

DECEMBER 2008

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Front cover

In September, operators from John Picone Inc, of Lawrence, NY completed a 320ft drive along the Atlantic Ocean in Brooklyn, NY with an Akkerman TBM 540 wheel machine and 5000 series pipejacking system. Located in Gravesend Bay, this job took place near the Verrazano-Narrows Bridge.

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Looking for a silver lining

As the year comes to an end, a black cloud seems to be hanging over us all. The global financial meltdown has claimed its first victims and numerous construction companies and projects are now feeling the pinch.

The first big tunneling project to be threatened is the Port of Miami Tunnel (News, p7). The Florida Department of Transportation announced early this month it would not be closing the deal with private consortium Miami Access Tunnel (MAT), following the loss of its primary equity partner, Babcock & Brown. The Australian company was forced to pull its majority stake in the \$1.7bn project when its stock price plunged from \$34 to \$0.05 per share, leaving partner Bouygues scrambling to find replacement financing.

There may still be some hope for the project however. Under pressure from local lawmakers, the state's transportation secretary has agreed to take a second look at a new deal proposed by MAT. In the meantime, Miami Mayor Manny Diaz is requesting \$100 million in federal stimulus funds for the project, attaching the request to a project wish-list to be bankrolled by the Obama administration as part of its economic stimulus package.

And herein lies the economic silver lining. Following the announcement of the President-elect's infrastructure investment plan, there was an immediate surge in share prices, extending stock market recovery. The companies

poised to benefit the most from major public-works projects stood out, such as Caterpillar with shares up 12%.

Just looking at transit alone in the US, there is a vast amount of work on the way - voters approved more than 20 pro-transit ballot initiatives in the November elections.

Top of this list is California's Proposition 1A, which granted a \$9.95 billion bond measure for the implementation of a 700-mile long high-speed rail system stretching from Sacramento to San Diego. The estimated \$40 billion project will provide a transit time from Los Angeles to San Francisco of just over 2.5 hours, and is expected to include somewhere between 30-50 miles of tunnel.

In Los Angeles, voters also

Despite the difficult times, the fundamental drivers for growth are still present.

approved Measure R, a half-cent sales-tax increase that will provide funding for a 12-mile underground metro extension to Santa Monica.

Construction also starts this month on San Francisco's \$4.1 billion Transbay Terminal project, which will house eight transit systems including the future high-speed rail system.

In Washington, voters passed a \$17 billion transit bond. With funding already approved for Sound Transit's University Link extension, most of this money will pay for further extensions to Seattle's light rail system - including another extension to

the north and a long anticipated extension south to SeaTac Airport and beyond.

On the other side of the country, New York's Metropolitan Transportation Authority (MTA) in pushing on with its numerous multi-billion dollar transit projects - which include the \$6 billion East Side Access, \$4 billion Second Avenue Subway, the \$900 million Fulton Street Transit Center and the \$2 billion Seventh Line Extension.

This acceptance of, and desire for, transit systems is extremely encouraging. With global warming becoming a such a vital issue, the international Copenhagen climate, deal due to be signed next year, is expected to take an extremely hard line on the greenhouse gas emissions.

Due to reduced fuel requirements, California's High Speed Railway is alone expected to account for the reduction of 12.7 billion pounds of greenhouse gases annually. With federal and congressional transportation proponents now seeking expressions of interest from firms to finance, design, build and operate other high-speed passenger rail projects, it seems that the tide is turning towards cleaner, more efficient transportation methods.

Despite the difficult times, the fundamental drivers for growth are still present. Many believe that economic recovery is likely to be sooner rather than later and with so many infrastructure project on the way right across the country, the future can certainly only be bright for the tunneling industry.

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Robbins benefits from Mexico City's boom

The consortium last month awarded the contract to build a 38.5 mile (62km) long sewer improvement scheme in Mexico City has placed an order for half of the required EPBMs with Robbins.

Conagua, the Mexican National Water Commission, awarded the almost US\$725M contract to a consortium comprising Ingenieros Civiles Asociados, Carso Infraestructura y Construcción (CICSA), Construcciones y Trituraciones (COTRISA), Constructora Estrella (CESA) and Lombardo

Construcciones.

The consortium, Constructora Mexicana, has commenced initial works on the fixed term project, which is due for completion in September 2012. The tender to build the Eastern Discharge Tunnel (Túnel Emisor Oriente) was structured with both fixed price and unit rate components.

Construction will begin with excavation of 24 access shafts of 30m-150m deep - 17 will have diameters of 12m while seven will be 16m wide.

