

SLOVENIA



Name of Association: Slovenian Society Underground Structures

Type of Structure: Non-profit, open association.

Number of Members: 120 members, 30 young members

ASSOCIATION ACTIVITIES DURING 2023 AND TO DATE

- 14th International Tunnelling and Underground Structures Conference (15th – 17th November 2023, Ljubljana, Slovenia).

Link to website: <https://www.ita-slovenia.si/14-mednarodna-konferenca-o-predorih-in-podzemnihobjektih/>

- Construction site visit – tour of the construction site of the Karavanke tunnel (11th May 2023)

Link to website: <https://www.ita-slovenia.si/ekskurzija-na-gradbisce-predora-karavanke/>

CURRENT TUNNELLING ACTIVITIES

Karavanke Tunnel

Construction is underway to augment the existing single bidirectional transalpine base tunnel with an additional tube, creating a twin highway tunnel system. Spanning 8km with over 1,000m of overburden, the tunnel crosses diverse

geological formations, ranging from Permian, Carboniferous to Triassic, including areas with squeezing ground and challenging hydrogeological conditions. Initiated in the latter half of 2020, the excavation from the Slovenian side has progressed approximately 3000m, leaving about 450m remaining until the breakthrough.

Divača-Koper Railway Line, Second Track

Work has begun on adding a second track to the existing railway line between Divača and Koper. This new segment includes eight tunnels (T1-T8), totalling 38km. All tunnels are single-tube, with T1, T2, and T8 featuring service tubes for rescue operations, and T4 and T7 equipped with transverse exit tubes. The second track's path traverses various carbonate rock formations, heavily characterized by karst phenomena such as sinkholes, fissures, caverns, and underground caves. The karstification level is high in certain sections.

Tunnel Pekel

Construction of the 1.5km double-track railway tunnel on the Maribor – Šentilj – state border line began in early 2021. With a cross-section of about 135m², the tunnel's overburden peaks at 90m, reducing to less than 10m near the H2 highway crossing. Construction was finished in autumn 2023.

Tunnel Konovo

Construction of a 495m single-tube tunnel commenced in 2023. This tunnel is a part of the access road connecting to the main route.

FUTURE TUNNELLING ACTIVITIES

Third Development Axis - North

The design for the Third Development Axis – North covers the execution of a new road link from the access point to Koper – Šentilj motorway A1 near Šentrupert to the Slovenj Gradec access point. The total length of the planned expressway amounts to 31.5km, and it will include four cut-and-cover tunnels with a total length of 1,840m and six tunnels in a total length of 3,700m.

Third Development Axis – South - Tunnel Gorjanci

The design for the Third Development Axis – South covers the execution of a new road link from the access point to Ljubljana–Obrežje motorway near Novo



mesto to the Maline access point. The total length of the planned expressway amounts to 17.9km. It will have three bridges, four viaducts, two cut-and-cover tunnels, a 2,341m long tunnel under the Gorjanci hills, 10 overpasses, nine underpasses and two lay-by niches.

Upgrade of the Second railway track of the new Divača-Koper railway line

Preliminary design for the upgrade of the currently under construction railway line Divača – Koper. The new left track has a 17.05km total length of the planned tunnels.

Second rail Ljubljana-Jesenice-Karawanke tunnel

The spatial planning for the optimisation, and improvement into two lanes of the existing railway track Ljubljana – Jesenice – Karawanke tunnel is in progress. As a candidate rail line for inclusion in the extended TEN-T network, it requires its infrastructure to allow higher train velocities. For trains to meet the requirements on this

section of 70km, the line must pass through 13 newly built tunnels (8800m of total length) and three cut and cover tunnels (2200m of total length).

Ljubljana Railway Junction

An alignment study for a railway junction below the Ljubljana city area including the city centre is in progress. Around 16km of tunnels will be excavated by TBM, whereas NATM will be used for bifurcation caverns. The project will put freight train traffic below the urbanized surface and will enable higher volumes of freight traffic.

STATISTICS

1. Length or volume excavated during 2023:

18.5km (100% conventional)

2. Amount (USD or EUR) of tunnelling / underground space facilities awarded in 2023: €400M

3. List of tunnels completed:
Pekel Tunnel

4. List of tunnels under construction:

- a. Second tube of Karawanke Tunnel
- b. Second Track of the Divača-Koper railway line:

- Lokev Tunnel
- Beka Tunnel
- Stepani Tunnel
- Tinjan Tunnel
- Osp Tunnel
- Mlinarji Tunnel
- Škofije Tunnel
- Konovo Tunnel

EDUCATION ON TUNNELLING IN THE COUNTRY

- Department of Geotechnology, Mining and Environment (OGRO)/ Faculty of Natural Sciences and Engineering, University of Ljubljana
- Department of Civil Engineering/ Faculty of Civil and Geodetic Engineering, University of Ljubljana
- Department of Civil Engineering/ Faculty of Civil Engineering, Transportation Engineering and Architecture, University of Maribor