

EU

Expression of Interest Submitted for Research Programme

'UnderGround' is an expression of interest for a Network of Excellence on Transportation and Facilities submitted further to a research and technological development call for bids launched within the 6th Framework Programme. UnderGround is a core group of around ten members among which research and education organisations as well as engineering consultancies. The members are: the Belgian Building Research Institute (BBRI), STUVA (Germany), CUR/COB (Netherlands), TNO (Netherlands), DMT (Germany), INERIS (Institut National de l'Environnement Industriel et des Risques, France), BRE (UK), Arsenal (Austria), University of Greenwich (UK), Cowi (Denmark), MottMcDonald (UK), Geoconsult (Austria), and Holland Railconsult (Netherlands). There are also about 40 supporting partners like the Technical Research Centre of Finland (VTT), SINTEF (Norway), CETU (Centre d'Etudes des Tunnels, France), etc.

The aim of UnderGround is to establish an international scientific reference point that would lead to underground transportation and facilities, which are competitive in construction, highly performing in operation, environmental-friendly and respective and safe for the people and society. UnderGround is focused on road and rail tunnels, metro lines, underground logistic systems and other underground facilities (car parks, commercial and cultural structures, etc.).

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World Digest of Tunnels Under Planning

Canada. Further details are available about the \$4 million definition contract awarded to Pacific Liaison and Associates Inc., a subsidiary of SNC-Lavalin, for the Capilano-Seymour tunnels in Vancouver (see E-News Weekly # 19 & 23). The 7.5 km twin tunnels will feature a diameter expected to be greater than 3.2 m (minimum required to meet headloss requirements). The bedrock in the region of the tunnel alignment is generally characterized by granitic, granodioritic and dioritic rock with locally intruding andesitic dykes. Rock is generally interpreted as being tight, good quality with relatively low mass permeability. Occasionally, there are closely fractured and faulted zones with high permeabilities. More detailed geotechnical investigations are still to be done. There are two buried river valleys that require more investigation to determine depth requirements. A rock TBM will be used for the major portion of the tunnel and raise boring for the exit shaft. The method for the entrance portal shaft, approximately 100 m in soil before encountering the bedrock, is yet to be determined. A possible shallow option through buried valley with soft ground TBM and then rock TBM has been proposed. For support and lining, some localized rock bolting is anticipated as well as potential areas requiring concrete lining or steel sets with shotcrete. The definition phase is just commencing for completion in September 2002. Hatch Mott MacDonald is subconsultant. The geotechnical investigation programme and design will then follow. The route alignment is still to be determined, as well as a thorough field investigation programme leading to a geotechnical baseline report. A shaft will be required at each end (approx. 150 m-deep). One shaft

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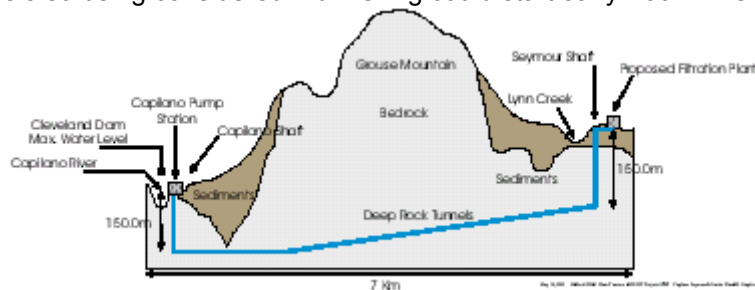
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may be inclined, but this is yet to be determined during the project definition stage. A shallower option is also being considered. Tunnelling could start early-2004. The estimated year for entry in service is



2007 (with filtration plant and pumping station). Cost is around C\$100 million. Financing is by the Greater Vancouver Water District through British Columbia Municipal Finance Authority. Visit www.gvrd.bc.ca

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– 30th May 2002

China. Approval has been granted by the State Council to build the first tunnel across the Yantze river in Wuhan (see E-News Weekly # 13). The project will include a tunnel for both road traffic and trains. The road section will start from Huang Shi road north of Pier 24 or 25. On the other side of the river, the tunnel will surface near the west side of Wu Chang electricity plant. The 1,380 m underwater tunnel will be constructed with precast concrete elements joined together underwater. Each tube segment measures 34.9 m-wide and 8.65 m-high. The construction cost is US\$219.4 million. Construction is set to commence within 2002 and will take four years to complete.