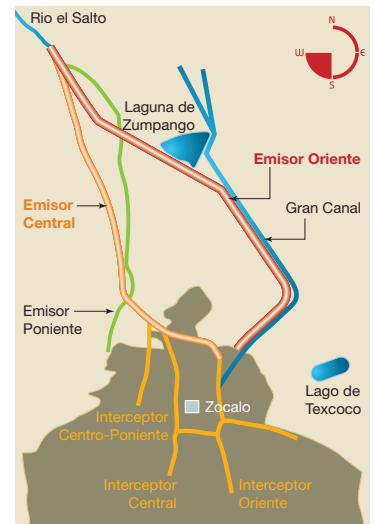
Robbins has been contracted to supply three 29.3ft (8.9m)

diameter EPBMs by the end of 2009 for the excavation. The manufacturer will fabricate the parts for the mixed face TBMs in both the US and China, and will also supply back-up systems, cutting tools, including 17" discs, and spares.

The lengths of 23ft (7m) i.d. sewer tunnel to be driven by the Robbins shields are each approximately six miles. Geology along the alignment ranges from sandy clay and gravel to tuff and pumice. Boulders up to 24" (600mm) are expected and each shield will be fitted with a 35" (900mm) diameter ribbon-type screw conveyor.

A total of six TBMs will be used to excavate the new sewer. An order for two EPBMs had previously been placed with Herrenknecht (T&TNA, Sept, p7).

The major sewer investment, budgeted at US\$1.2bn, is needed to help overcome the drainage problems arising from the long-term sinking of the local area, which has been increasingly suffering from groundwater drawdown. The consequent movement in the slope of existing sewerage pipes has reduced their flow rate capacity by 40% over the last three decades.



Alignment of the Emisor Oriente

The new sewer will have a capacity of 5,300ft³/s (150m³/s) and has been sized to also enable maintenance of the existing deep sewers, helping to reduce flood risk.

Separately, Robbins also recently received a contract for a 33.4ft (10.2m) diameter EPBM to be used on the 3.8 mile (6.2km) long western section of Line 12 on the metro network. ■

Seattle drops tunnel option yet again

Three tunnel options to replace the central section of the Alaskan Way viaduct and seawall in Seattle have been dropped from the shortlist of options due to cost, but one – the bored tunnel – remains on the sidelines pending possible resurrection as a stand-alone addition in future.

The final two options that remain after the whittling of eight contenders are both surface alternatives, one an elevated bypass and the other a boulevard-based hybrid of the surface contenders. While the hybrid would have the least disruption to the waterfront area the through-journey will take longer than at present.

The three tunnel alternatives were a bored tunnel and two cut and cover options. All the tunnels would provide dual, two-lane tubes and open waterfront space above, however the bored tunnel would be further back from the sea and leave more land for additional surface road capacity.

Both of the remaining options – viaduct or boulevard – have price tags of approximately US\$3.5bn. The costs are slightly up on previous estimates and on par with the most expensive core tunnel option, due to the packages also including extra improvement works for existing

roadways and transit services.

Replacement of the aging and seismically-damaged viaduct has been under investigation for the last few years by Washington State Dept of Transportation (WSDOT), King County and the City of Seattle. There has also been input from the Federal Highway Administration (FHWA).

Rival alternatives, split broadly over replacement or tunnel, have been hotly contested but even after a vote given to local taxpayers last year there was no clear preference. The authorities returned to studies and this year produced the eight scenarios.

The eight options for the replacement works on SR 99 on the central waterfront were three surface alternatives (US\$800M-US\$900M), two elevated (US\$1.6bn and US\$2.2bn) and three underground (US\$1.9bn-US\$3.5bn). Operating costs are estimated to be in the range of US\$3M-US\$10M annually.

Holding out some hope for the bored tunnel's survival, authorities said it could be built in future 'as a stand-alone project'. The problem for the tunnel option in future would again be cost: The overall expense of improving the waterfront area would then be double of what is currently being proposed. ■

On December 3, Luminita, the Lovat TBM used to bore King County's Brightwater-East Project, in Seattle, completed its journey to the North Creek shaft. The 19ft (5.9m) diameter mixed face EPBM was used

by the Kenny, Shea and Traylor JV to construct a 14,050ft (4.28km) long tunnel in 14 months through ground conditions consisting of fine to medium sand, with varying amounts of gravel, silt and clay (see p15).



Big Dig agreement for epoxy manufacturer

The indictment against Powers Fasteners over the fatal ceiling collapse in the Big Dig tunnel in Boston, in 2006, is to be dismissed by Massachusetts as part of a compliance agreement, and both the Commonwealth and City of Boston have settled civil claims with the anchor adhesives manufacturer.

Powers Fasteners said it had agreed with the Commonwealth the indictment will be dismissed once the company has self-certified the completion of specific items of corporate compliance. It added that the certification was expected to be provided by late this month or early January. A settlement with the Commonwealth and City of Boston of civil claims has also resulted in a payment of

US\$16M by the family-owned company.

In July 2006, a ceiling panel collapsed in the I-90 tunnel and hit a car, killing a woman passenger, Melina Del Valle.

