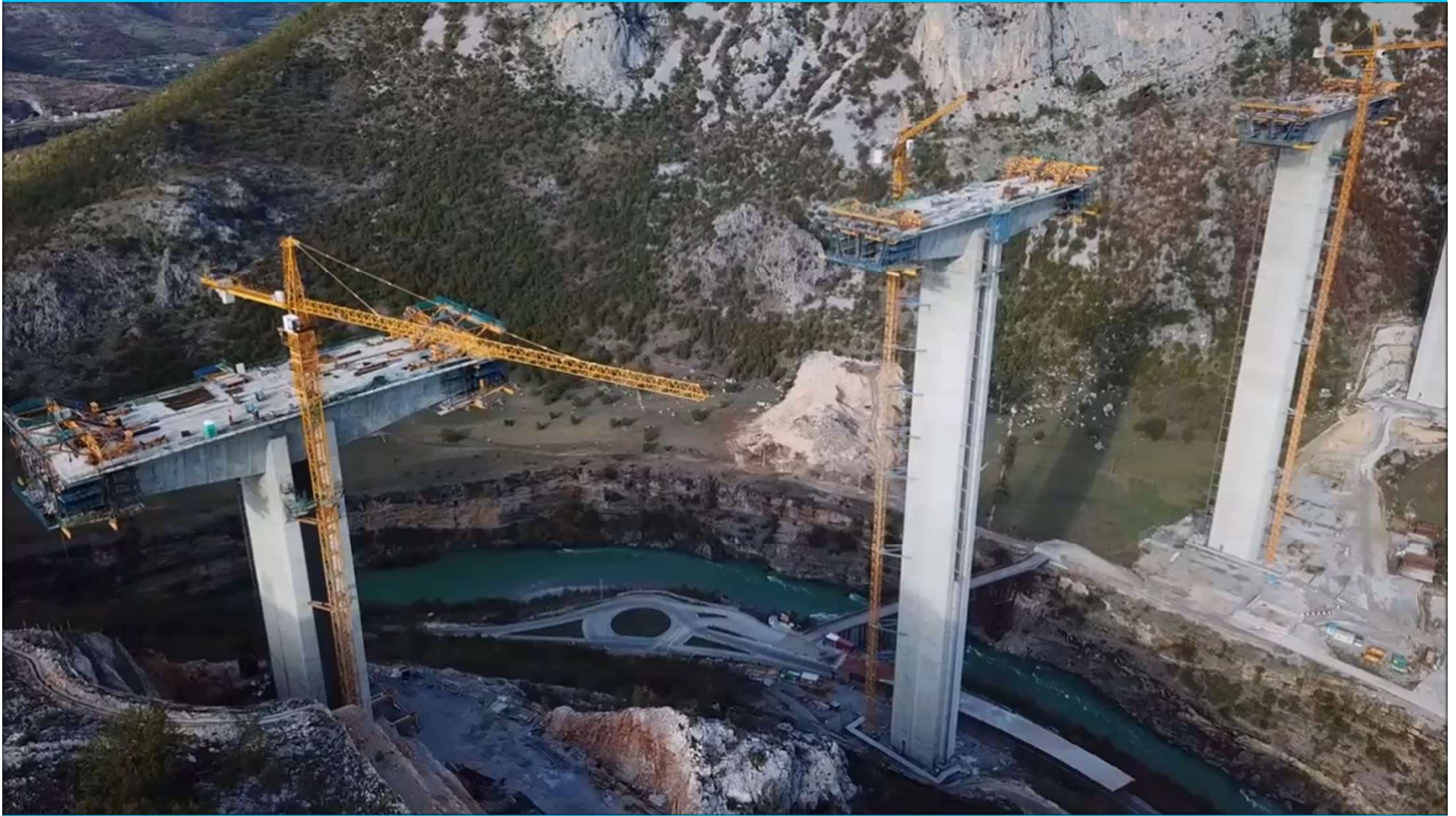
Geodata is in JV with French company Ingerop with the role of Engineer as per FIDIC with the main duty of tunnel construction and geotechnical and safety matters

BAR BOLJARE HIGHWAY

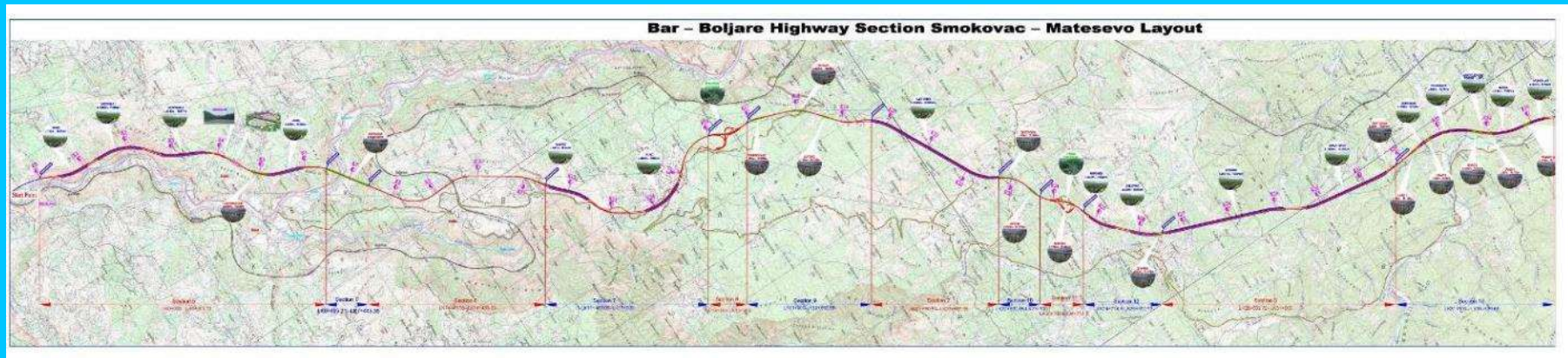


BAR BOLJARE HIGHWAY





BAR BOLJARE HIGHWAY



Four parts corresponding to four Contractor formally belonging to same company CRBC
15 sections (anyone with bridges, tunnel and open road) corresponding to building permit released by government