First published in *E-News Weekly No. 18* – 25th April 2002

Taiwan. The feasibility study of the Taoyuan MRT blue line is completed. The line will run from Chiang Kai-shek International Airport to the HSR Chinpu station, then to TRA Chungli station. Total length is 16 km, 5 km of which underground, with 10 stations (4 underground). The blue line will be constructed in two phases. The first phase is 8 km between the airport and the HSR Taoyuan station. It will take 2½ years to construct. Tenders will be launched in the second half of 2003. Three foreign consortia expressed interest in the project. Target is set to open this section at the same time as the HSR in October 2005. The project will be constructed and operated in the BOT mode. Total construction cost is estimated at T\$33 billion, among which T\$15 billion in land acquisition. Commercial operation of the full line is programmed for 2010.

First published in *E-News Weekly No. 50* – 5th December 2002

United States. Dallas Area Rapid Transit (DART) is considering building a light rail train station at Dallas Love Field that would cost \$160 million and require a deep, 3.2 km underground tunnel across the airport beneath a runway running 30 metres underground in solid shale. The extension would cost \$900 million without the Love Field station, or \$1.06 billion if it is included. The Love Field station would enter the airport at the corner of Denton Drive and Mockingbird Lane. It would be carefully located to avoid a massive network of existing piers built deep underground as foundation supports for Love Field's passenger terminal. As the tunnel leaves Love Field, it would realign with Denton Drive and come back to street level at Burbank Street. The project is part of the so-called "Southwest Airlines" corridor. Visit www.dart.org

First published in *E-News Weekly No. 21* – 16th May 2002

United States. A 4.8 km tunnel beneath the Coast Range, connecting the upper Tualatin river to Henry Hagg Lake, is being considered in Washington County, Oregon. The Sain Creek tunnel could go as deep as 274 m below the surface. The tunnel is just in the idea stage but is one of the options considered to help meet a growing need for drinking and irrigation water in the next 50 years. Officials will study the tunnel idea as well as the effects of climate change on water demand.

The Water Managers Group, consisting of the Tualatin Valley Water District, Clean Water Services and nine cities (Hillsboro, Beaverton, Tigard, Forest Grove, Sherwood, Tualatin, North Plains, Cornelius and Banks) are in the process of approving \$60,000 to finance the tunnel study. The cost will be shared proportionally, based on the amount of water each agency would use. The group also

plans to pay \$50,000 for a study of the effects of climate change on water needs in the county. Once the environmental issues are addressed, the consultant will study the geologic formations and determine the better method for tunnelling, either TBM or drilling and blasting. Officials hope to have the results of the tunnel study in March 2003. The climate change study should be finished in June. Preliminary estimates assess the cost of the Sain Creek tunnel between \$7 million and \$10 million, depending on the tunnelling method and the length. Visit www.co.washington.or.us, www.tvwd.org and www.cleanwaterservices.org

First published in *E-News Weekly No. 43 – 17th October 2002*

World Digest of Bids

Australia. The Roads and Traffic Authority of New South Wales is inviting applications for registration of interest (ROI) from the private sector to finance, design, construct, maintain and operate the proposed Lane Cove tunnel as a privately financed tollroad. Deadline 24th April, 2002. The 3.4 km twin tunnels will link the M2 motorway at East Ryde and the Gore Hill Freeway at Artarmon in Sydney. The estimated cost is A\$815 million. Copies of the ROI document are available for inspection and purchase at the Roads & Traffic Authority, Road Network Infrastructure Directorate, Level 6, Centennial Plaza, 260 Elizabeth Street, Surry Hills. Contact: Ms. Toni Fearn on +61 (02) 9218 3945. E-mail Toni_Fearn@rta.nsw.gov.au. The Environmental Impact Statement will be provided in CD format with the ROI document. A pre-registration briefing will be held on Wednesday 3rd April, 2002. Enquiries to the General Manager, Private Infrastructure, Mr. Les Wielinga on +61 (02) 9218 3945. E-mail Les_Wielinga@rta.nsw.gov.au. Visit www.rta.nsw.gov.au/frames/business/g_f.htm?/frames/business/g11&/business/g112_c.htm&Current+Tender+Advertisements&2

First published in *E-News Weekly No. 12 – 21st March 2002*

Italy. Open tendering, deadline 7th May, 2002 for the construction of the Valle di Giovo bypass on the SS 612 road, in Trento province. There is a 850 m-long 13.7 m-wide single tunnel. The cross section is 100 sq m. Eighty five percent of the geology is porphyric and little fractured rock consisting of quartz, feldspar and biotite, ranging from grey to light red and dark red or purple. Drill/blast will be the excavation method. Support will be with Swellex rockbolts, fiber-reinforced shotcrete, and possibly steel ribs. The project has been designed by a jv of Ata Engineering, Italconsult, and Scetauroute. Time frame for construction of 650 days for a cost of €16.5 million. Visit <http://ted.eur-op.eu.int/ojs/en/frame.htm>, OJ S 33, document 25037-2002 or contact the Trento Autonomous Province, Trento, fax +39 04 61983494. Also visit www.provincia.tn.it

