

Austria

Polypropylene Fibres Make Concrete More Resistant to Fire

The Research Institute of the Association of the Austrian Cement Industry (VÖZFI) developed a new concrete which property is to resist better to fire. This is possible thanks to polypropylene fibres in the concrete. This new construction material is already used at the Vienna metro extension works. When a fire erupts in a tunnel, high temperatures cause the evaporation of humidity in the concrete before it reaches the outer surface of the tunnel and the concrete explodes under the high vapor pressure. Polypropylene brings two precious advantages in case of fire. First of all, the water vapor is guided along the fibres and therefore, pressure spreads better. This avoids explosion risks. Secondly, in very high temperatures, the fibres melt and leave small cavities in which the vapor can equally spread.

Concrete with polypropylene fibres already exist and are often used by the cement industry to reinforce concrete. More from Johannes Steigenberger, steigenberger@voezfi.at and visit www.zement.at

World Digest of Tunnels under Planning

United Kingdom. A massive tunnel, 9 m in diameter and 35.4 km long, is planned through London, underneath the riverbed of the Thames, to relieve the capital's overloaded sewage system. The daunting engineering project, costing £2 billion and adding £12 a year to the average water bill, is necessary to prevent an environmental disaster in the Thames which could seriously damage its thriving wildlife. It will be the biggest sewage project in the capital since the legendary engineer Joseph Bazalgette built the interceptor sewers that relieved London of the "Great Stink" and saved the city from Victorian cholera epidemics. London is facing a crisis because its 140-year-old sewage system cannot cope. Up to 60 storm overflows are still directed into the river and have to be brought into use so often they are in breach of European directives designed to save rivers from being starved of oxygen and the wildlife wiped out.

Since the 1980s, after a 20-year cleanup of a multitude of remaining discharges into the Thames, London has been held up as an example to the world on how to clean up a "dead" river through a major city. However, changing rainfall patterns caused by climate change and urban development have meant that many times a year London's sewers have been unable to cope with the combined flow from the city's sewage and storm water system. As a result, the Thames has received a vast load of effluent mixed with storm water and rubbish washed from the city's streets.

For the past three years the Environment Agency, Ofwat, the water company, the Greater London Authority and the environment department have been examining the options for solving the overflow problem. The group, known as the Thames tideway strategic study, is due to report this year but has concluded that a tunnel is the best option. The optimal solution is to build a tunnel under the river from Twickenham in the west to the Beckton and Crossness sewage works in the east. Construction is likely to take six years but is unlikely to begin before 2010. The tunnel could hold millions of cubic metres of storm sewage. It have to follow the course of the river to collect sewer overflows from about 60 different points. Visit www.thames-water.com

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United States. A study by Geodata reveals that the Antelope Valley route for California's high speed rail project would involve safer and less extensive tunnelling, lower total construction costs with less risk of cost overrun and costly delay, and significantly lower risk of catastrophic accidents affecting rail passengers and crews after service has commenced.

The Grapevine route along the I-5 Freeway would run within 1.6 km of the San Gabriel earthquake fault for over 32 km, greatly increasing tunnelling costs and the likelihood of construction accidents and delay. Because earthquake hazards are significantly lower on the Antelope Valley route, construction time is expected to be half that of the Grapevine route, and construction costs (including non-tunnel portions of the routes) could be as much as 60% (\$775 million) less. The Grapevine route would tunnel right through the San Gabriel fault at several locations.

Although the Antelope Valley route would add six to nine minutes to the Bay Area-Los Angeles trip, it would serve 750,000 more residents and 260,000 more employees than the virtually unpopulated Grapevine route, and generate greater ridership revenues, resulting in \$900 million in net benefits over the first 33 years of operation. In addition to Palmdale and Lancaster, the Antelope Valley route is supported by a wide range of elected officials and public agencies, including the Mayor and the City Council of Los Angeles, the Board of Supervisors of the County of Los Angeles, the Los Angeles County Metropolitan Transportation Authority and Los Angeles World Airports. Visit www.geodata.it and www.tunnelbuilder.com, us/67.

World Digest of Bids

Belgium. Negotiated procedure, deadline 27th April, 2004 for insulation of anti-fire ducts in the niches and electromechanical equipment of the Soumagne rail tunnel. Visit <http://ted.publications.eu.int/udl?request=Seek-Deliver&language=en&docid=054946-2004>, OJ S 64, or contact SNCB, Brussels, fax +32 2 5297928 or 7810. E-mail afa@tucrail.be, scb@tucrail.be and nde@tucrail.be. Visit www.tunnelbuilder.com, be/11.