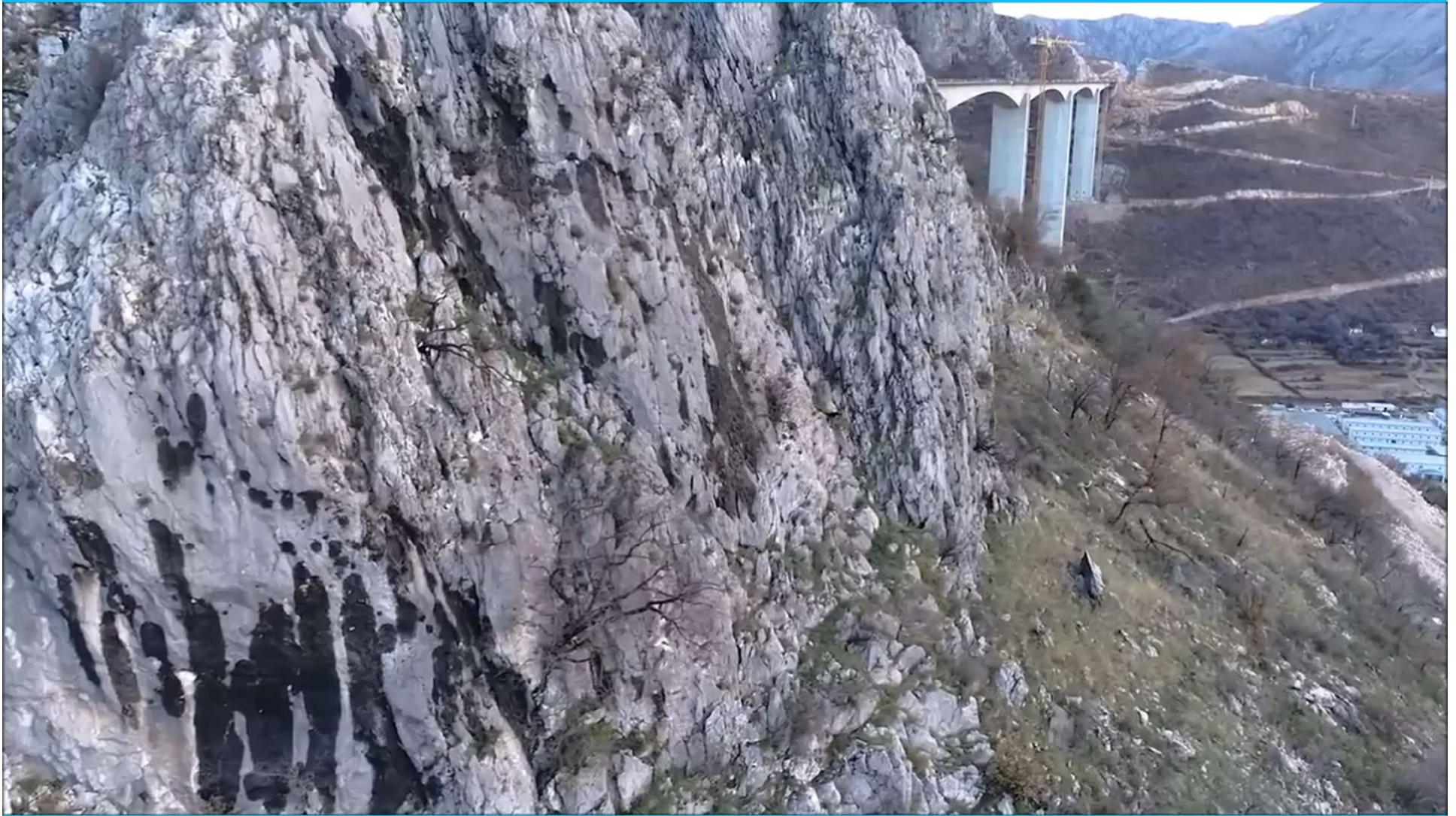


BAR BOLJARE HIGHWAY



BAR BOLJARE HIGHWAY





