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TECHNICAL VISITS

World Tunnel Congress



MAY
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MOSTRA D'OLTREMARE
NAPLES 2019

ITA - AITES General Assembly and
World Tunnel Congress

TUNNELS AND UNDERGROUND CITIES:
ENGINEERING AND INNOVATION
MEET ARCHAEOLOGY, ARCHITECTURE AND ART

Archaeology, Architecture and Art



Thanks to its morphologic structure and its long experience in building tunnels and underground works, Italy is able to offer a wide variety of **A.A.A. – Archaeology, Architecture and Art –** technical visits, along with more traditional technical visits. 

A.A.A. ON SITE TECHNICAL SESSIONS - THE BOURBON TUNNEL AND THE MIRRORS HALL

The Bourbon Tunnel (*"Galleria Borbonica"*) is one of the most fascinating underground route of the city. It is an ancient underground passage, commissioned by the Bourbon monarchs mainly for military purposes to connect the Royal Palace of Naples to military barracks in Via Morelli.

The A.A.A. on site Technical Sessions of the Congress Scientific Programme will be held at the Bourbon Tunnel on May 6-7-8, 2019.

At the Mirrors Hall (*"Salone degli Specchi"*) by the Serrano Palace (just on top of the Tunnel) Keynote Lectures presented by International Experts will bring the participants in the fascinating world of the underground discoveries dealing with archaeology, architecture and art. After the speeches, guests will jump into the past, through the steep stairs caved in the tuff rock that link the basement of the Serrano Palace to the Bourbon Tunnel, accompanied by the narration of local guides.



TECHNICAL VISIT – METRO LINES 1 & 6 IN NAPLES. A MODERN UNDERGROUND INFRASTRUCTURE BORED THROUGH THE HISTORY

The Naples Metro Lines 1 and 6 are part of an integrated metro system serving the whole city that today embodies six underground railway lines and four funiculars. For these underground lines, participants will have the chance to attend two technical visits: **Municipio underground station** and **Centro Direzionale-Capodichino stretch**. Designed by Alvaro Siza and Eduardo Souto de Moura, Municipio is located in the quarters of the Port of Naples and represents one of the largest archeological excavation in Europe. Some parts of the station are still to be completed; once completed, the archaeological treasures found during its construction will be part of the station. Centro Direzionale-Capodichino represents an extension of Line 1 of Naples underground from the centre to the airport. The project includes works in tunnel excavated through TBM, as well as the construction of two relevant stations designed by Benedetta Tagliabue and Richard Rogers.



TECHNICAL VISIT – TUNNELLING THROUGH THE APENNINE MOUNTAIN CHAIN FOR THE CONSTRUCTION OF NAPLES-BARI HIGH SPEED RAILWAY LINE (NAPLES)

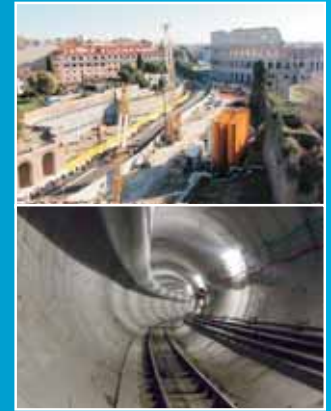
The new Naples-Bari high-speed railway line is part of the TEN-T European network, as it constitutes a diversion within the Scandinavian-Mediterranean corridor. The project will enable the integration of the southern railway network with the existing Italian high-speed network and will provide better intermodal transport facilities. With a total length of about 150km, the alignment in the central stretch will underpass the Apennine mountain chain with deep tunnels (up to 400m overburden) in difficult geotechnical conditions (squeezing ground and explosive gas are foreseen). The alignment has been divided in 8 stretches and either design or construction is underway in all the eight construction lots. Recently, the first two stretches closer to Naples have been awarded by RFI to main Italian Contractors; in May 2019, the jobsites will be fully in operation. The participants will have the opportunity to visit the Casalnuovo and the Monte Aglio tunnels, excavated using compress air to control the water pressure (Casalnuovo) and conventional full section excavation (Monte Aglio).



TECHNICAL VISIT - METRO LINE C IN ROME: THE ANCIENT ROME UNDERGROUND STRETCH FROM FORI IMPERIALI TO SAN GIOVANNI STATIONS

Line C is the third line of the Underground in Rome, under-passing the historical and archaeological heart of the city; it is also the first fully automated metro line in Rome. The T3 stretch, from San Giovanni to Fori Imperiali, is 3-km long and is still under construction. The tunnels (6.7m diameter) run 35m below the ground level, while the stations (platforms length 120m) are located very close to the Colosseum and the Aurelian Walls (*"Mura Aureliane"*).

The technical visits will give access to the new San Giovanni station/museum and to the construction site of T3 stretch (Amba Aradam and Fori Imperiali Stations and tunnels). The stations and tunnels are distinctive examples of the constructive and architectural solutions implemented in a very unique archaeological and historical context, facing bad geotechnical conditions with up to six bars of hydraulic pressure at the bottom of excavations. The project has foreseen specific technologies: cut and cover, top-down modified, trench cutter, TBM EPB, ground freezing, soil injections, compensation grouting, as well as a specialized architectural design for the underground stations.



TECHNICAL VISIT – THE BRENNER BASE TUNNEL: THE LONGEST UNDERGROUND RAILWAY TUNNEL IN THE WORLD (BOLZANO)

The Brenner Base Tunnel (BBT), between Italy and Austria, will be the world's longest underground rail link and is currently under construction. Once completed, it will be 55km long between the two main portals. However, including the rail bypass of Innsbruck, to which it is directly connected, it will have a total length of 64 km. The infrastructure is a crucial element in the European TEN-T network, as it constitutes the central link within the Scandinavian-Mediterranean corridor.

The Brenner Base Tunnel consists of an exploratory tunnel, two main tunnel tubes, four lateral access tunnels and three underground security areas. The project foresees the excavation of approximately 230km of tunnels, of which roughly three quarters using open or shielded TBMs and one quarter using the conventional drill and blast method. One particular challenge for the construction is the Periadriatic fault zone that separates European and African tectonic plates: with a total length of 700km it is the longest geological fault in the Alps and is intersected by the tunnel for approximately 700m. In May 2019, underground excavations and civil works will be in full activity and the participants will experiment the visit "at its best"!



TECHNICAL VISIT -THE MONCENISIO BASE TUNNEL: TUNNEL EURALPIN LYON-TURIN (TURIN)

The new railway link Lyon-Turin, including the 57.5km Mont Cenis base tunnel, is the main project of the Mediterranean corridor in the European TEN-T network. The Mont Cenis base tunnel includes two 57.5km long tubes (45km on the French side and 12km on the Italian side), four intermediate accesses and three underground security areas. Complementary works are currently in progress for the achievement of the infrastructure: three access tunnels have been completed in France, for an overall length of 16km. In Italy, the Maddalena survey tunnel, in Chiomonte, Susa Valley, was completed in February 2017. Another survey tunnel is currently being built down the Saint-Martin-la-Porte access tunnel, where last summer an 11.21m diameter Tunnel Boring Machine (TBM) started the excavation. The machine will excavate 9km in order to study the geology of one of the most complex sections of the Mont Cenis base tunnel, but already at the diameter and on the axis of the base tunnel.

These are just the first steps... In May 2019, works will be in full activities and the participants will experiment the visit "at its best"!

