

# IRAN



**Name of Association:** Iranian Tunnelling Association (IRTA)

**Type of Structure:** Non-profit, open association

**Number of Members:** 811 individual members, 452 student members, 205 corporate members

## ASSOCIATION ACTIVITIES DURING 2023 AND TO DATE

- Publishing the IRTA internal "Tunnel" Magazine
- Publishing two issues of the bi-annual "Tunnelling and Underground Space Engineering" Journal together with Shahrood Technical University
- Holding the 14th Iranian Tunnelling Conference between 22nd and 25th May entitled "Lessons from past challenges" that included keynote lectures, scientific paper presentations, an exhibition and site visits
- Holding the following 3 workshops:
  1. The challenges of using an EPB machine in deep and highly stressed alluvium
  2. A review of the Konjan Cham long tunnel from a project management point of view
  3. Safety and environmental considerations of the Bazi-Deraz Tunnel
- Holding a scientific meeting entitled "The role of urban underground spaces in sustainable development (Geological and Environmental Issues)" on 18th of December with presentations by national and international experts.

## CURRENT TUNNELLING ACTIVITIES

- Work on the 126km long Tehran-North Freeway which consists of four sections will continue. One section is completed and work in the other three are ongoing. The freeway includes a total of 131 tunnels (in two directions). Several other road tunnels are also under construction in other provinces. During 2023 work on the 2nd section progressed and a total number of 27 tunnels with a length of 18,367m were constructed as part of the highway along with numerous bridges, embankments, etc. It should be noted that approximately 16,947m of tunnel was completed in 2022. The tunnels are constructed using conventional methods.
- Construction of the Niayesh underground parking space with nine levels below ground surface (to the depth of 36m below ground) is being carried out in a property with an approximate area of 5000m<sup>2</sup> by the top-down method. The underground parking space will be able to accommodate 1200 cars and together with two commercial levels will have an area of approximately 51,000m<sup>2</sup>. The construction works are expected to finish in 2025.

- The sewage tunnel for Ahwaz (in the Khouzestan province) is being constructed by Micro-TBM with sizes of 1200mm and 1400mm. The sewage and waste will be transferred from three collectors along the tunnel from the cities of Ahwaz and Karoun. The launch and reception shafts for the equipment are completed. The tunnel will be 11.5km long.
- The following water transfer tunnels are currently under construction:
  1. 2nd section of the Lar-Kalaan Tunnel with a 19km length and 3.8m diameter, constructed using a double shield hard rock TBM
  2. The northern and southern portals of the Safaroud tunnel with a length of 19km and a diameter of 4.5km are being constructed by double shield hard rock TBMs
  3. The Hezar-Masjed tunnel with a length of 8.5km and 3.8m diameter is under construction using mechanized methods
  4. The Kameh tunnel with a length of 1200m and 2.5m diameter is being constructed using drill and blast
  5. The Sabzkouh tunnel with a length of 11km and a diameter of 5.4m is being constructed with a double shield hard rock TBM
  6. The Chamshir tunnel with a length of 7km and a diameter of 5.5m is being constructed using a double shield hard rock TBM

## FUTURE TUNNELLING ACTIVITIES

- The construction of new Metro lines and extension of some existing metro lines in several cities are planned. These include the extension of lines 3, 4, 5,



The single-track Dusse-Alinsky tunnel



The Kerak tunnel

# ITA MEMBER NATION ACTIVITY REPORTS 2023

and 6 and the construction of the new line 11 in Tehran. The completion of Metro lines in Tabriz, Isfahan, Shiraz, and Mashhad are also ongoing.

- The work on the Tehran-North Freeway - one of the largest current road projects in Iran - will continue. As already mentioned, the freeway includes a total of 131 tunnels with an approximate length of 143km (in two directions).

■ Construction works on the water tunnel projects mentioned above will also continue.

## EDUCATION ON TUNNELLING IN THE COUNTRY

Tunnelling as a specialized field of study is being held at Postgraduate level (Master's Degree) in the following Universities:

- 1) Amirkabir University of Technology;
- 2) Shahrood University of Technology;

3) Tarbiat Modares University; 4) Urmia University of Technology.

Tunnelling is also taught at Bachelor level in the form of study modules in Mining and Civil Engineering fields in numerous universities. Other related courses in Geotechnical Engineering (Soil mechanics, rock mechanics, Engineering Geology), Construction Management etc. are also offered in various universities.

## STATISTICS

Statistics of tunnels in Iran during 2023 (values in metres):

State of tunnels	Water conveyance tunnels with average internal diameter of 4m.	Sewerage tunnels with average diameter of 2.5m.	Metro tunnels with average 8.5m diameter for s.t and 5.5m for d.t	Railway tunnels with average 35m <sup>2</sup> cross section	Road tunnels with average 40m <sup>2</sup> cross section and 70m <sup>2</sup> h.w	Total length of tunnels (in metres)
Under operation	349330	650000	370000	210000	450000	2029330
Under construction	90200	25000	148000	45000	21000	329200
Under study and design	72300	150000	325000	60000	179000	786300
Constructed during 2023	2600	17400	15000	5600	17000	57600
<b>TOTAL</b>	<b>514430</b>	<b>842400</b>	<b>858000</b>	<b>320600</b>	<b>667000</b>	<b>3202430</b>