The Gotthard Base Tunnel – questions and answers

When will the Gotthard Base Tunnel officially become operational?

The opening ceremony of the Gotthard Base Tunnel will take place in June 2016. It is scheduled that the tunnel will become operational at the end of 2016.
Source: UVEK, http://www.uvek.admin.ch/themen/03527/03866/index.html?lang=de (not available in English)

Why and how was the decision taken to construct the Gotthard Base Tunnel?

The mobility requirements of Switzerland's growing population have increased greatly over the past 100 years. Current forecasts indicate that the country's transport sector will continue to grow. In addition, the Switzerland's strategic location at the crossroads of the continent makes it a highly important hub for European goods traffic. Swiss government policy is to ensure sustained mobility by increasing the public transport share of overall traffic and providing reliable basic services nationwide. Within this long-term programme, protection of the environment and the population has been accorded high priority. The NRLA (New Railway Link through the Alps) is one of four ambitious projects undertaken by the government, of which the Gotthard Base Tunnel is the flagship focal point. As a level transalpine railway link with few gradients, the Gotthard Base Tunnel will complement Switzerland's existing mountain rail routes. It will also enable higher travelling speeds and permit the use of heavy goods trains.
Source: BAV, http://www.bav.admin.ch/alptransit/01271/index.html?lang=de (not available in English)

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How is construction of the Gotthard Base Tunnel being financed?

In a nationwide vote in 1998, the Swiss electorate approved funding for the construction of the "New Rail Link through the Alps" (NRLA). Voters backed the "FinöV" programme for the long term funding of public transport (through revenues generated by Value Added Tax (VAT), a performance-linked levy on heavy traffic, and a mineral oil tax).
Source: BAV, http://www.bav.admin.ch/alptransit/01376/01377/index.html?lang=de (not available in English)

How much is the entire construction of the Gotthard Base Tunnel costing?

The cost of the Gotthard Base Tunnel amounts to CHF 9.7 billion (1998 price level excluding Inflation, VAT and construction loan interests). Effective costs amount to CHF 12.2 billion.

Total costs of the NRLA – including the Lötschberg Base Tunnel, Gotthard and Ceneri Base Tunnel – amount to CHF 18.2 billion (at 1998 price levels, excluding inflation, VAT and construction loan interests). Effective total costs amount to approximately CHF 23 billion.
Source: BAV, http://www.bav.admin.ch/alptransit/01376/01382/index.html?lang=de (not available in English)

How long is it taking to construct the Gotthard Base Tunnel?

The first examination of the geological fault zone in the Gotthard Massif was carried out in 1993 with the construction of an exploratory tunnel. The second NEAT construction site was opened three years later. The first drill-and-blast operation was undertaken in 1999. The first breakthrough in one of the tunnels was in October 2010, and 2011 saw excavation completed. Work on the infrastructure (including track, catenary, electricity supply, telecommunications and safety systems) is in progress and will be finished with the handover to Swiss Federal Railways for the operational testing.
Source: Alp Transit Gotthard Ltd, https://www.alptransit.ch/en/status-of-the-work/status-of-the-work/

Who has been working on construction of the Gotthard Base Tunnel?

Constructor of the Gotthard axis of the "New Rail Link through the Alps" (with base tunnels through the Gotthard and Ceneri) is Alp Transit Gotthard Ltd, a wholly owned subsidiary of Swiss Federal Railways. A railway systems general contractor has been tasked with installing the railway systems of the Gotthard Base Tunnel and the above-ground sections. The Transtec Gotthard Consortium – comprising the four companies Alpiq, Alcatel-Lucent/Thales, Renaissance and Balfour Beatty Rail – is responsible for installation planning, installation, and commissioning of the railway systems. After Alp Transit Gotthard Ltd has completed the test phase, Swiss Federal Railways will take over in 2016.
Source: Alp Transit Gotthard Ltd, https://www.alptransit.ch/en/project/the-project.html

Is the environment affected by the construction of the Gotthard Base Tunnel?

With the construction of the new Gotthard Base Tunnel, Switzerland is implementing one of Europe's most ambitious environmental protection projects. From concept to completion, construction is proceeding as environmentally compatible as possible. Wide-ranging measures have been taken to reduce the impact on people, wildlife, water and air.

Alp Transit Gotthard Ltd is in constant dialogue with environmental authorities in finding workable solutions. Measures include environmentally compatible material transport to ensure clean air, strict guidelines concerning waste water, dust and noise protection, protection of flora and fauna as well as sustainable use of the stone extracted from the mountain.
Source: Alp Transit Gotthard Ltd,

https://www.alptransit.ch/fileadmin/dateien/shop/broschueren/atg_broschuere_e_2012_lq.pdf

How can safety by guaranteed in such a long tunnel?