Following the announcement of the agreement between the Commonwealth and the company, and the settlement, Raquel Ibarra Mora, daughter of Mrs Del Valle, said on behalf of the family: "We are grateful that the Powers family company has done the right thing. The Powers family showed respect towards our family in important ways throughout this difficult matter. We feel that the Powers family, like ours, has suffered enough. We now want to close this chapter in our lives."

In a statement, Powers Fasteners said that, since the



Above and right: Investigations following the fatal incident

accident, the industry had learned a great deal about epoxy creep, the need for both more reliable industry standards and proper training in the selection and installation of adhesive anchors.

The company emphasised that customers had to be aware of the 'all-important' requirement in the new AC-308 standard for special inspection for all adhesive anchor applications, as required under 2006 International Building Code. It added that research was being funded into "simplified hole cleaning methods" and options for industry to make use of adhesive anchors in safer practice.

Jeff Powers, president of Powers Fasteners, welcomed the Attorney General's 'willingness to dismiss the indictment', and added the company 'accepts its



share of responsibility as one of many businesses involved in the construction of the tunnel'. He noted that the firm was first to compensate the Del Valle family.

Powers Fasteners added that, in 1999, it had provided an engineering report on its epoxy types to those on the Big Dig project. It highlighted that epoxies subsequently used in the ceilings were only meant for wall panels.

The decisions, oversight and liabilities among the project parties and supplier for such use were a key part of the National Transportation Safety Board (NTSB) investigation following the accident and in the subsequent legal debate. ■

Funding progress for THE tunnel scheme

The second Hudson tunnel project has gained federal approval and secured further financial backing in advance of work due to start next year.

The Final Environmental Impact Statement (FEIS) was cleared last month by the Federal Transit Administration (FTA) and paves the way to release US\$124M in further design fundings and also the chance to receive federal matching funds. Project sponsors – the state of New Jersey, the Port Authority of New York and New Jersey – have committed US\$5.7bn to the project and are seeking US\$3bn in federal funds.

The project, also known as the Trans-Hudson Express (THE) tunnel, is being built to boost commuter rail capacity between New Jersey and New York. It is the centrepiece of a wider transport initiative – "Access to the Region's Core" (ARC).

In addition to two single tube rail tunnels, to run from North Bergen to west Manhattan, key features of the scheme include enlarging Penn station in New York and extensive track and signal improvements. The new, expanded rail service is to be operational in 2017.

In October, the New Jersey

Transit Board approved funding for final design work, which was launched following the subsequent FEIS approval. The final design stage will also take preparations forward to begin construction procurement.

In a statement last month, Governor Corzine said: 'This key federal approval dovetails with our economic recovery plan, which includes a commitment to major capital projects that can jumpstart the state's construction sector and ensure the creation of jobs for New Jersey residents.'

The design work is being undertaken by a JV of Parsons Brinckerhoff, STV and DMJM Harris/AECOM, operating together as "THE Partnership". Preliminary engineering for the project is underway and final design is to be done over 2009-10. The contract has authorisation for engineering and design work up to US\$124M, bringing the total to US\$214M.

A separate JV of Tishman, Parsons and Arup is providing construction management and project control services.

Also in October, the New Jersey Turnpike Authority greenlighted a toll adjustment plan that puts US\$1.25bn to the scheme. ■

Detroit River tunnel awarded to Vinci/FK

In late November, a joint venture comprising France's Vinci Construction Grand Projets and US contractor Frontier-Kemper Constructors signed a contract with the Detroit Water and Sewerage Department to build a tunnel for carrying treated wastewater from the city for discharge into the Detroit river.

The US\$299M contract

consists of a 1.18-mile (1.9km) long, 21.3ft (6.5m) i.d. tunnel constructed using a slurry TBM. Vinci is the JV lead with a 65% share, with the balance held by Frontier-Kemper.

Elsewhere, the two companies are also working in joint venture with Parsons RCI on two slurry TBM drives for the Brightwater Central Project in King County, Seattle, (p15).

Virginia moves on PPP tunnel

A consortium led by Skanska was sole bidder for the tunnel and bridge scheme on the I-264 being developed by Virginia Department of Transport (VDOT), and has been awarded the work to produce a detailed proposal.

The toll road project in the Hampton Roads area involves three work elements – at Midtown Tunnel, Downtown Tunnel and the MLK Freeway Extension. The scheme would see the scheme developed and operated on a public-private partnership (PPP) basis.

The sole bid came from Elizabeth River Crossings (ERC), a limited liability company owned by Skanska Infrastructure Development and a subsidiary of Macquarie Financial Holdings, which are the lead firms in the consortium.

Detailed proposals are wanted by mid-2009 for award of the PPP contract by 2010. VDOT is planning for construction to be

completed by 2015. Current cost estimates are US\$1.7bn-US\$2.25bn.

