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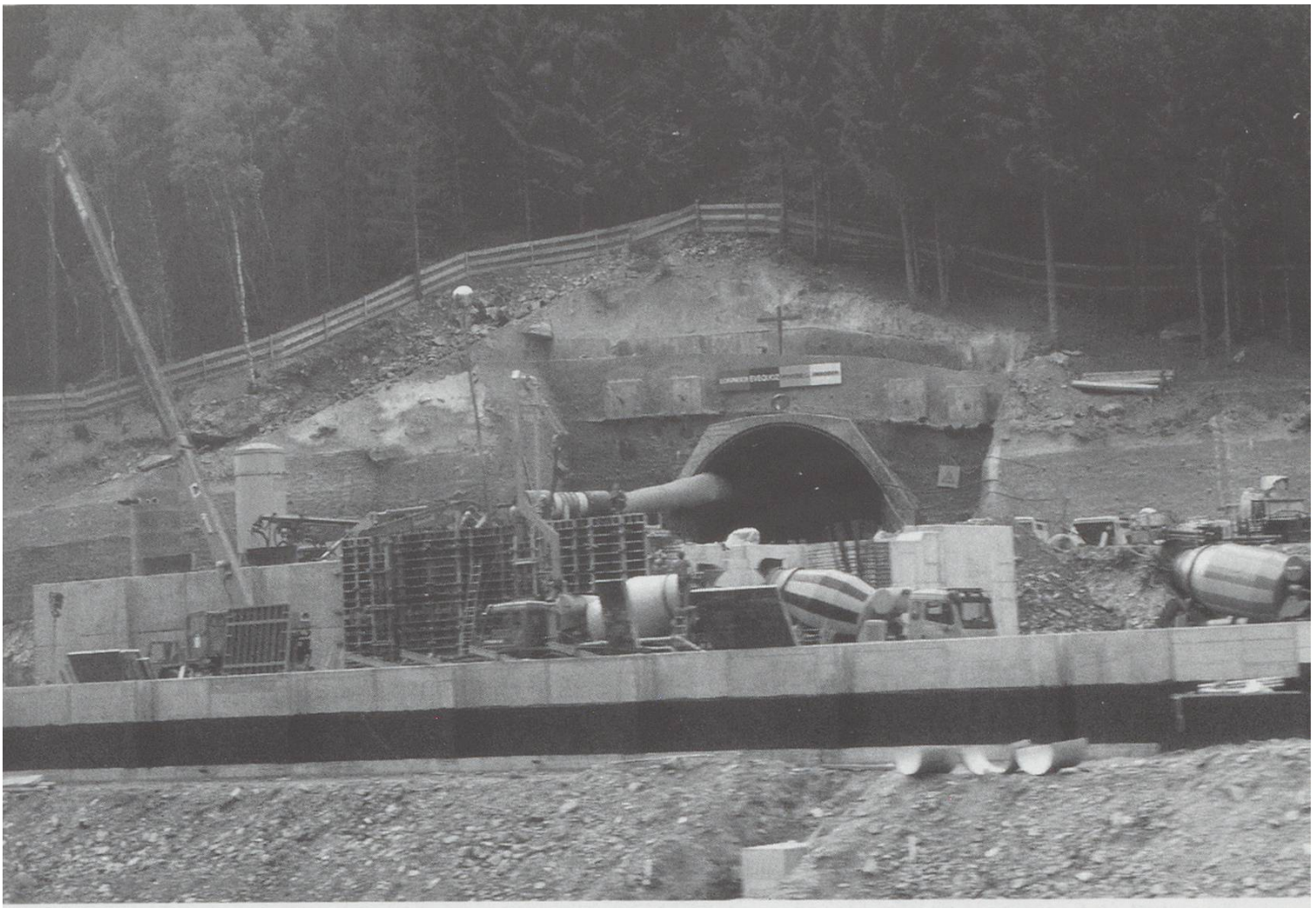


AlpTransit Update; 2 Lötschberg base tunnel

The June 1998 issue of Swiss Express contained a brief overview of the recent developments on the AlpTransit project. This time **Peter Marriott** *covers the Lötschberg base tunnel part of the project.*

The Lötschberg AlpTransit route is intended to connect the Swiss capital city of Bern with the Rhone valley. Using the existing Simplon tunnel it will ensure an improved link between north and south Europe. The design and construction of the project will be supervised by BLS AlpTransit SA which is a subsidiary of the BLS group.

