

Switzerland

Name: Swiss Tunnelling Society (STS)



Type of structure: Non-profit, open association

Number of members: 492 members, 98 corporate members/research organizations.

ASSOCIATION ACTIVITIES DURING 2017 AND TO DATE

In 2017, the Swiss Tunnelling Society continued to promote the cause of underground construction to its constituency by hosting the following main activities:

- May - General Assembly in Solothurn
- May/June - Swiss Tunnel Congress (STC) in Lucerne
- September - DACH Meeting in Hamburg
- October - STS field trip to the Bözberg Tunnel construction site
- November - BEFIPS Meeting in Paris

Additionally, the STS young members (STSym) hosted the following three events:

- March - STSym field trip to the Bözberg tunnel construction site (start event)
- May - Reception as part of STC 2017 in Lucern
- October - Autumn workshop at ETH Zurich

CURRENT TUNNELLING ACTIVITIES

New construction of Albula tunnel II:

On Thursday 17 October 2017, at the New Albula Tunnel of the Rhaetian Railway (RhB), the break-through into the reverse drive of the cavern was achieved. With this, the excavation from Preda (main lot) met the reverse drive which has previously been excavated from a cavern. The reverse drive was commissioned separately for the excavation of the Raiblner-Cornieule (the most delicate zone in the massif on the Albula tunnel).

A2 autobahn, Belchen rehabilitation tunnel:

To facilitate the repairs to the two existing Belchen tunnel tubes without traffic disruption, a third tube – a "rehabilitation tunnel" – is currently being constructed. The breakthrough on June 21, 2017 marked the end of a 3,100m drive by the 14m-diameter shield tunnel boring machine, the largest TBM currently deployed in Switzerland.

A1 autobahn, third Gubrist tunnel tube:

The daily congestion at the Gubrist tunnel bottleneck on the A1 freeway spells hour-long delays for drivers in both directions. The third Gubrist tunnel tube will provide extra capacity as part of the freeway widening project, from



Top: Belchen. Above: CEVA

four to six lanes, between the Limmattal and Zurich East junctions. A celebration was held on November 21, 2017 to mark the start of the tunnelling works.

Bözberg tunnel:

SBB (Swiss Federal Railways) has been mandated by the Swiss federal government to build, by 2020, a four-meter rail corridor on the Gotthard axis that will allow additional cargo to be shifted from road to rail. The largest single project on this corridor is the new Bözberg tunnel in the Canton of Aargau.

The focus of operations in 2017 was the approx. 2.5km TBM drive. Work started on June 6, 2017 on the Schinznach Dorf side. The 12.36m-diameter tunnel boring machine advanced at rates of up to 40m per day. With the breakthrough on the Effingen side on November 29, 2017, the tunnelling works were completed exactly within the estimated six-month window.

CEVA:

The new Cornavin–Eaux-Vives–Annemasse (CEVA) rail link, with a total length of 16km (of which about 14km is on Swiss territory), will serve key hubs in and around Geneva. By connecting the French (SNCF) and Swiss (SBB) rail systems, each of which currently terminate separately, the new link will also pave the way for a full regional network spanning the binational and bicantonal (Geneva/Vaud) conurbation.

In addition to several isolated engineering structures and cut-and-cover sections, the new route also includes two bored tunnels: the (2,100m) Pinchat tunnel and the (1,400m) Champel tunnel. The tunnels were excavated in soft ground, stabilized by means of pipe umbrellas and jet grouting so as to allow the subsequent use of excavators in conjunction with heavy supports. The Pinchat tunnel necessitated partial-face excavation (on the Bachet side).

Eppenberg tunnel:

The new Eppenberg tunnel between Schönenwerd and Gretzenbach in the Canton of Solothurn is the main engineering structure in the work package awarded by SBB (Swiss Federal Railways) for the "integral four-tracking" between Aarau and Olten. The summer of 2017 saw completion of the excavations in two geological areas: the "Effingen strata" and the "lower freshwater molasse" formations. While still in position, the TBM was subsequently refitted for operation in hydroshield mode instead of the previous dry mode. The natural lower-terrace gravel was then extracted by the TBM, with face support provided by bentonite suspension and compressed air, and removed via steel tubes for use as aggregate in concrete production. The drive was completed and the reception pit in Gretzenbach reached on December 21, 2017 – before year-end, as scheduled.

FUTURE TUNNELLING ACTIVITIES

Rail Tunnels:

Ausbau Bahnhof Bern (RBS, L = 1,200m), Dragonato (SBB, L = 30m)

Road Tunnels:

Safety Gallery Tunnel Rofla (ASTRA, L = 1,017m), Leissigentunnel (ASTRA, 2,200m), Einhausung Schwamendingen und Schöneichtunnel (ASTRA, L = 1,680m), Tunnel Cholfirst (ASTRA, L = 1,250m), Safety Gallery Kerenzerberg (ASTRA, 5,504m), Morschacher / Sisikon Tunnel (Kt. SZ/UR, L = 7,680m), Vingeltunnel (Kt. BE, L = 2,300m), City Tunnel (Kt. BE, L = 900m), Porttunnel (Kt. BE, L = 1,700m), Tunnel Weidteile (Kt. BE, L = 1,300m), Tunnel Fäsenstaub (ASTRA, L = 1,460m), Tunnel de déviation des Evouettes (Kt. VS, L = 770m)



STATISTICS

1. Length or volume excavated - % mechanized / % conventional during 2017: 9,000m / 33% TBM
2. Amount of tunnelling / underground space facilities awarded in 2017: €670M.
3. Tunnels completed: Rosshäuserntunnel (BLS, L = 2,100m)
4. List of tunnels under construction

Rail Tunnels:

Ceneri-Basistunnel (ATG AG, L = 15,400m), 5 Tunnel der CEVA (SBB/Kt. GE, L = 8,200m), Bözberg II Tunnel (SBB, L = 2,500m), Ruckhaldetunnel (AB, L = 725m), Eppenbergtunnel (SBB, L = 3,114m), Albulatunnel (RhB, L = 5,860m), Coldrerio (SBB, L = 96m).

Road Tunnels:

Tunnel Eyholz Haupttunnel (Kt. VS, L = 4,200m), Tunnel Ligerz (ASTRA, L = 2,483m), Safety Gallery Tunnel Sachseln (ASTRA, 5,084m), Galgenbuck (ASTRA, 1,138m), Tunnel Visp 2. Röhre (Kt. VS, L = 2,600m), Safety Gallery Tunnel Bärenburg (ASTRA, L = 1,028m), Sanierungstunnel Belchen (ASTRA, L = 3,200m), Gubrist 3. Röhre (ASTRA, 3,230m), Safety Gallery Tunnel Crapteig (ASTRA, 2,171m), Tunnel Riedberg (Kt. VS, L = S: 555m, N: 483m), Tunnel Silvaplana (Kt. GR, L = 750m), Südumfahrung Küsnacht (Kt. SZ, L = 500m).

Main picture: Albula. Top: Bizberg. Above left: Eppenbergtunnel.
Above right: Gubrist