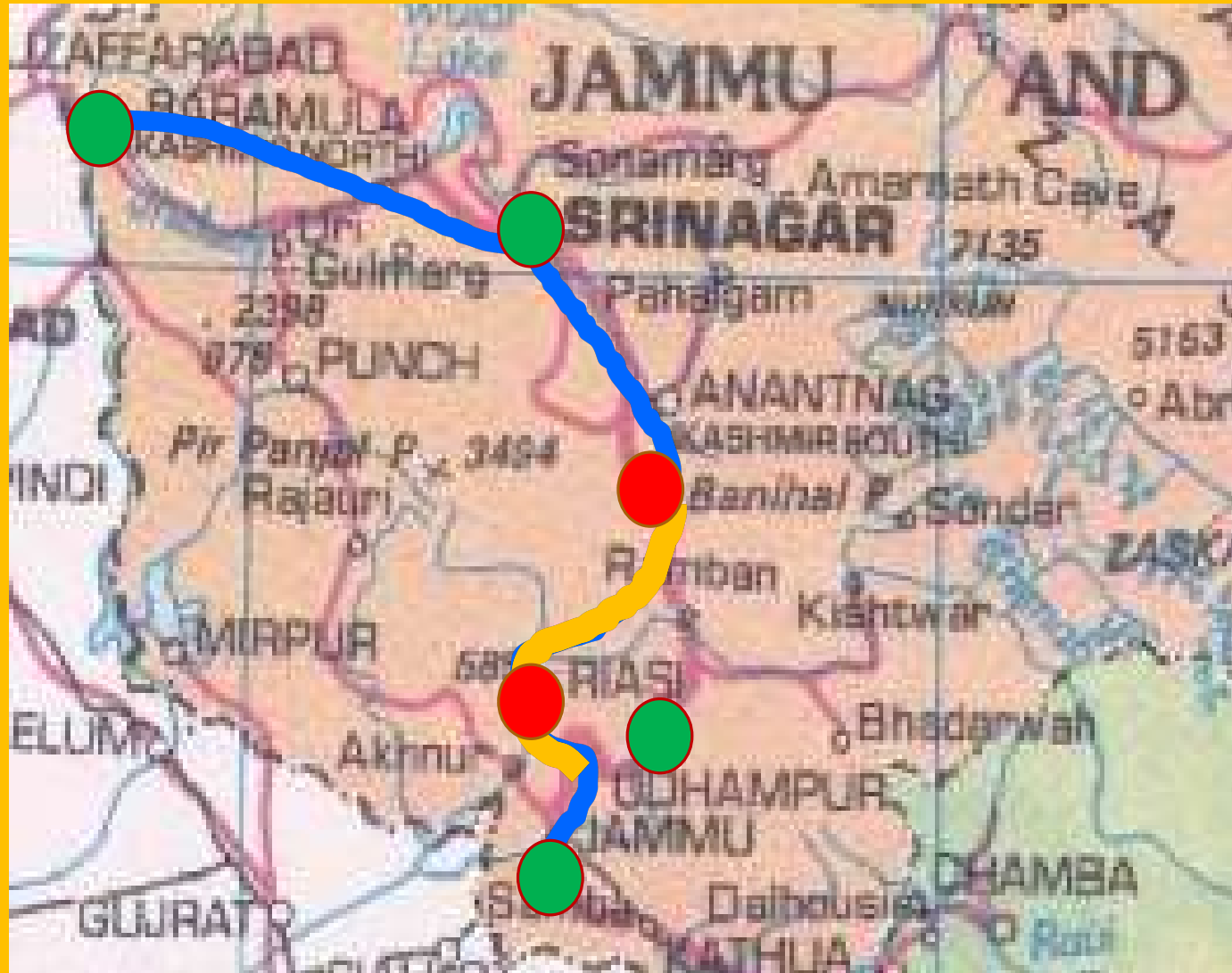
USBRL UDAHMPUR SRINAGAR BARAMULLA RAILWAY LINK