The Lötschberg project is envisaged to fulfil various transportation requirements; the passage of high speed passenger and freight trains through the Alps (the "transit" function) and the transportation of motor vehicles linking the N6 and N9 motorways in the Kander valley from Bern with the Rhone valley motorway using a shuttle service between Frutigen and Steg (the "shuttle" function). The latter will require a larger clearance profile within the tunnels compared with the Gotthard base tunnel.

The Lötschberg-Simplon Base Tunnel System route from Basel to Italy will use a mixture of existing track, existing tunnel (Simplon), new Rail 2000 tracks (between Bern and Olten, Liestal and Basel) with a new Lötschberg base tunnel.

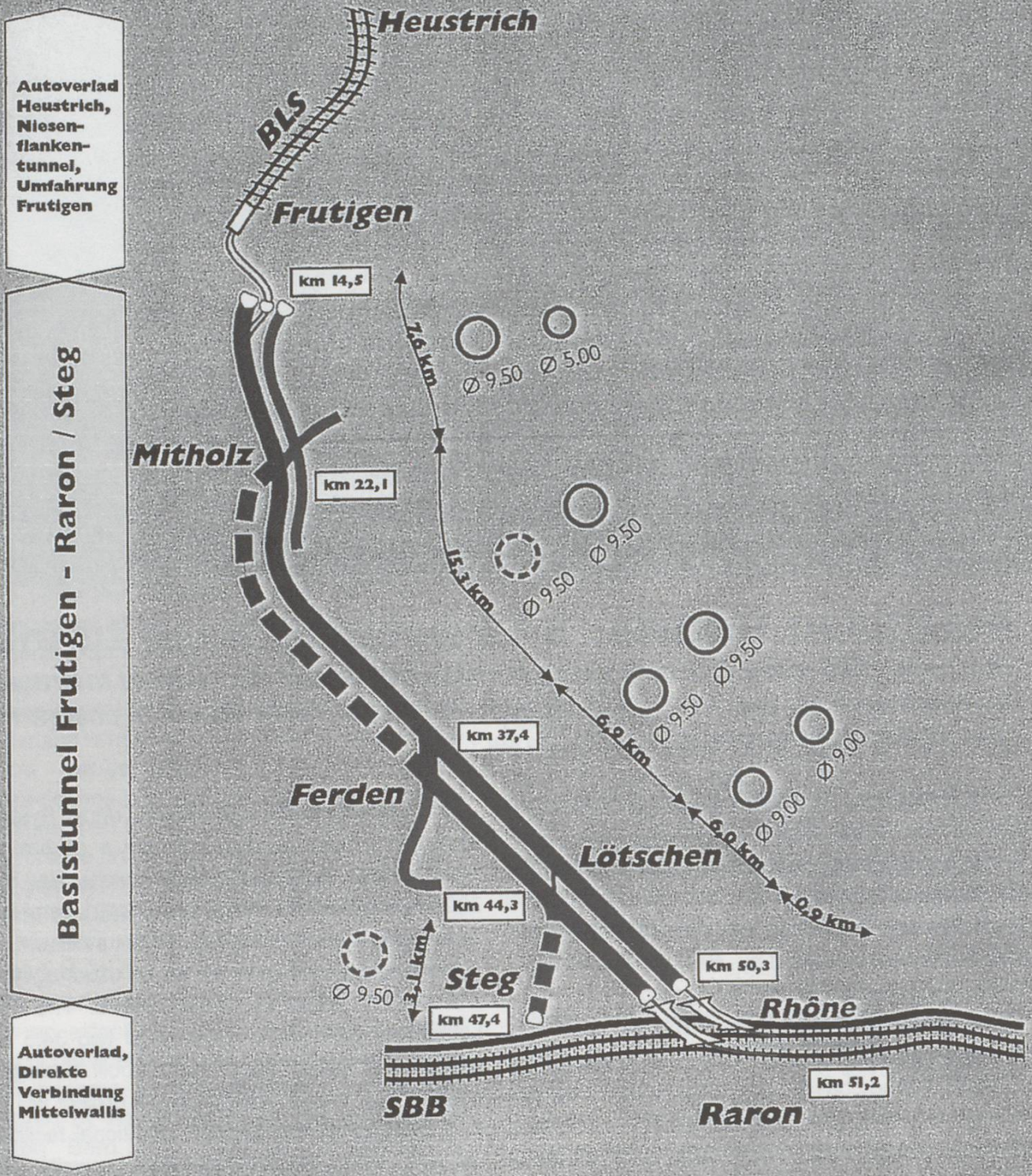
A maximum 13% gradient will be used together a minimum radius of 4000 metres. The new Lötschberg tunnel will comprise of two 34.5 km single track tunnels which will be built in stages. Initially the "transit" aspect of the project will be built followed by the "shuttle" additional facilities as and when finances/demand permit. The completed project will include two underground emergency stations for passenger evacuation purposes. Additionally cross-overs will provide operational flexibility.