ERC has retained a construction JV to develop the works on a design-build basis. The JV includes Skanska US Civil Southeast, Kiewit Construction and Weeks Marine. Design support comes from Parsons Brinckerhoff, Volkert & Associates, Transdyn and COWI. The advisor for operations and maintenance is Hatch Mott MacDonald.

Work at Midtown Tunnel will involve both modifications to the existing structure and construction of an immersed tube tunnel parallel to existing tunnel below the Elizabeth river. The existing tunnel is 1,280m long and was opened in 1962.

Modifications are also planned for Downtown Tunnel, on I-264, which crosses the southern branch of the Elizabeth river. The twin tube Downtown Tunnel links Portsmouth with Norfolk and is

the busiest tunnel in Hampton Roads. The first tube is 3,346.5ft (1.02km) long, was opened in 1952 and now takes westbound traffic. The second immersed tube is 3,805.8ft (1.16km) long, was opened in 1987 and takes eastbound traffic.

The scheme also involves a highway extension to provide a direct link to Midtown Tunnel. Tolls were originally placed on both the Midtown and Downtown tunnels but in 1986, prior to the expansion of the latter crossing, they were

removed.

VDOT has had the scheme under development since 2004 when it issued a Request for Information, and the following year had three expressions of interest – from Tidewater Skanska, Jacobs Civil and Parsons Transportation. While VDOT is looking for completion of the works by 2015, ERC's concept proposal envisages detailed design starting early 2010 and tunnel works, following fabrication, being undertaken over 2011-2014. ■

Credit crunch affects Miami Port Tunnel deal

With generally positive news still coming from the tunneling industry despite the economic downturn, it came as a surprise to some that on 12 December, the Florida Department of Transportation (FDOT) announced it would not be closing the deal on the Port of Miami Tunnel (POMT) project (*T&TNA* March '08, p5), a public-private partnership between the department, Miami-Dade County, the City of Miami and Miami Access Tunnel (MAT), a private consortium awarded the contract on 15 February this year.

MAT's proposal included an original construction cost of US\$600M, with FDOT and the local governments agreeing to share the capital costs equally. *T&TNA* was told: "With the current financial markets, MAT's primary equity partner could no longer confirm it had the financial ability to close the deal."

The key information is in the public-private financing initiative which is more vulnerable than traditional state budgets in troubled economies. French construction firm, Bouygues Publics Travaux and investment bank Babcock & Brown of Australia had won the bid to design, finance, build and

operate the tunnel. Reports said that Babcock & Brown, who constituted MAT's primary equity partner, had to cut its 90% stake in the \$1.7bn project after its stock plunged from US\$34 to roughly US\$0.05 per share.

Gus Pego, the FDOT regional secretary in charge of the project said: "We are disappointed we could not bring this project to close. The department truly supports the Port of Miami Tunnel project as a means to improve access to the port. However, a large project like this requires a number of partners. I applaud our local partners for coming to the table and providing the funding to go forward. However, I also recognize that our private partners are experiencing the effects of these difficult economic times. Although everyone has worked hard to bring this project to fruition, we must face the reality that our private partners have been overwhelmed by the effects of the financial market making delivery unworkable."

As *T&TNA* went to press a statement was due from the Miami-Dade County Mayor and the Miami Mayor on the future of the project. ■

Devil's Slide progress

By early December both of the Devil's Slide tunnels in California had advanced 1650ft (500m) and cross passage development was also well underway. Tunneling for the project consists of two NATM highway tunnels 4200ft (1.28km) long and 30ft (9.14m) wide through the San Pedro mountain, just south of San Francisco.

In early December, *T&TNA* was told 1867ft (569m) of top heading had been excavated in the northbound bore and 1739ft (530m) in the southbound bore. Of the benching works, 1371.4ft (418m) had been excavated in the northbound bore and 1135ft (346m) in the southbound. Two of a total of 10 cross passages have also been completed, with work underway on the third.

A spokesman for client the California Department of Transportation (Caltrans), District 4, said the northbound bore was in category 4 ground and the southbound bore was currently in category 3 conditions. The categories describe a decrease in the density of the material as the category numbers increase.

There are five categories of ground conditions on the scheme. Tunnel lining consists of shotcrete, followed by steel lattice girders then final lining. The shotcrete includes fibres, mainly for fracturing / bursting protection in the event of a fire.

The tunnels are being driven by contractor Kiewit using two roadheaders. Kiewit has also developed a proprietary 3D imaging system, gVT, with the University of Virginia graduate studies program that is being employed on the works to map tunnel profiles. The system allows the profile and conditions to be read concurrent with excavation so engineers can modify and adapt support to the information contained in the 3D mapping.