The Gotthard Base Tunnel's top priority is passenger safety, necessitating implementation of a modern safety concept. The tunnel system consists of two directionally separated single-track tubes. These tubes are connected by cross passages located every 325 metres. In an emergency they would serve as rapidly accessible evacuation routes into the other tube. At the one-third-way points of the tunnel at Faido and Sedrun, emergency-stop stations in both tubes are connected to the parallel tube through six connection tunnels. The way to the connection tunnels is indicated by signs, emergency lights, and handrails. In the event of evacuation, trained railway personnel will provide assistance. Overpressure ensures that the air remains smoke free. Fans provide fresh air in the emergency stop stations; hot fumes are sucked out through extraction openings. Travellers can then be collected in the opposite tube by an evacuation train.
Source: Alp Transit Gotthard Ltd,
https://www.alptransit.ch/fileadmin/dateien/shop/broschueren/atg_broschuere_e_2012_lq.pdf

How long will it take to travel through the Gotthard Base Tunnel?

The Gotthard Base Tunnel will be 57 kilometres long and the maximum speed of passenger trains in the tunnel 250 kilometres per hour. Travel time through the tunnel will take an estimated 20 minutes.

How will the travel time be affected between Switzerland and Italy?

With the integration of the Gotthard Base Tunnel in 2016 – as well as the Ceneri Base Tunnel in 2019 – travel time will be reduced as follows:

	2017-2018	**2019**	**Starting 2020**
Zurich – Ticino	approx. 25 minutes	approx. 40 minutes	approx. 60 minutes
Basel – Ticino	approx. 30 minutes	approx 40 minutes	approx. 60 minutes
Lucerne – Ticino	approx. 40 minutes	approx 40 minutes	approx. 60 minutes
German-speaking Switzerland – Milan (Italy)	approx. 30 minutes	approx. 30 minutes	approx. 60 minutes

Train travel from Zurich to Milan currently takes 4 hours 3 minutes. It is estimated that in 2020 the same journey will take less than 3 hours.
Source: SBB, http://m.sbb.ch/news.newsdetail.2013-8-0808_1.html (not available in English)

What will happen with the current railway connection over the Gotthard?

The Alpine railway link with its countless bridges, loop tunnels and summit tunnel (built in 1882) will continue to be served. Passengers will be able to travel via the old railway route or the new Gotthard Base Tunnel. Starting in December 2016 – and with the commissioning of the Gotthard Base Tunnel – the old railway route will be served hourly by a RegioExpress connected to inter-city transportation in Erstfeld, Bellinzona and Lugano.
Source: SBB, http://blog.sbb.ch/gotthard-bergstrecke/2014/06/19/

How can the Gotthard Base Tunnel be compared with the Lötschberg Base Tunnel?