USBRL UDAHMPUR SRINAGAR BARAMULLA RAILWAY LINK



USBRL UDAHMPUR SRINAGAR BARAMULLA RAILWAY LINK

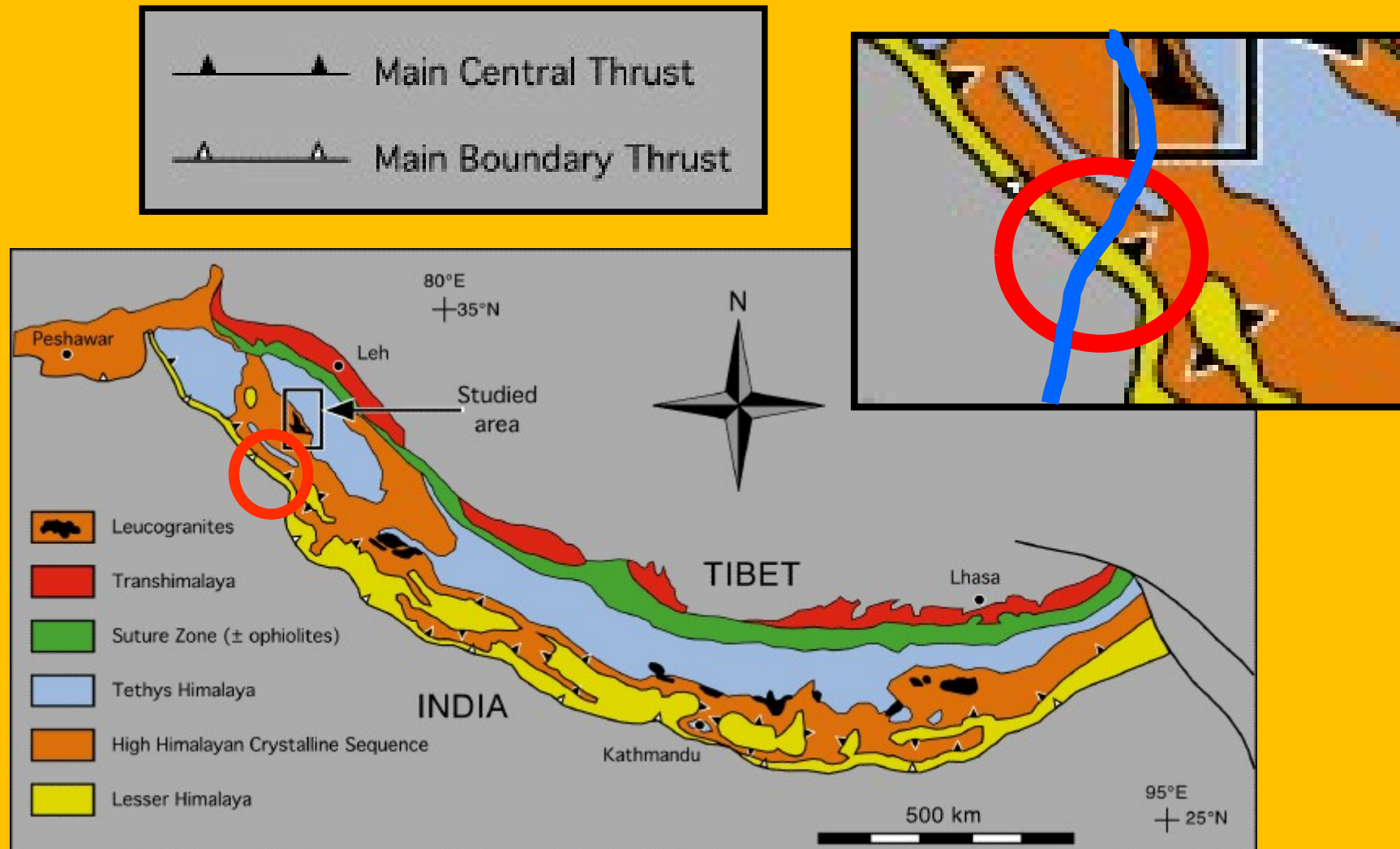


USBRL UDAHMPUR SRINAGAR BARAMULLA RAILWAY LINK

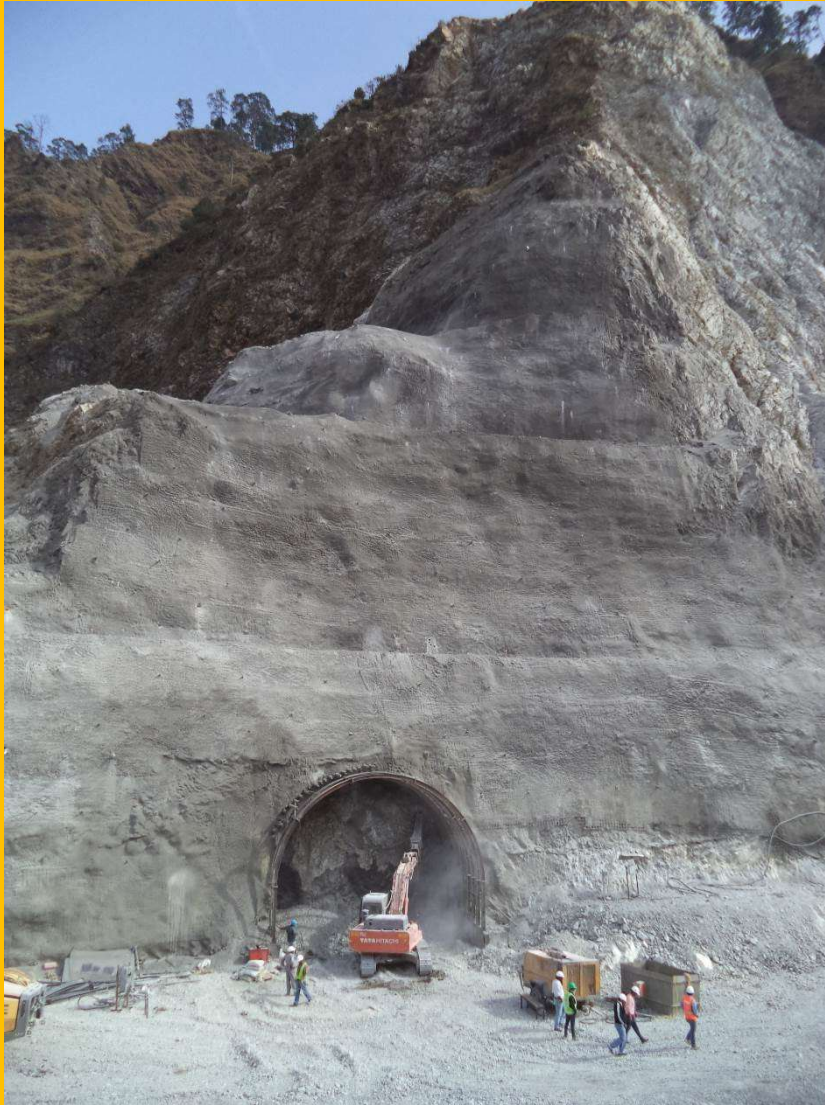


The connection named USBRL Udhampur Srinagar Baramulla Railway link is a railway of around 290 length that will connect Kashmir with the rest of India . The ongoing part is between Reasi and Banihal. Bridges and tunnel are included . The alignment cross Lesser Himalaya boundary Trust the friction zone btwwen India and the rest of Asia,with challenging geological issues.