Once complete, the tunnels and two 1000ft long bridges that are also part of the scheme will re-align a challenging portion of California's coastal Route 1, which has been prone to landslides and closures. The bridges were completed in the summer 2008 and the tunnels are expected to open in 2012. Overall project costs to date are US\$325M.



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Matchmaker, matchmaker make me a match

David F Egger, a Vice-President of Black & Veatch and Global Practice Leader of Black & Veatch's water business, considers the wisdom of setting aside preconceived notions about best fit in selecting Alternative Delivery Methods



It is often these days that talk of alternative delivery methods enters the dialogue for publicly owned projects. For example, we very recently received news that the owner of a major tunneled water transmission project for which we are designer is considering the construction manager-at-risk model. On another project nearing advertisement, the owner's chief engineer commented, "Alternative project delivery (APD)? Not on my project," without giving much thought to potential benefits, such as those offered by the engineer-procure-construction management method. At the interview for another project, an entire line of discussion was devoted to APD and its strengths and weaknesses.

For a broad range of projects in the public sector, APD can improve implementation, shorten project schedules, reduce claims, and improve working relationships. Solid documentation of overall cost reduction has been more elusive except in cases where significant time has been removed from project schedules.

There is little doubt that given the right fit all parties can reap benefits. But, as a wise mentor once told me: "When it comes to people or projects, you will live to regret forcing a square round peg into a round square hole."

One key factor for success looms large: The delivery method must fit the project and address the goals for taking an alternate approach. For instance, the schedule for linear, urban projects that require complex land acquisition and permitting is almost always driven by these activities. So why choose a

delivery method that was "built for speed" – such as lump-sum design-build delivery – when land acquisition and environmental permitting are protracted, prickly issues that are typically best handled by the owner? If a project is almost entirely on public land, has no controversial permitting issues, and requires innovation between designer and builder, why not seriously consider APD?

Perhaps APD for tunnel projects works best when tunneling is part of the bigger picture. For example, who better to optimize hydropower potential versus investment in civil works than a collaborative team of designer and builder?

"APD requires a willingness of participants and stakeholders to change how and when decisions are made and how work gets done"

Does the delivery method fit the project? Another example would be innovation in odor control for one of the many large CSO tunnel projects being contemplated. Is the owner willing to invest the time and effort at the project development stage to make a decision about odor control at 20 or more distinct sites (and not fully knowing who lives next to any of them) without the comfort of a full set of drawings and specifications?

Where APD has been most successful in my view is where it has been more than an idea that has entered the fray late in the development of a project. It is imperative that the decision to use some form of APD be well thought out and planned in a manner similar to planning technical details, public outreach, staff requirements, or land acquisition for a major

project. What will work is driven by a completely honest assessment of what is important to the owner. Issues of importance to the owner can include, but are not limited to, expedited design, reduction in claims, and tight control over the final product. Such factors – and the relative importance or those that are mutually exclusive – will shape how a project is delivered.

APD is not a handy way to transfer all risks (especially subsurface conditions) from the owner to the designer and builder; the risks for each party are as unique as the carefully tailored delivery method selected for a particular project.

My view is that a formal decision process is needed for any public owner to make a leap from design-bid-build to an alternative delivery method. It is vital for owners to understand that APD means it is not business as usual for all parties. After all, accelerated design makes no sense if a three-month-long owner's review at selected milestones is still a contractual requirement.

This is easy to say, but it's essential that owners understand this or we all risk serious stress later when APD does not live up to expectations. So we must be diligent enough to "prepare, prepare, prepare".

A small group working under the auspices of ASCE's Underground Technology Research Committee is formulating a guidebook for project delivery. The telephone calls and meetings (spearheaded and led by Dave Jurich - thank you Dave!) have been extremely energizing because participants have had

the opportunity to hear many stories of alternative delivery from the private sector in particular. Our goal is to sort out the jargon so we are all speaking the same language. The group will also provide a pamphlet to initiate discussion of the advantages of various delivery methods with owners and other project partners. So stay tuned and stand ready to share your thoughts as this effort gets more flesh on the bone.

One other comment about APD that transcends the project and planning is worth sharing here: APD is also about people. APD requires a willingness of participants and stakeholders to change how and when decisions are made and how work gets done. The greatest challenges for most municipal owners are:

- **Managing Up:** Educating ultimate decision makers (i.e. commission, board or council); and
- **Managing Across and Down:** Driving institutional change across their organizations (i.e. legal, procurement, engineering, operations, and maintenance)

For APD to be successful, the owner's legal department must embrace the concept and have the resources. For the legal department, a new form of APD amounts to a project within a project; no cookie-cutter approaches are allowed. The current resources of many legal departments can pose a constraint that needs brutally honest and ego-free appraisal.