The tunnelling will commence from both portals (Frutigen and Raron) plus various access tunnels

Planvorlage 1996 Lötschberg-Basistunnel

Beantragtes Investitionsprogramm (Variante A)

BLS AlpTransit
Lötschberg-Basislinie



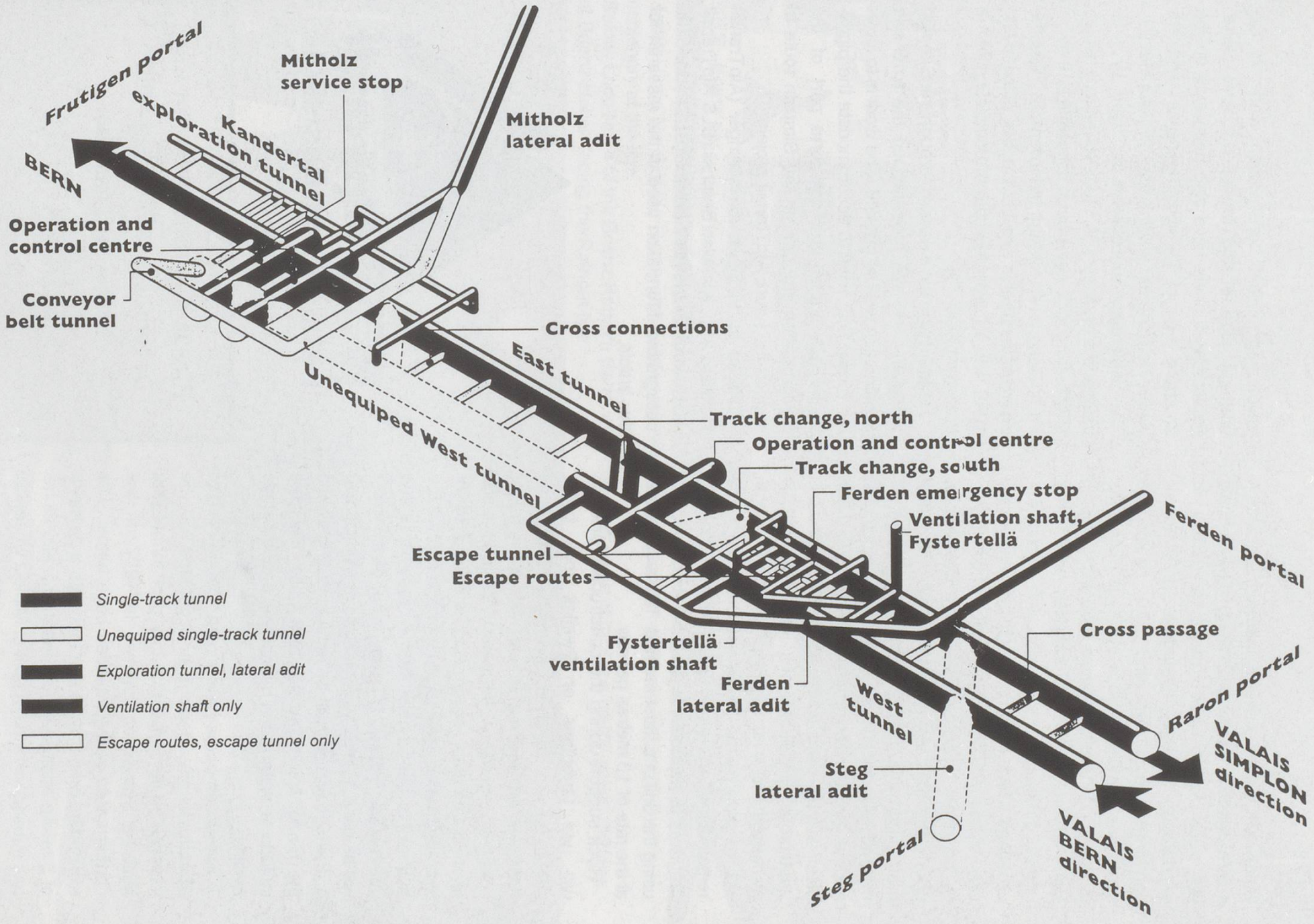
Betriebsfähige Teilstrecken:

Realisierung sichergestellt

Realisierung zurückgestellt, raumplanerisch gesichert

var_afar.cdr / hps

BLS AlpTransit AG, Stabsorgan
BSB+Partner, Biberist 18.10.96


Frutigen Portal
Mitholz service stop
Mitholz lateral adit
Kandertal exploration tunnel
BERN
Operation and control centre
Conveyor belt tunnel
Cross connections
East tunnel
Unequiped West tunnel
Track change, north
Operation and control centre
Track change, south
Ferden emergency stop
Ventilation shaft, Fystertellä
Ferden portal
Escape tunnel
Escape routes
Fystertellä ventilation shaft
Ferden lateral adit
West tunnel
Cross passage
Raron portal
VALAIS SIMPLON direction
Steg lateral adit
Steg portal
VALAIS BERN direction
Single-track tunnel
Unequiped single-track tunnel
Exploration tunnel, lateral adit
Ventilation shaft only
Escape routes, escape tunnel only

which will permit several intermediate attack points (Mitholz, Ferden and Steg). The tunnels will need to be built through a variety of sandstones, shales, limestone, greywackes, anhydrites, dolomites and other geological conditions. Whilst the rock quality is mainly fair to very good there are various rock folds, dipping slabs of rock, gneisses, schistes which may create difficulties especially with waterflow. Locations which have high rock permeability will need to be made tight by injections of concrete.

The tunnelling process will use a combination of drill and blast excavation together with tunnel boring machine (TBM) excavation. Choice of method will depend on geological conditions, access, and the construction schedule. Drill and blast will be used where the TBM method is unsuitable for local rock conditions. It is envisaged that over 99.5% of the tunnel length will be able to be excavated full face - the remainder will use a half face method. Tunnelling progress is expected to be 7.5 metres per day using the drill and blast method. TBMs will tunnel at the rate of 13 metres per day.

Rock support during the construction process will use fibreglass or Swellex rock bolts, shotcrete, wire mesh or steel ribs. The tunnel floor will be covered in various strengths of concrete together with mesh, ribs and bolts. Ground treatment, by grouting, is envisaged for the Jungfrakeil area. A concrete lining will be built within the tunnels. At the cross-overs and intermediate tunnels a tunnel lining of shotcrete will be used. Where water inflows are anticipated a drainage system will be incorporated between the tunnel lining and the rock walls. This will include a waterproof membrane and drainage facilities.

Two dozen bores have already been drilled to investigate the geological conditions of the intended route. An exploratory pilot tunnel was built at Kandertal, finished in 1997, at the northern side of the intended base tunnel. The exploration tunnel is 9437m long with a diameter of 5 m. An additional intermediate access tunnel has subsequently been built at Mitholz where the major part of the construction work on the northern side of the tunnel will take place. Exploratory tunnels have also been built on the southern side of the existing tunnel and are visible from the car loading area at Goppenstein. The exploration tunnels will be used by rock mechanics engineers to study formations which may feature rock water burst capabilities.

Following a referendum in November 1998 the award of contract is expected to take place in late 1998 with an expected date of completion of the project in 2006.