USBRL RAILWAY LINK : REASI



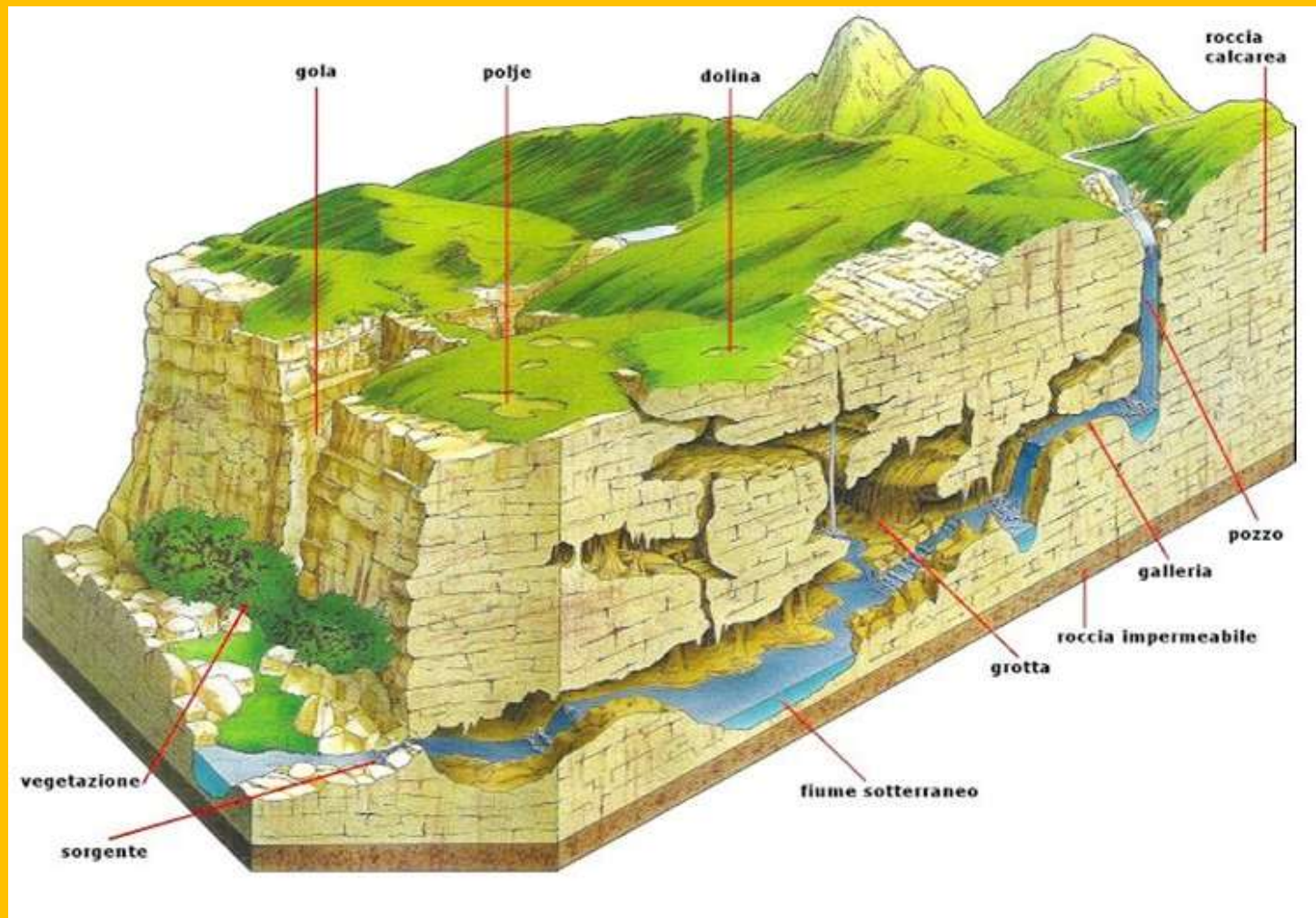
USBRL RAILWAY LINK : REASI



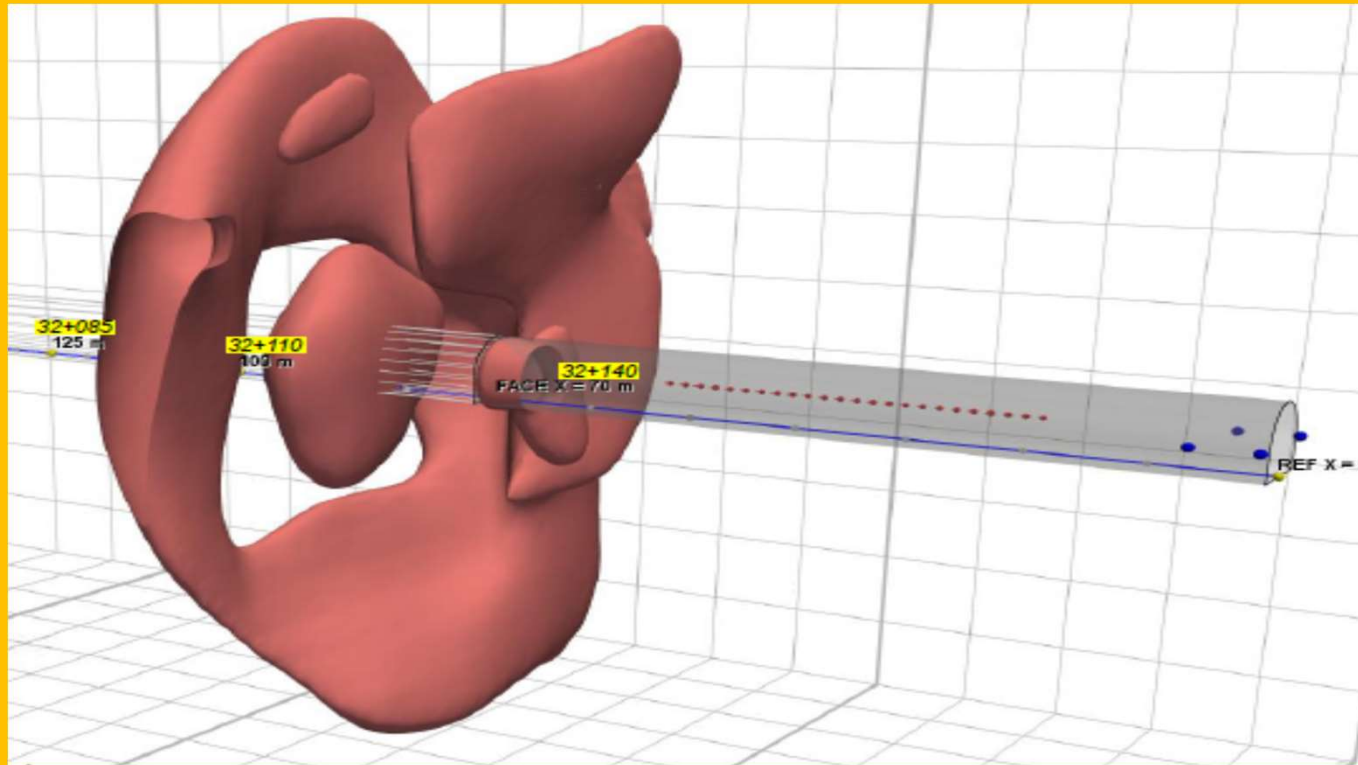
USBRL RAILWAY LINK : REASI



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USBRL