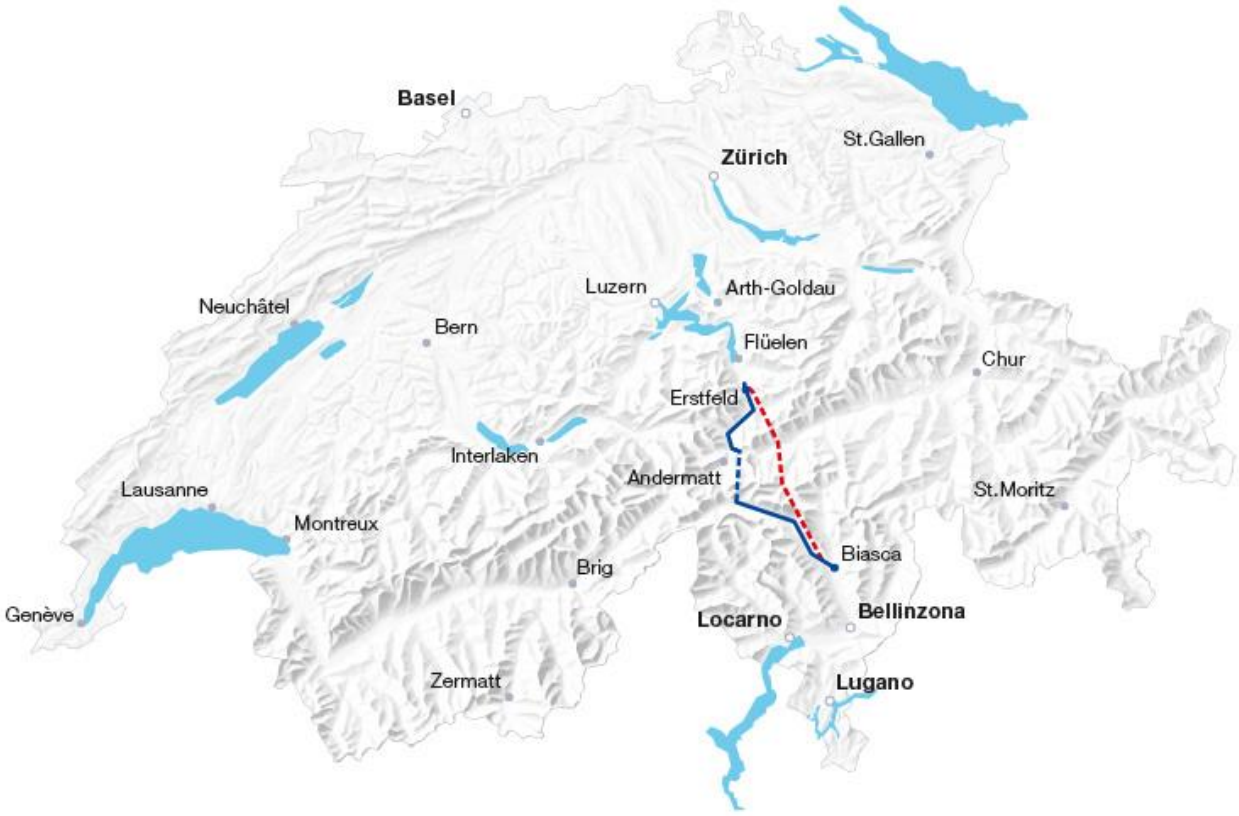
The Lötschberg Base Tunnel is part of the NRLA (New Railway Link through the Alps) together with the construction of the Gotthard Base Tunnel. The Lötschberg Base Tunnel became operational in December 2007 and represents a technical and civil engineering masterpiece. Today, some 50 passenger trains and up to 60 freight trains operate through the tunnel every day. By comparison, figures for the Gotthard Base Tunnel will be up to 260 freight trains and 65 passenger trains per day.
Source: BLS, http://www.bls.ch/e/infrastruktur/neat.php

Milestones in the development of the Gotthard Base Tunnel

1882: Opening of the first Gotthard Base Tunnel (15 km.), connecting Göschenen and Airolo by trrain
1980: Opening of the Gotthard Road Tunnel (16.9 km.)
1992: Swiss voters approve government proposals for the construction of the New Railway Link through the Alps (NRLA), including the Gotthard Base Tunnel
1998: Approval of the FinöV financing concept
1999: Start of the first drill and blast cycle
2010: Gotthard Base Tunnel breathrough

2016: Opening of the Gotthard Base Tunnel (linking Erstfeld and Bodio)
Source: UVEK, http://www.uvek.admin.ch/themen/03527/03866/index.html?lang=de (not available in English)

Gotthard axis route overview



- Mountain route over the Gotthard
- Gotthard Base Tunnel

Detailed facts and figures about the Gotthard Base Tunnel:

Length, depth and distances	
Total length of entire tunnel and gallery system	151.840 km
Length of Gotthard Base Tunnel, north portal	57.104 km
Erstfeld - south portal Bodio	57.017 km
Total both tubes	114.121 km
Altitudes above sea level and altitude differences	
Rail upper edge at north portal Erstfeld	460 m
Rail upper edge at south portal Bodio	312 m
Altitude difference between north portal Erstfeld and south portal Bodio	89 m
Maximum rock overlay	2300 m
Speed	
Travel speed inside the tunnel	Max. 250 km/h
Travel speed outside tunnel	Max. 250 km/h
Estimated travel time through the tunnel	20 minutes
Material consumption	
Total volume of excavated rock	28.2 million tons
Concrete	4.0 million m3
Rock anchors	4800 km
Reinforcement	16,000 tons
Labour	
Persons employed, including engineers, geologists and other specialists	2600
Personnel trained by SBB	3900
Railway, telecommunication and safety systems	
Tracks (including MFS tunnel crossover)	290 km
Main signal warning signs	426 units
Radio block centre (European Train Control System)	1 unit
Railway control system	1 unit
Stand-alone control computers	380 units
Tunnel control system data points	70,000
Emergency call columns	417
Telephone instruments	60
Network components	500
In-tunnel wireless communication amplifiers	280

Source: Alp Transit Gotthard Ltd, https://www.alptransit.ch/en/media/facts-and-figures.html