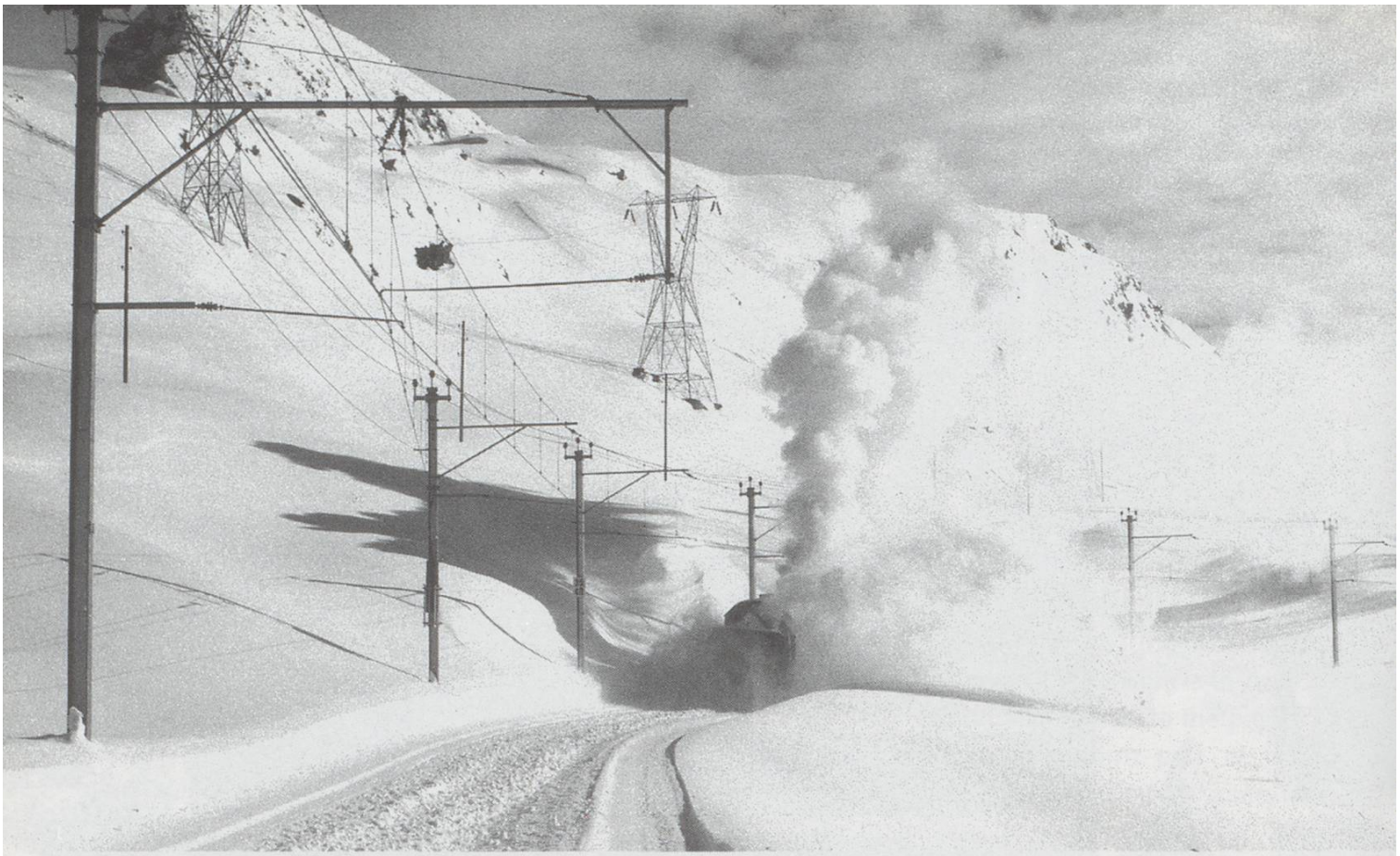
Readers who have passed through the Simplon tunnel in 1998 will have noticed the extensive construction work at present. The work is to lower the tunnel floor level to accommodate the piggy-back HGV trains and will form part of the modernisation program on the Simplon route to support the future AlpTransit project.

Thanks go to Oliver Bertschinger (AlpTransit Gotthard AG), Nicholas Brunner (BLS AlpTransit AG) and Hansueli Kunz (BLS) for the background information used in the research for this article.

Please submit articles for the December "Swiss Express" by the 20th October.

THANK YOU

Above: Loco No. 6 of the Gornergrat Bahnen, plinthed outside the main station in Zermat for the centenary of the line.
Below: Loco No. 4 of the Brienz Rothorn Bahn, on a makeshift piece of rack line on the goods platform at Brienz station facing the Rothorn line



AGM Photo Competition Winners

Overall Winner: Above: Steam Snow Plough X9213 at work between Alp Grüm and Bernina Ospizio
Scenic Winner: Below: Bernina Pass. Both taken on 4/2/96 by Bill Pickup.

Railway Winner:
Right: No. 2 of the Dampfbahn Furka Bergstreke at Realp By Diana Combs.

The appeal of the Railway winner lay in the way the locomotive stood out from the rest of the scene almost as though the photograph had been deliberately printed that way. The scenic entry was clear, balanced and contained contrast without loss of detail in the shadow. The overall Winner was felt to combine the Scenic and Railway interests very well and thus to merit its place.