RAILWAY LINK : REASI

USBRL RAILWAY LINK : BANIHAL



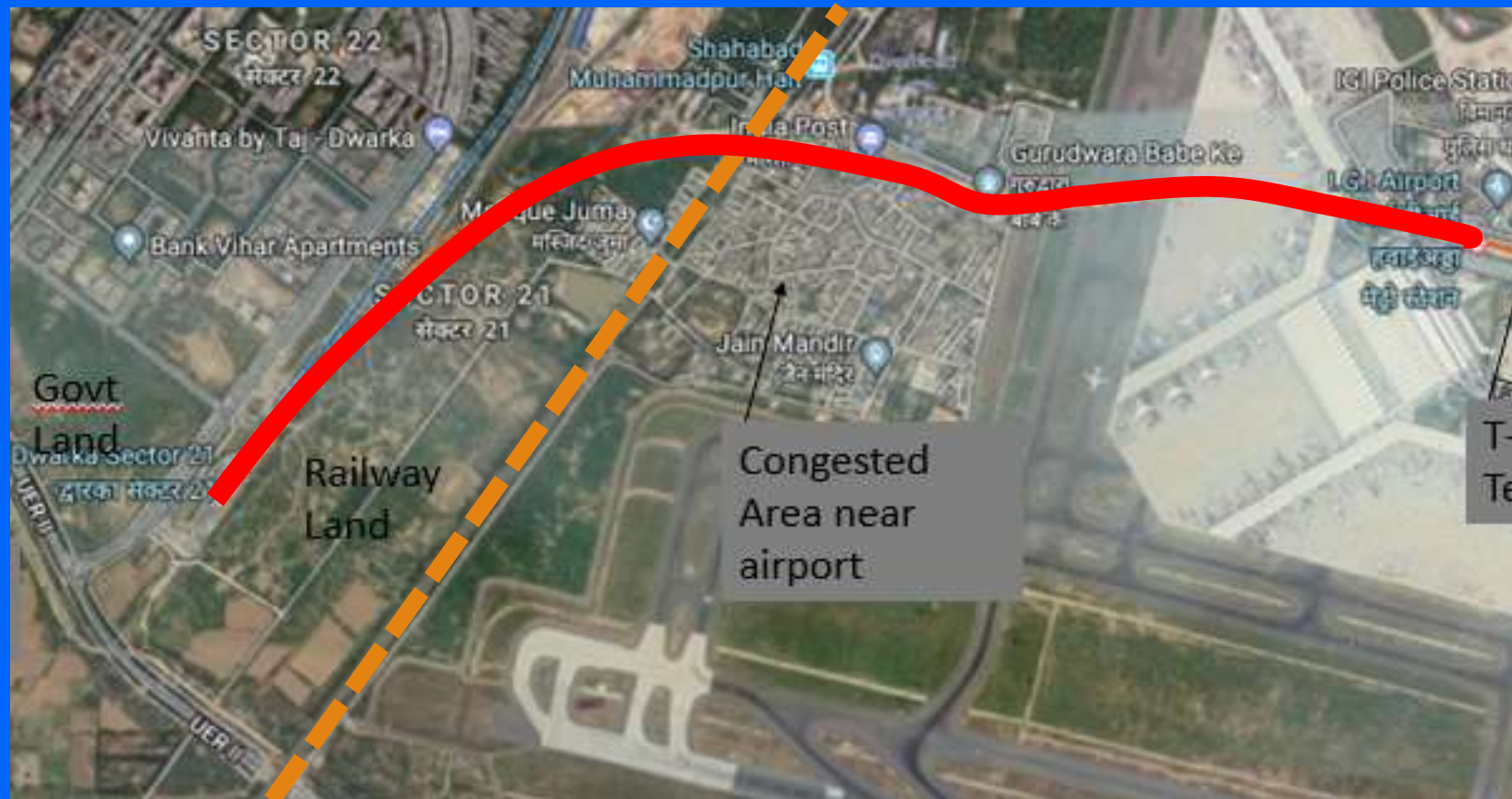
USBRL RAILWAY LINK : BANIHAL



USBRL RAILWAY LINK : BANIHAL



And tomorrow ?