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Changing the bidding climate in San Diego

San Diego County Water Authority recently embarked upon a contractor outreach program to improve its bidding processes and practices. **Vic Bienes**, Engineering Manager for the Authority, explains

The San Diego County Water Authority wants to be an agency of choice for contractors – and we want to be an agency of choice regardless of the market or economy. Last year we experienced what many public agencies were experiencing; a large number of capital construction projects with a small contractor bidding pool. Therefore we decided to take action to buck this trend.

We recognized that projects alone were not enough to draw contractors for a competitive bidding process. When we stepped back to objectively look at our bidding practices, we saw there were some areas we could change. We have a \$3.6 billion capital improvement program that includes projects of various types and sizes – and we need contractors to help us build, maintain, and expand our water delivery infrastructure.

As part of the reevaluation, we embarked on an outreach program to research what contractors look for in an owner and when bidding on projects. The first step in this process was to investigate why contractors pursue certain projects and how they decide to place a bid.

We teamed with a local outreach consultant to develop a list of 65 contracting firms in the US. These companies, large and

small, represented a wide range of specialties. From this list of 65, 20 firms were solicited to participate in discussions.

The contractor interviews were conducted by an independent professional interviewer/facilitator and the interviewees were business coordinators, project managers, owners, and CEOs.

Revisit

Our research showed there is no “silver bullet” for attracting bidders or notifying contractors about a job. Contractors get information about bids from many sources: websites, mailers, publications, and word of mouth. This meant we had to expand our methods of providing information about upcoming jobs. In addition, at a staff level, we revisited internal practices to improve how business is conducted on a daily basis. External practices were also reexamined to determine what we can do to influence the actions of contractors.

As we looked inward to see what best practices could be implemented, our entire approach to the bidding process was revised: From contract documentation to our website and the actual bidding itself. This included:

- Improving cost estimating processes to more accurately reflect the current economy
- Including “material escalation clauses” into contracts so the Water Authority shares the risk of unforeseen increases in materials cost
- Improving the website so bid results are posted quicker, payment information is updated, and contractor opportunities are easy to access and understand
- Ensuring progress payments are made within 20 days
- Improving the bidding process itself. Now, two pre-bid meetings are held for each project: One for networking and pulling together the most qualified team; and a second to



Above: Construction at Lake Hodges and; Left: San Vicente



answer questions once the contractor has begun preparing the bid. A bidding checklist has also been created

- Providing a mix of large and small projects so contracting firms of all sizes can comfortably bid on projects
- Conducting project-specific tours and open houses, to create opportunities for contractors and potential bidders to meet project teams, visit the project site, and see first hand what challenges and opportunities exist for each specific project

building, maintaining and improving public infrastructure, received look-ahead documentation containing upcoming public agency projects, and “tips” for doing business with the State and local government agencies.

Results

As a result of all these efforts, the Water Authority received the Public Agency Partnership Award from the Engineering and General Contractors Association.

Although awards are nice they are not the reason we embarked on these outreach efforts. We wanted to increase the number of competitive bids on construction contracts.

Although it is still too early to tell if our efforts have paid off in the long-term, the short-term results are favorable. Bids are coming in closer to the estimates, more contractors are pursuing Water Authority projects, and the Regional Construction Procurement Committee continues to meet to increase agency communication.

Although San Diego has arguably one of the best climates in the country, the bidding climate was not so sunny a year ago. Trying to change this is a lofty goal, but one we are ready to take on. Now that the groundwork has been laid, we will continue to further improve processes. ■



Vic Bienes is an Engineering Manager for the Authority's Design Group, which manages the design

phases for the Water Authority's Capital Program. In September, Bienes received APWA's 2008 Outstanding Service in a Public Agency Award, for his contributions in standardizing construction specifications and improving the communication and coordination of public works projects in the region.

TAC success at the Falls



The Tunnelling Association of Canada (TAC) recently held its 20th national conference in Niagara Falls. The event was a huge success with around 150 delegates and 15 exhibitors.

The Sheraton Falls view hotel was the venue for the two-day conference. The Falls providing a majestic backdrop as technical papers were presented by authors from around the globe.

Papers covered six continents and were diverse, from grand schemes such as the local Sir Adam Beck tunnel in Niagara Falls, to advances in surveying.

The conference theme was "Tunnelling, Technology and the

Environment", and all presenters had some environmental stories to relate. Of particular interest was the keynote speech given by Dr Thomas Homer-Dixon, a professor from the University of Waterloo. He is well versed in environmental and industrial impacts and is his speech was the subject of much discussion throughout the conference.

A second keynote was made by Charles Wheeler of the Toronto Transit Commission, his outline of future transit expansion was excellent and good news all around with a significant amount of tunnelling on the horizon.

Social events were also well received. Being in the heart of wine country, it was only natural that a wine tasting at the hotel, followed by a local winery tour would be in order.