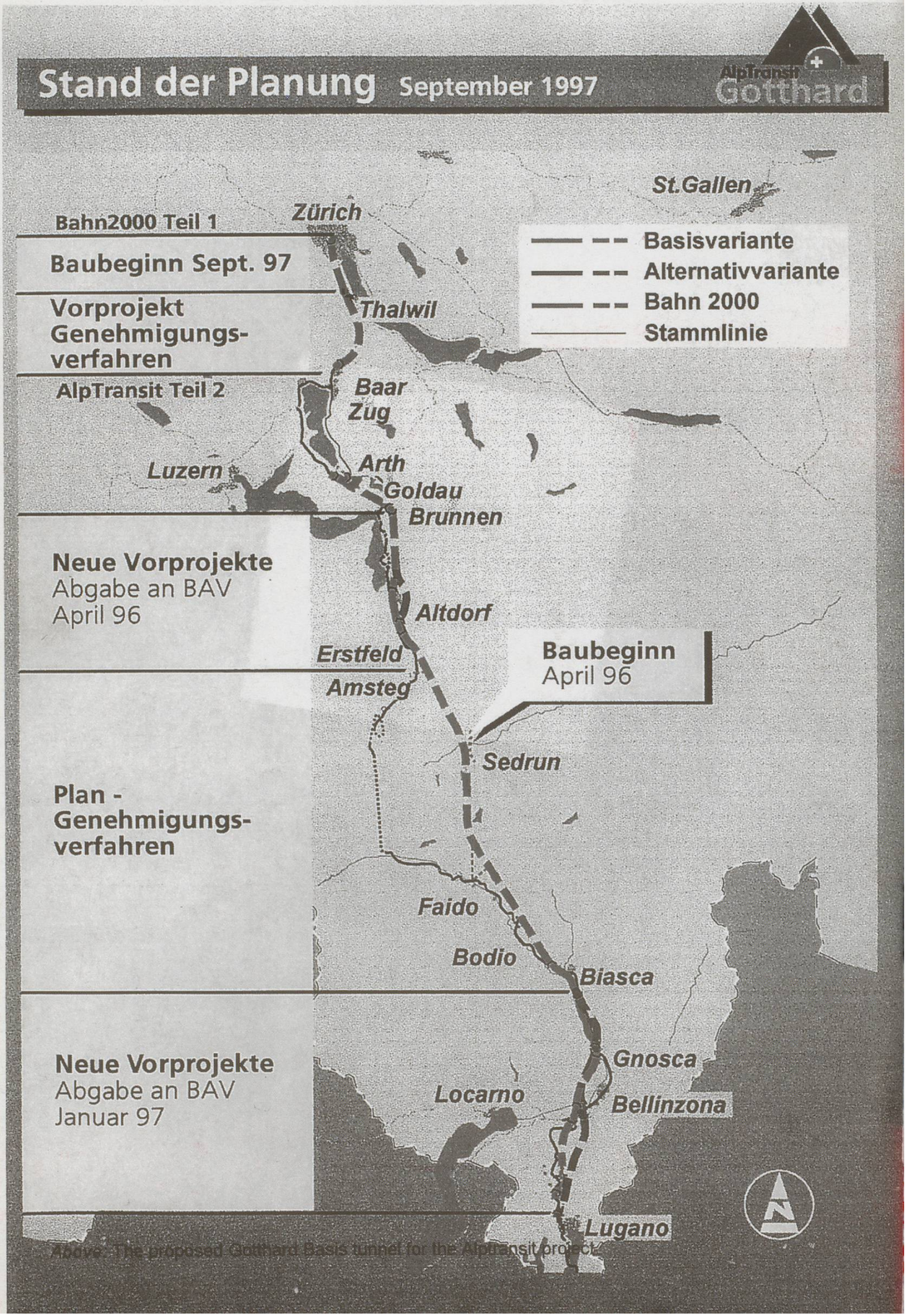
I would like to thank all the entrants for their participation in the contest, the judging was difficult due to the very high standard of the entry.

Paul Russenberger.

1999 A.G.M. and Spring Meeting

The committee have asked the Bristol & Bath Branch to organise the above event. It will be held on Saturday 20th March at the Holiday Inn, Crown Plaza which is 5 minutes walk from Bristol Temple Meads station and half a mile from the end of the M32. The cost of the evening meal is to be £17.50 per person and a special room rate has been negotiated of £60.00 per room per night (including breakfast). I must emphasise that this is 'per room', and although is a little more than for other hotels we have used, it is a four star establishment with a high standard of accommodation. If any members wish to bring layouts, exhibits or stands to the A.G.M. please let me have details as soon as possible, as with any meeting space is at a premium. Full details of the event will as usual be published in the December 'Swiss Express'

ROGER ELLIS



Above: The proposed Gotthard Basis tunnel for the AlpTransit project