



RENEWAL AND PROFIL EXPANSION TUNNEL MAROGGIA, 4-METER CORRIDOR BISSONE / MAROGGIA (CH)

EMPLOYER

Swiss Federal Railway Company, SBB,
CH-6002 Lucerne

DESIGNER

Rothpletz, Lienhard + Cie AG, CH-4600 Olten
Pini Swiss Engineers SA, CH-6900 Lugano

TIME OF COMPLETION

05.2016 – 03.2018

CONTRACT SUM

CHF 13 Mio.

EXECUTION OF THE WORK

ARGE M&M

CONSORTIUM PARTNERS

Marti Tunnel AG, CH-3302 Moosseedorf
Marti Bauunternehmung AG, CH-6002 Lucerne
Mancini & Marti SA, CH-6501 Bellinzona

LEAD COMPANY AND TECHNICAL LEAD

Marti Tunnel AG, CH-3302 Moosseedorf

COMMERCIAL LEAD

Mancini & Marti SA, CH-6501 Bellinzona

RENEWAL AND PROFIL EXPANSION TUNNEL MAROGGIA, 4-METER CORRIDOR BISSONE / MAROGGIA (CH)

SCOPE OF THE WORKS

The Maroggia tunnel is the railway line between Basel and Chiasso and is located in the Canton of Ticino (CH) between Bissone and Maroggia. The double tube tunnel was commissioned in 1874, together with the opening of the Gotthard main tunnel, and has since been renovated and maintained several times.

The access routes to the new Ceneri- and Gotthard Baisistunnels will be expanded to a frame profile as part of the project 4-meter corridor. This allows semitrailers with a height of 4 meters and a width up to 2.60 meters to be transported by train from Basel to Chiasso.

By means of extensive support measures and a one-sided profile expansion under continuous rail operation, can the insufficient profile clearance be eliminated and the tunnel upgraded to the new requirements.

ACTIVITIES

The two 570 m long railway tunnel will be during railway operation. The railway tunnel is daily by up to 180 passenger and freight trains, which requires a 100% availability of the tracks.

Construction measures:

- Vault injections	600 to
- Shotcrete plates	1'000 m ²
- Arch support by spiles	3'500 m
- Buil of a concrete bolt longarine	570 m
- Pre-tensioned bolts 500 kN	4'000 m
- Diamond blade cuts	2'000 m ²
- Excavation support with mortar bolts	1'000 pcs

The expansion of the roof takes place in 172 stages. In the portal areas and fault zones, the excavation occurs in the pilgrim step method. In the other sections, the excavation continuously in steps of 2 to 4 meters.

Vault Replacement:

- Vault excavation	5'000 m ³
- Rock support with sprayed concrete	800 m ³
- Support with grouted bolts	3'000 pcs
- Umbrella water proof sealing	4'200 m ²
- Vault concrete	2'000 m ³
- Joint sealing	1'200 m

Niche:

- Escape niches	15 pcs
-----------------	--------

Invert renovation:

- New construction of tunnel drainage	600 m
- Invert adjustment	1'000 m ²
- Cable channels	800 m

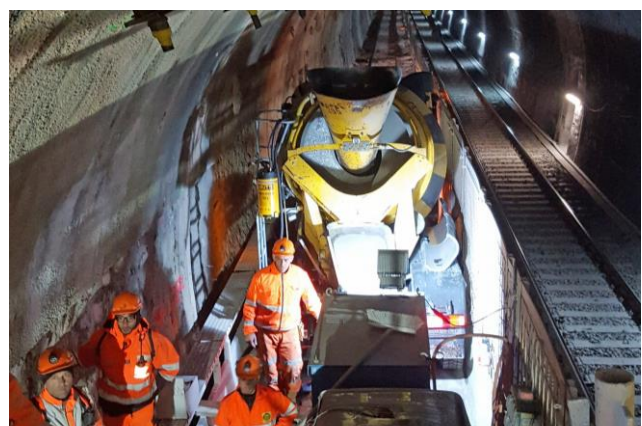
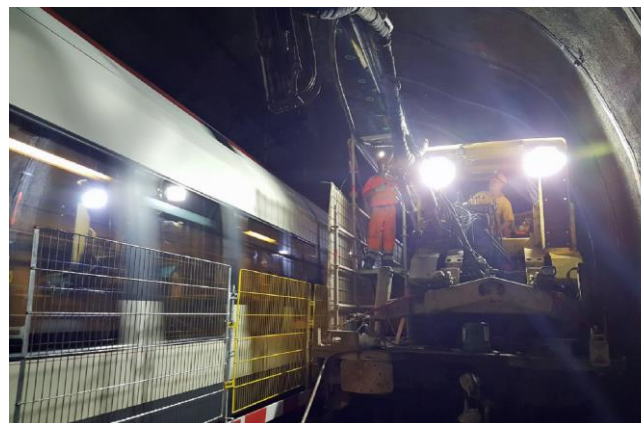
Self-rescue device

- Handrail with illumination	570 m
------------------------------	-------

GEOLOGY

Tunnel: - Porphyry

Portal sections: - Loose material artificially covered



09.01.2018