

Spain

Second And Fourth Spanish Contractors To Merge Soon

ACS, the fourth Spanish construction group, hopes to merge with Dragados, the number 2, in 2003. Angel García Altozano, corporate general manager of ACS and vice chairman of Dragados, announced the move and said that once the integration has started, it could take six to eight months to conclude. The construction sector is keen for the merger to materialise, after ACS announced in April the acquisition of a 25% stake in Dragados (read E-News Weekly # 25 & 26). The merger would create the undisputed leader in the sector, with profit of \$381 million and sales of \$8.8 billion, well ahead of current market leader FCC, Ferrovial-Agromán and Necso. Visit www.grupoacs.com and www.dragados.com

Switzerland

Ceresola And Bernold Decide To Merge

In the field of modern tunnelling, there is a growing demand for high performance together with specialist skills and reliability. This is why Ceresola has decided to merge with Bernold AG based in Walenstadt, Switzerland forming a new centre of excellence for steel formwork, mould installations, support materials and individual steelwork solutions. As of 1st September, 2002 the two companies took the name Bernold-Ceresola AG. The new address and telephone numbers of the head office are as follows: Bernold-Ceresola AG Im Riet CH-8880 Walenstadt, Switzerland. Tel. +41 (0)584555000, fax +41 (0)584555001. E-mail info@bernold-ceresola.com. Branch in Magden: Bernold-Ceresola AG Ziegelmat 1 CH-4312 Magden, Switzerland. Tel. +41 (0)584555060, fax +41 (0)584555061. Visit www.bernold-ceresola.com, www.ceresola.com and www.bernold.com.

World Digest Of Tunnels Under Planning

China. More than 800 km of metro lines are planned for construction by 2010 in major urban centres. Zhu Jun, director of the railway division of the China International Engineering Consulting Corporation said the State Council has approved metro rail projects, many of which are underground lines, in a group of medium sized cities. Fifteen metro lines are currently under construction in ten mainland cities, totalling 383 km in length and scheduled to be completed by the end of 2005. In all, 143.4 km of metro lines were in operation in China by the end of last year, located in Beijing, Tianjin, Shanghai and Guangzhou.

Switzerland. The proposed metro line M2 in Lausanne has been approved by the Grand Conseil of the Vaud Canton. The local population has yet to decide upon the project by referendum. The scheme is valued at CHF590 million. Construction may start in 2003 for commissioning planned in 2007. Visit www.tunnelbuilder.com, item ch/36 in Archive.

World Digest Of Bids

Egypt. Thirty-five companies from Canada, China, Egypt, France, Germany, Japan, South Korea, and Spain have so far submitted applications to build the third underground metro line in Cairo, worth \$2 billion. The deadline for

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submitting bids has been extended until 1st November. The 33 km line will run between Cairo's Imbaba district to the international airport, and the project will be carried out in four phases. For more details, visit www.tunnelbuilder.com, item eg/12.

World Digest Of Contract Awards

Malaysia. Two existing tunnels in Kuala Lumpur will be cladded with Glasal panels of Euro Panels Overseas. The two tunnels are located at an important crossing point, one at Jalan Ampang and another one at Jalan Bukit Bintang. Very special for this project is the design that will be shown on the Glasal panels. The first tunnel will have a pattern of Dolphins on each of the walls whereas the second tunnel will show Ribbons Waves in mirror image. Both designs are obtained by a special process with waterjet or laser cutting. This cutting procedure guarantees a perfect cut of the enamelled surface of the Glasal panels. Once the pattern has been cut, the special pieces of Glasal panels are glued to an Eflex backer board like a puzzle to obtain the design. The total thickness of the combined panel is 8 mm. The total project should be finished within maximum 2 to 3 months from now. The concept of cutting Glasal by laser or waterjet to obtain design patterns has been practised for many years already in Japan for cladding of walls of metro stations. It is a well-known process with a high quality result and it contributes to the overall performance and aesthetics of the Glasal tunnel lining panel. Visit www.europaneloverseas.be or www.tunnelbuilder.com and click on Euro Panels Overseas' logo.