Breaking with tradition, the conference dinner was a lower

The 2009 George A Fox Conference, due to be held on January 27, at the Graduate Center, City University of New York, promises to be an engaging and thought-provoking conference. With a theme of "Large Rock Caverns and Soft Ground Mechanical Excavation", Leon Jacobs of Frontier-Kemper Constructors will Chair the one-day event.

Following a keynote address from Galyn Rippentrop, Retired President and CEO of Frontier-Kemper, the morning session features project updates on ongoing schemes in New York.

Following lunch, the focus turns to "Contractor's Experience Utilizing Soft Ground Excavation Methods". Bret Robinson and Michael Traylor, of Traylor Brothers, will present principles, benefits, and lessons learned using EPB machines; Steve Redmond,

Vice President, and Terry Yokata, Contract Engineer, for Vinci/Parsons/FKCI JV, will present experiences using Slurry TBMs; and Michael DiPonio, of Jay Dee, will present Mixed Face TBMs.

Cross-passage excavation considerations using NATM, SEM, ground freezing, and grouting will be presented by Christian Newmann, Technical Director of Beton- und Monierbau USA; and the necessity, risks, preparation and management of TBM interventions will be discussed by Werner Burger, Chief Engineer with Herrenknecht.

The day will conclude with two presentations on "Large Span Rock Caverns", including works for the Kops II project, in Austria, and New York's Trans-Hudson Express (THE) Tunnel Cavern.

For more information visit: <http://www.smenet.org>

key event than the usual formal dinner. An award ceremony was also held during this event, giving recognition to three very well known industry individuals.

With the activities concluded, the Tunnel Association is straight into planning for the next conference, to be combined with the ITA conference, scheduled for May 2010 in Vancouver. ■

FUTURE EVENTS

**RETIC 2009
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CENTRAL PUGET SOUND REGIONAL TRANSIT AUTHORITY INVITATION FOR BIDS UNIVERSITY LINK LIGHT RAIL TBM TUNNEL UWS TO CHS – LINK CONTRACT U220 (IFB NO. RTA/LR 1-09)

The Central Puget Sound Regional Transit Authority (Sound Transit) invites sealed bids for the construction of approximately 11,400 feet of twin-bored running tunnels between the University of Washington Station and Capitol Hill Station and cross passages excavated at intervals between the bored tunnels, including permanent slurry-walls for the UW Station and crossover box structure and excavation of the southern cross-over portion of the box.

A Pre-Bid Conference will be held January 23, 2009 at 9:00 a.m. in Sound Transit's Ruth Fisher Board Room, 401 South Jackson Street, Seattle, Washington. A Networking Session and Site Visit will be conducted following the pre-bid conference. A CD of the Invitation for Bids may be obtained through Sound Transit's contracting opportunities web site at www.soundtransit.ebidsystems.com.

Any and all inquiries concerning the IFB process should be directed to Brian Knight, Lead Contract Administrator, at (206) 689-4942.

Central Puget Sound Regional Transit Authority

By: Brian P. Knight, Lead Contract Administrator

NOTICE BOARD

Input call on FHWA National Tunnel Inspection regulations

Last month, the US Federal Highway Administration (FHWA) published an advance notice* of proposals to establish mandatory National Tunnel Inspection Standards (NTIS) and has called for industry feedback in their development. The road tunnels' regulations will apply to all federal-aid highway tunnels. A deadline for comments and feedback has been set as 17 February 2009, though FHWA noted that late submissions would be considered, if possible. Submissions are to be made to the Department of Transportation (DoT), either physically or electronically.

While FHWA had previously developed and issued guidelines for inspections, and provided management software for owners, it has noted that take-up and methods varied widely. Following the fatal ceiling fall in the Central Artery Tunnel in Boston, MA, in 2006, a key recommendation from the National Transport Safety Board (NTSB) was for inspections to be moved to a mandatory basis.

NTSB called on FHWA to seek legislative authority to establish the inspection program, called for it to be similar to the bridge system in that critical elements for checking would be identified and appropriate frequency of checks specified.

The push for action by the FHWA was given further impetus about two years ago with a bill introduced to the House of Representatives just over a year ago to adapt existing bridge inspection legislation to get mandatory tunnel coverage (T&TI, February 2007, p7). Just over a year ago when the DoT Inspector General gave testimony before Congress. Meanwhile, state authorities have been improving standards of vigilance in tunnel inspections, following the Boston accident. In Colorado, for example, action by the state discovered a roof crack that threatened the structural integrity of the I-70 Hanging Lake tunnel. The tube at risk, the eastbound tunnel, was closed for seven months while the westbound took contraflow traffic. Repairs cost US\$6M but avoided potentially much worse problems.

In issuing its advance notice, FHWA said it is acting proactively to develop the new inspection standards. It notes that the variance in inspection frequency is extreme, ranging from daily to once every 10 years. Inspection of elements also varies with climate. FHWA said the new regulations would ensure routine inspections, the results being reported to it and problems corrected 'in a timely manner'.