France. Negotiated procedure, deadline 13th May, 2003 for construction of two ventilation structures between Bercy and Dugommier stations and Bercy-Gare de Lyon and Bastille stations on metro line 6. Visit <http://ted.publications.eu.int/udl?request=Seek-Deliver&language=en&docid=060346-2004>, OJ S 71, or contact RATP, Paris, fax +33 158770481. E-mail philippe.coutault@ratp.fr

France. Preinformation notice for construction of a 1.7 km-long 1.4 m-diameter wastewater duct requiring a pipejacked or microtunnelled section under a railway (180 m) and a pipejacked crossing of a dyke (70 m). Visit <http://ted.publications.eu.int/udl?request=Seek-Deliver&language=en&docid=060834-2004>, OJ S 72, or contact Communauté d'agglomération Tour(s) Plus, Tours, fax +33 247801115. More from oth-tours@oth-centre.fr

France. Restricted call for bids, deadline 14th May, 2004 for electrical equipment and lighting of the 2 x 170 m Gumond cut-and-cover tunnel in Corrèze county. Visit <http://ted.publications.eu.int/udl?request=Seek-Deliver&language=en&docid=061763-2004>, OJ S 73, or contact ASF, Paris, fax +33 147533634.

Italy. Accelerated restricted procedure, deadline 13th May, 2004 for equipment of the Le Piane and San Silvestro tunnels on trunk road SS 16 Adriatica, section Pescara-San Salvo in Abruzzo region. Visit <http://ted.publications.eu.int/udl?request=Seek-Deliver&language=en&docid=062694-2004>, OJ S 74, or contact ANAS, L'Aquila, fax +39 086261983.

Spain. Open invitation to tender, deadline 17th May, 2004 for construction of section Kastrexana-Arbujo of the Kadagua highway in Biscay province. Includes a 163 m twin-tube tunnel, radius 6.16 m, together with 60 m of forepiling for the portals. Both tubes will be 10 m distant. Visit <http://ted.publications.eu.int/udl?request=Seek-Deliver&language=en&docid=055331-2004>, OJ S 65, or contact Interbiak, Bilbao, fax +34 944057001.

Spain. Open invitation to tender, deadline 7th May, 2004 for lengthening of platforms in the Lavapiés, Embajadores, Palos de la Frontera and Delicias stations on metro line 3 in Madrid. Visit <http://ted.publications.eu.int/udl?request=Seek-Deliver&language=en&docid=061301-2004>, OJ S 72, or contact Metro de Madrid, Madrid, fax +34 915017800.

World Digest of Contract Awards

France. The Montgenèvre bypass on trunk road RN 94 in Upper Alps, including a 420 m-long cut-and-cover tunnel, has been awarded to Campenon Bernard, Bec Frères, Gardiol, Allamanno and Queyras. Civil engineering will start in June. Read E-News Weekly 4/2004 & 9/2003. Visit www.cbconstruction.fr

Italy. Coopsette, Kopa Engineering and Otis won a contract for finishing work for lot 6-B in section from Pozzo Strada to shaft 11 (6 stations, 7 shafts) of metro line 1 in Turin. Read E-News Weekly 50/2003. Visit www.gtt.to.it, www.coopsette.it and www.kopaeng.it

Italy. Fiat Engineering, Garboli-Conicos, Schindler and Gemmo Impianti won a contract finishing work for lot 6-A in section from km 0.160 and Pozzo Strada station (5 stations, 4 shafts) of metro line 1 in Turin. Read E-News Weekly 50/2003. Visit www.fiatengineering.com and www.garboli-conicos.com

Spain. Proyectos Civiles y Tecnológicos, Arquitectos Ingenieros Consultores and Civil Mateng won a €2 million contract to design and supervise the construction of section Torrejuncillo-Abia de la Obispalía on the high speed railway from Madrid to Valencia and Murcia. This section includes two single-tube tunnels, 50 and 100 m, cross section 100 m². Read E-News Weekly 3/2004. Visit www.arinconsultores.com

Spain. Comsa and Obras Subterráneas secured a €15.6 million contract for the civil works to lengthen the rescue tunnel of the Cadí tunnel in Catalonia. Read E-News Weekly 33/2003. Payma Cotas won a €770,400 contract for work management. Visit www.comsa.com, www.obrassubterraneas.es and www.paymacotas.com

World Digest of Ongoing Tunnelling

Australia. Long-running efforts by the Perth City Council to sink the rail line up to Milligan Street has officially be abandoned after the Leighton-Kumagai consortium - which was awarded the A\$324 million William Street tunnel section of the \$1.5 billion Perth to Mandurah rail project - said it would cost an extra A\$200 million to sink the Northbridge rail line. Read E-News Weekly 11/2004. Visit www.tunnelbuilder.com, au/23.