United Kingdom. For the Channel Tunnel Rail Link, Saint-Gobain is supplying 3,000 tonnes of SGI segments to line a series of cross passages at 3.5 m-diameter (8 segments plus key) and special opening set segments to form an hybrid PCC/SGI ring at the cross passage break out sections. In addition, 4.5 m-diameter linings (12 segments plus key) are being supplied for sump shaft passages. Deliveries will be complete by February 2003. For the Kings Cross Underground Station Re-development Phase 1, 200 tonnes of SGI segments are being supplied at 3.5 m-diameter (8 segments plus key) and 6.0 m-diameter (16 segments plus key) for a lift shaft and access passage for disabled persons. Deliveries will be complete by March 2003. Visit www.saint-gobain.com

Unites States. Italian construction group Impregilo has won a €300 million contract for the improvement of the sewerage system in Portland, Oregon. The project is the west side CSO tunnel that will be built for the Environmental Services of the City of Portland. CSOs (combined sewer overflows) occur nearly every time it rains in Portland. During a CSO, stormwater quickly fills the combined sewers, which carry both sanitary sewage and runoff from streets, parking lots, and rooftops. The overflows carry bacteria from the untreated sewage as well as other pollutants in the stormwater. Construction will start in fall 2002 to intercept sewage that now flows into the Willamette river during rain storms. The west side CSO tunnel will be 6.4 km-long (4 miles) and 4.27 m (14 feet) in diameter. TBMs will be used to build the tunnel at depths reaching 42.6 metres. Construction is due to be completed in four years. Several pipelines ranging in size from 91.4 cm (36 inches) to 2.1 m (84 inches) to send sewage to the tunnel will also be required. They include Segment 3 of the Southwest Parallel Interceptor, the Tanner Extension and the Balch Conduit. Microtunnelling will be used. There will be five large shafts along the west side CSO tunnel alignment along Naito Parkway and Front Avenue at Nicolai Street, Upshur Street, near the Ankeny Pump Station in Waterfront Park, and at Clay Street. Two shafts on Swan Island will be located at the south end of Port Center Way and near the intersection of Emerson Street and Basin Avenue. Visit www.impregilo.it and www.ci.portland.or.us

World Digest Of Ongoing Tunnelling

Venezuela. 'Milagros' (meaning Miracles) is the name of the Herrenknecht EPB shield which broke through on 6th September, 2002 four days ahead of schedule a 622 m tunnel section between Capuchinos and Plaza Venezuela on Line 4 of the Caracas metro. The contractor is Odebrecht of



Picture 1: Breakthrough in Caracas.

goes south to cross the river and continues on the right bank up to Las Mercedes. After Tamanaco, the route shifts to north to reach Chuao, crosses the river for the second time and ends in Parque del Este.

'Brizeida', the first EPB shield, is excavating its section to Parque Central. Milagros will follow suit. The project as a whole is however 22 months late due to land expropriation problems in Avenida Lecuna. Read E-News Weekly # 10. Visit www.metrodecaracas.com.ve, www.herrenknecht.com and www.tunnelbuilder.com, item ve/11.

Brazil. The TBM advanced at a daily speed of 14 metres removing 18,000 cubic metres and passing beneath the Paseo Colón viaduct. An average of ten segmental rings have been installed each day.

The first shield holed through the first bore three months ago. Line 4 runs fully underground from Capuchinos to Parque del Este, stretching 12.3 km and serving ten stations. West to east, the alignment follows Avenida Lecuna until Parque Central, with stops in Teatros and Nuevo Circo near the corrida arena. Then, the line borders the left bank of river Guaire to connect with Lines 1 and 3 in Plaza Venezuela. Further on, the route

LINEA 4: Capuchinos-Plaza Venezuela-Parque del Este



World Digest Of Inaugurations

Spain. The second tube of the L'Ollería tunnel in Valencia, 1 km in length, has been inaugurated on 11th September by José Luis Olivas, president of Generalitat Valenciana, the regional government. Olivas claimed the tunnel is the safest in Europe. More details in E-News Weekly # 33.