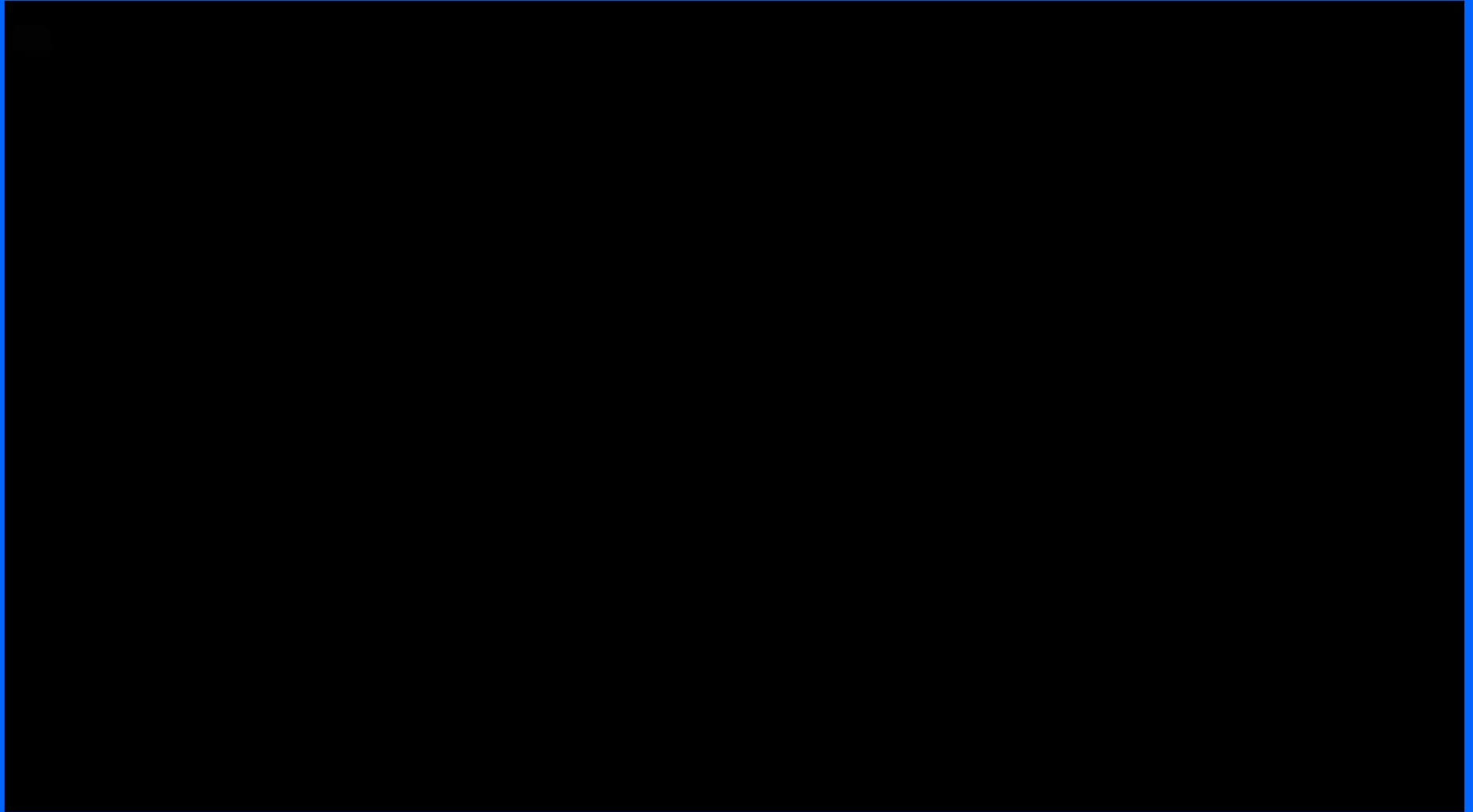
Mumbai Pune



MAP OF MAHARASHTRA IN INDIA



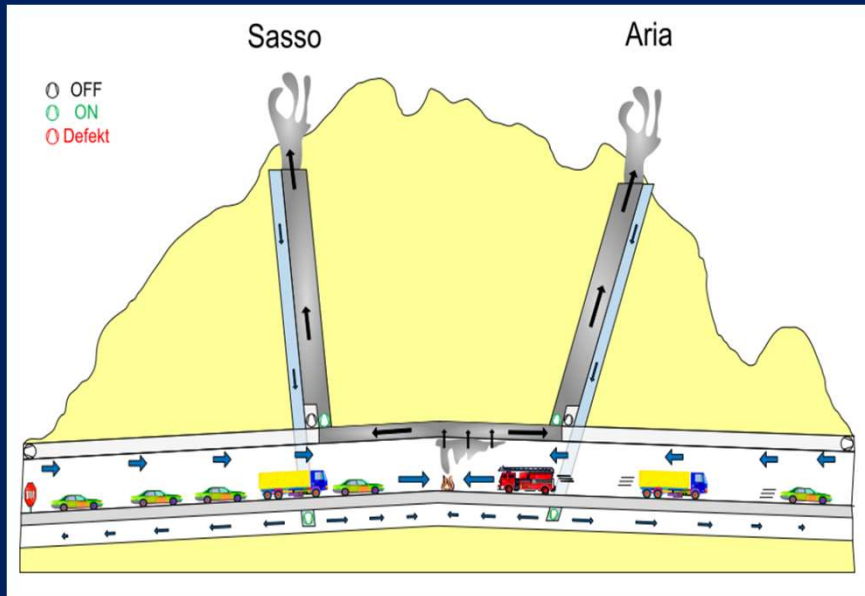
Mumbai Pune



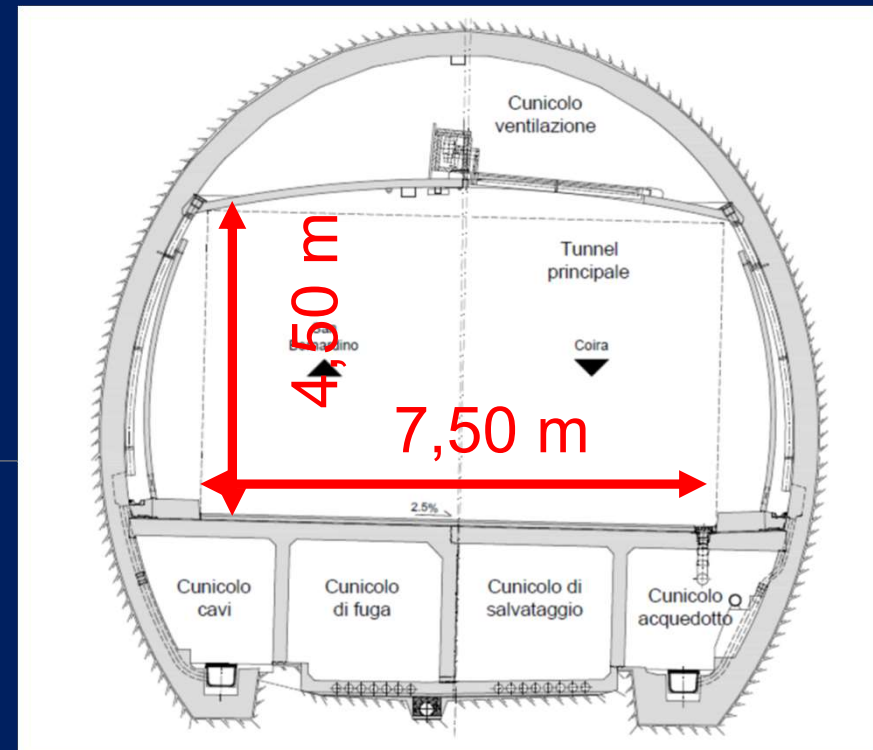
Galleria san Bernardino



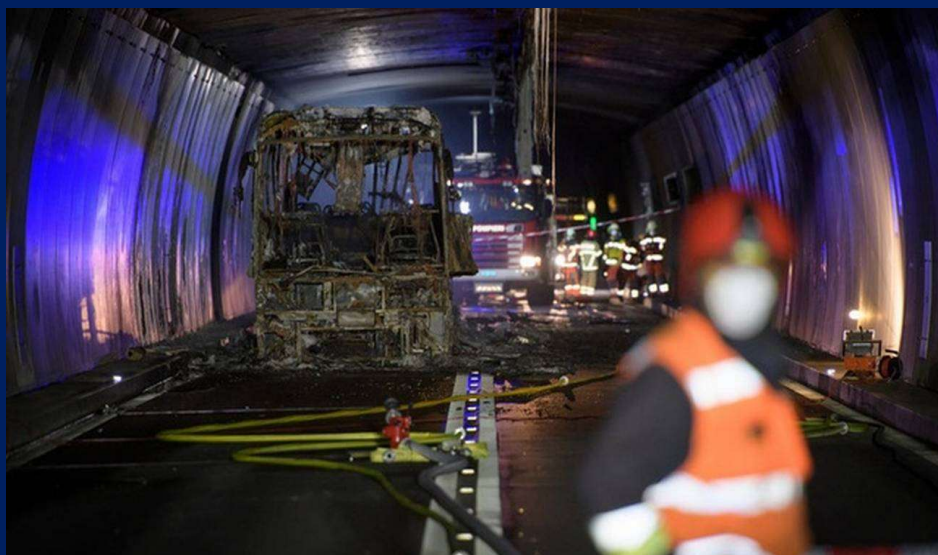
Galleria san Bernardino



LUNGHEZZA 6656 M

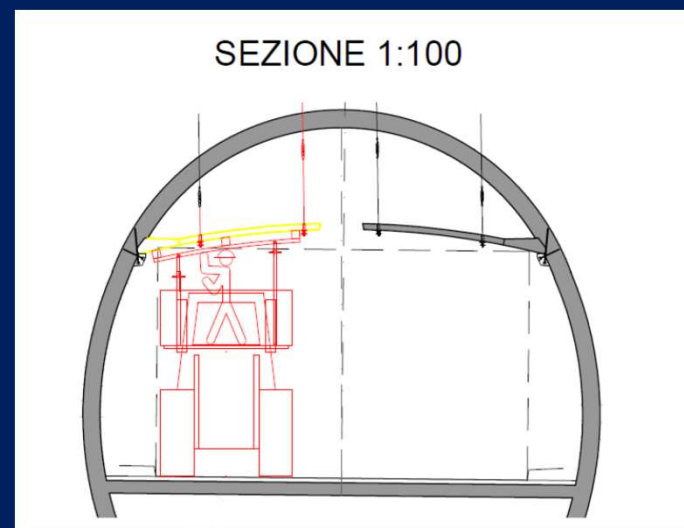
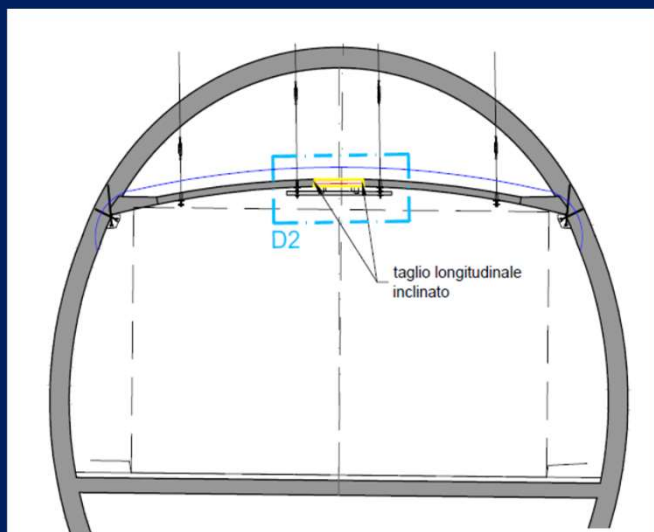


Galleria san Bernardino