Bhutan. Adverse geological conditions in drilling the headrace tunnel and numerous blockages in vertical and inclined pressure shafts might delay the completion of the 1,020 MW Tala hydro electric project by a few months. The commissioning date of September 2005 is expected to slip further by a few months. 80% of the project is completed and about 159 m of tunnelling is still to be completed. The 42 km tunnel from Mirchingchu to Kalikhola faced difficult conditions between the 23 km area from Wangkha to Kalikhola in a 600 m stretch. The vertical and inclined pressure shafts that would filter water flowing through the tunnel also had numerous blockages, with the latest blockage cleared on 29th March. Read E-News Weekly 23/2003 & 25/2002. Visit www.tunnelbuilder.com, bt/11.

Germany. Züblin will use a new Atlas Copco L2 C Rocket Boomer drill rig for the 719 m Schottenberg tunnel in Meißen, a single bore with an emergency tunnel. The jumbo is equipped with a COP 1838 HF rockdrill and Secoroc drill bits. For shotcreting, Normet will supply two Spraymec 9150 WPC and a Himec 9905 BT platform machine. The tunnel will be supported partly with Swellex and MAI bolts. Work will begin in early May. Read E-News Weekly 12/2004, 26/2003 & 19/2003. Visit

www.atlascopco.com, www.normet.fi and www.zueblin.de



Picture 1: One of the plugged portal on one of the tunnel between Faial and Santana.

Portugal. Alterations to the initial alignment of the Faial-Santana expressway due to ground instability will oblige to dig a longer single-tube tunnel, 3 km in length, instead of two shorter tunnels on the mountain side. Tens of metres have already been excavated on the abandoned alignment. A crater appeared above the first drive on the second tunnel in Fajã de Mar, creating a funnel phenomenon inside the tunnel. The entrances have been plugged. The new alignment crosses more through the middle of the mountain, leaving no open air section.

The new tunnel will be Madeira's longest with the Encumeada tunnel (3,086 m). Read E-News Weekly 30/2002. Visit www.tunnelbuilder.com, pt/11.

Spain. Work in underway since December to construct a 1,440 m link in the Casablanca area on road AC-10 to connect Alfonso Molina avenue, El Pasaje and the harbour in La Coruña, Galicia. The double carriageway will accommodate two lanes in each direction and includes the 2 x 290 m-long 4.75 m-high Eiris tunnel. It is a horseshoe-shaped tunnel driven in granite and mainly designed for heavy goods vehicles. Support will be a mix of shotcrete, wire mesh, steel arches and bolts. The final lining will be a 30 cm-thick concrete layer. Each tube will accommodate a 9 m-wide dual-lane roadway with shoulders (50 cm and 1.5 m) and pavements (2 x 60 cm). The contractor is Coprosa. Construction is estimated to be completed after 28 months. Read E-News Weekly 6/2004, 20/2003 & 14/2003.

World Digest of Tunnel Renovation & Maintenance

Italy. Negotiated procedure, deadline 19th April, 2004 for maintenance and lining of a hydro power tunnel at the Talamona hydro power station in Lombardy. Visit <http://ted.publications.eu.int/udl?request=Seek-Deliver&language=en&docid=055846-2004>, OJ S 65, or contact Enelpower, Milan, fax +39 0223015433.

Spain. Open call for bids, deadline 25th May, 2004 for improvements, in particular ventilation, safety equipment (electrical supply, escape exit signs, fire detection video systems, etc.) in urban tunnels on the Madrid-Lleida high speed line in Saragossa and Lleida. Tender value: €5.6 million. Visit <http://ted.publications.eu.int/udl?request=Seek-Deliver&language=en&docid=060869-2004>, OJ S 72, or contact GIF, Madrid, fax ++34 913198535.

Switzerland. Three Bernold-Ceresola formwork structures are under assembly on the Pertit-Lac rest and service area along the A9 motorway, near the north Glion tunnel portals in Montreux. They will be used by a Zschokke-Locher-led consortium for the renovation of the 2 x 1,345 m-long tunnel. The tunnel is lined with a 35 to 70 cm concrete layer covered by panels installed for improving air circulation. These panels will be removed and a new layer will be installed instead. Each chassis weighs 100 tonnes and cost CHF500,000. They will concrete 36 m of tunnel in one round (12 m for each unit). A concrete plant in Villeneuve will supply the concrete. Setting time will take 15 to 16 hours. Work will commence in the second half of May from the south portal on the Villeneuve side where the units will be trucked. Read E-News Weekly 50/2003 & 25/2002. Visit www.bernold-ceresola.com



Picture 2: Formwork units at the Glion tunnel.