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South Africa. Two consortia have been prequalified for the Gautrain Rapid Rail Project between Johannesburg, Tshwane and Sandton and the Johannesburg international airport. Eleven kilometres of tunnel will be required. The first consortium is named Bombela and consists of Bombardier Transportation, Bouygues Travaux Publics, Basil Read (Pty) Ltd, Concor Holdings (Pty) Ltd, Murray & Roberts Limited - all three latter being amongst the largest South African civil engineering construction companies - and RATP International, operator of the metro and commuter railways in Paris. The second consortium is named Gauliwe and consists of Alstom (Pty) Ltd, Dragados Concesiones, Grinaker-LTA, one of the largest civil construction companies in South Africa, and Siemens. The consortium has secured SNCF as an operator. Both consortia secured support from banks and consulting engineers. They met all the prequalification requirements and have the experience and ability to successfully design, finance, build, operate and maintain the Gautrain Rapid Rail Link. The preferred bidder will be appointed in May or June 2003. For further info, read E-News Weekly # 5. Visit www.gautrain.co.za. Also visit www.tunnelbuilder.com, item za/11.

First published in *E-News Weekly No. 19 – 2nd May 2002*

Spain. Open call for bids, deadline 23rd December, 2002 for technical design of the Puig-reig – Berga stretch of the C-16 road between Barcelona and Puigcerdà. There will be three tunnels totalling 835 metres. Visit <http://ted.eur-op.eu.int/udl?request=Seek-Deliver&language=en&docid=172470-2002>, OJ S 217, or contact GISA, Barcelona, fax +34 934300124. E-mail dlh@gisa.es

First published in *E-News Weekly No. 47 – 14th November 2002*

World Digest of Contract Awards

China. Gammon Skanska has been awarded a contract by the MTR Corporation to design and construct the Tai Yam Teng tunnel, which forms part of the new MTR Penny's Bay rail link. The contract involves construction of a 120 m cut-and-cover section and 710 m of blasted rock tunnel. It also includes the construction of portal structures at both ends and an emergency vehicle access road to service the proposed station at Yam O. The work is scheduled to complete in September 2004. The Penny's Bay rail link will run between Yam O and Penny's Bay on Lantau Island, servicing the Disneyland Theme Park expected to open in 2005. Visit www.mtrcorp.com/prehome/index.html and www.gammonhk.com/hk/eng/home/default.html

First published in *E-News Weekly No. 50 – 5th December 2002*

United States. Construction of a deep tunnel storm sewer to alleviate flooding of the Grand Avenue and Bates Street area in Saint Louis, Missouri has been awarded to Affholder Inc., a subsidiary of Insituform Technologies Inc., by the Metropolitan St. Louis Sewer District. Construction consists of installing 2 km of 2.75 m-diameter pipes in a rock tunnel. The work will include a double, concrete box culvert 30.5 m-wide, 2.45 m-high and 27.5 m-long. The project costs will also pay for constructing an outfall structure to the Mississippi river, tunnel shafts and an access road. The tunnel work is funded by the Metropolitan Sewer District (\$33.7 million) and by Missouri's State Stormwater Fund (\$800,000). Work should begin this month and be completed by July 2004. Visit <http://www.msdlouis.mo.us> and www.insituform.com/corporate/corp_affholder.html

First published in *E-News Weekly No. 20 – 9th May 2002*

World Digest of Ongoing Tunnelling

France. A Lovat EPB TBM transported into pieces on trucks arrived on 23rd October in Rueil-Malmaison, west of Paris and was descended into the 10 m-diameter 15 m-deep start shaft. The 45 m-long machine will excavate the 900 m-long Solférino-Molière stormwater sewer for Conseil Général des Hauts-de-Seine, the client. This 2.54 m OD, 2 m ID sewer will alleviate flood problems catching waters gushing down Mont Valérien to the city centre. The new sewer will be connected to an existing rainwater sewer. The very first metres have been bored on 31st October. The 10 m-deep exit shaft has yet to be sunk. It will be rectangular, 2.8 m x 5.2 m.



Picture 1: The Lovat TBM at the bottom of the launch shaft.

The tunnels will be lined with concrete rings made of six universal segments supplied by Bonna Sabla. The TBM is equipped with the CAP guiding system with onboard gyroscope designed by Vinci, Campenon Bernard's parent company. The machine belongs to Campenon Bernard TP, who secured the job in joint venture with Eiffage, and was refurbished in their storage yard in Orleans. Breakthrough is awaited in May 2003 and completion of the works in 2004. Visit www.groupe-vinci.com, www.lovat.com and www.bonnasabla.com

First published in *E-News Weekly No. 46 – 7th November 2002*