World Digest Of Tunnel Renovation & Maintenance

Spain. Bids have been invited by Renfe, the Spanish railway company, to improve the drainage system of the two tunnels on the La Encina-Xàtiva section of the Madrid-Valencia railroad. The tunnels are exactly situated between La Encina (in Albacete province) and La Font de la Figuera (Valencia province). Tender value totals €1.4 million.

World Digest Of Innovations – R & D - IUT Special, Sargans 18th-20th September, 2002

Norway. Devico have made a user-friendly package of the DeviTool[®] PeeWee and the Devisoft[®] borehole software for deviation control of grout curtains and blast holes. Mika AS, a Norwegian contractor are using the system at the Asker railway tunnel in Sandvika. NSB, the Norwegian state railway company, requires regular control of hole deviation to ensure good quality of the curtains, to avoid problems encountered at the Romeriksporten tunnel which was excavated on the Oslo-Gardemoen Airport line.

DeviSoft[®] for Windows is developed to calculate the borehole path, make boreplans, set the start direction as well as present the results in tables and plots. The print and plot shows both planned and

real situation. DeviTool® and DeviSoft® make the work on site very efficient and accurate. Time consuming and interruption of the tunnelling work is minimal. One fully grouting curtain with 20 m holes can be completed within 1-2 hour or 3-5 minute per hole. Visit www.devico.no or www.tunnelbuilder.com and click on Devico's logo.

Switzerland. MBT will be exhibiting two new technologies at the IUT in Sargans: Superskin®, sprayable support membranes and Fireshield®, sprayable fire protection. Masterseal® 840 R01A Support Membrane Superskin is a two-component membrane for spray-application onto soil and rock. The product is cement free, gels in less than 5 minutes (at 20° C) and immediately forms a very ductile and strong surface reinforcement on the substrate. Through excellent bond, good elasticity and high failure stress the ground stability and stand-up-time is substantially improved. The fields of application are:

- In tunnelling and mining
- Temporary stabilization of soil and rock.
- Immediate rock reinforcement just behind TBM cutterhead, or other areas with difficult accessibility
- Against hard rock strain bursting
- When large deformations are expected within short time
- To reduce air-slaking and rock weathering
- Alternative to mesh/screen protection

Masterseal® 840 R01A must be used for strengthening of ground under the supervision of a qualified geotechnical engineer. The product should primarily be used to increase safety by application onto potentially unstable ground where other means cannot be applied due to space limitations or other restrictions. Masterseal® 840 R01A must not be used as a replacement for rock reinforcement by rockbolts. It can be considered as a mesh replacement as directed by the geotechnical engineer. Meyco® Fix Fireshield 1350 is a specially formulated and patent applied cementitious based mortar for fire protection in the civil construction, mining and the oil industries. The mortar can be applied manually, like a plaster, or it can be sprayed onto the substrate. The philosophy is to provide a passive fire-protective layer to any underground structure using a rapid application process. If attacked by fire, the underlying structural concrete would be protected for temperatures up to 1350°C. Repair is simply completed by local removal and re-sprayed with a new application. The following benefits are identified:

- Easy to repair after heat attack
- Good bond strength to most substrates, typically 1MPa
- Relatively high compressive strength (10 to 30MPa)
- White colour, if preferred
- Lightweight material 1.2 to 1.8 kg/dm³
- Environmentally friendly product
- Applicable manually, by dry mix and wet mix sprayed concrete equipment for fast application rates of up to 150m² per hour
- The mortar can be finished to most architectural requirements.

Visit www.ugc.mbt.com or www.tunnelbuilder.com and click on the MBT logo.