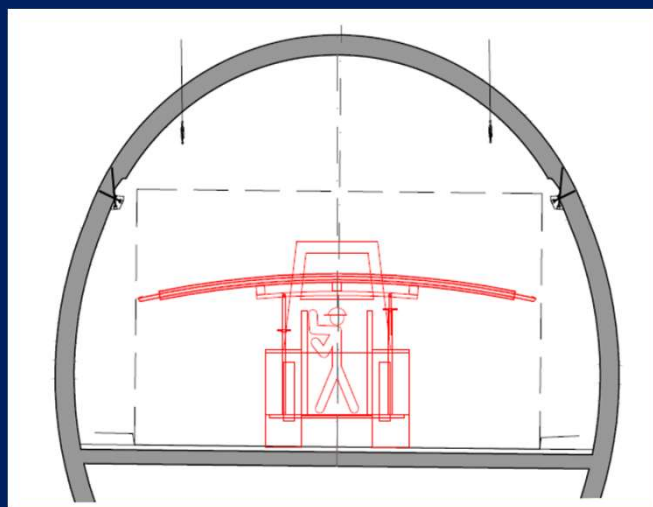


Incendio del 18 maggio 2018

Galleria san Bernardino



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Galleria san Bernardino



Galleria san Bernardino



Galleria san Bernardino



Galleria san Bernardino



Final comments



Result of Engineering effort
is the construction
not the design

Heritage of humanity



Viva l'Italia





Proud to be italian



Tanks !