FHWA expects to have the NTIS following the model of the existing National Bridge Inspection Standards (NBIS). It anticipates, therefore, setting out requirements for inspection procedures for structural, mechanical, electrical, hydraulic and ventilation systems as well as significant tunnel elements, such as finishes, qualification and training of inspectors, and a National Tunnel Inventory.

While no inventory presently exists for highway tunnels, FHWA estimates there are more than 300 such structures. It says that there are more than 100 linear miles of tunnels in Interstates, state routes and local routes, and most are at least half a century old.

The FHWA guidelines – "Highway and Rail Transit Tunnel Inspection Manual" – were introduced in 2003, updated in 2005 and are available at:

<http://www.fhwa.dot.gov/bridge/tunnel/inspectman00.cfm>

* The advance notice was published in the Federal Register, cited at Vol 73, No 223, pages 68365-68369. Its references are 23 CFR Part 650, and FHWA Docket No. FHWA-2008-0038.

Sound Transit invites bids for TBM tunnel contract

The Central Puget Sound Regional Transit Authority (Sound Transit) has invited sealed bids for the construction of approximately 11,400ft of twin-bored running tunnels between the University of Washington Station (UWS) and Capitol Hill Station (CHS), in Seattle, Washington.

Contract U220 also includes cross passages excavated at intervals between the bored tunnels and permanent slurry-walls for the UW station and crossover box structure and excavation of the southern cross-over portion of the box.

A pre-bid conference will be held January 23, 2009 in Sound Transit's Seattle offices, followed by a networking session and site visit. A CD-ROM of the Invitation for Bids may be obtained through Sound Transit's contracting opportunities web site at: <http://www.soundtransit.ebidsystems.com>

All inquiries concerning the IFB process should be directed to Brian Knight, Lead Contract Administrator, on (206) 689 4942.

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Under pressure at Brightwater

The first of four extremely challenging soft ground TBM drives has recently been completed for the Brightwater conveyance tunnel, in greater Seattle, marking an initial milestone on the project. **Amanda Foley**, reports

The 13-mile (21km) long Brightwater tunnel is a major component of a \$1.8 billion project to increase sewage treatment capacity in the greater Seattle region of King County, Washington. The 13-17ft (4-5m) i.d. tunnel is currently being excavated at depths of up to 475ft (144m) using two Lovat EPBMs and two Herrenknecht slurry TBMs, involving some of the longest and most challenging soft ground drives in the US to date.

Due for completion in late 2010, the tunnel will ultimately collect flows from two existing trunk sewers and divert them, via shafts at North Kenmore and North Creek, to the new Brightwater treatment facility (figure 1). Once treated, effluent will also be conveyed back through the combined tunnel to a new 1-mile (1.6km) long marine outfall in the Puget Sound.

Project background

Following detailed studies and preliminary engineering, client King County's Department of Natural Resources and Parks, Wastewater Treatment Division (WTD), awarded final design of the conveyance project to a JV of Montgomery Watson Harza/Jacobs Associates (MWH/JA) in 2004.

Over the following two years, the team worked with geotechnical engineer CDM to develop contract documents, including geotechnical data and baseline reports, and by the end of 2005 the first of three

lump-sum tunnel construction contracts had been awarded. When *T&TNA* last reported on the project (see *T&TNA*, Sept '07, p13) all three contracts had mobilized and the first of the project's four TBMs had just arrived on site.

Technical challenges

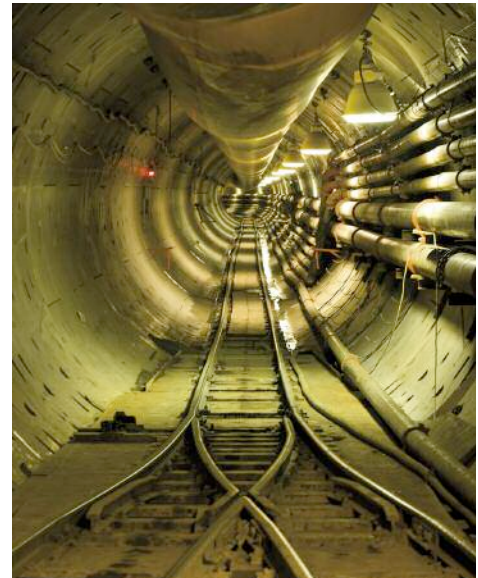
Due to the highly-variable and complex mix of glacial soils found along the tunnel alignment - combined with long drive lengths and widely varying groundwater conditions - pressurized TBMs and sealed shaft techniques have been specified for all three contracts.

On the East and West tunnels the choice of EPB or slurry was left to the contractors, with both ultimately opting for EPBMs. However, due to predicted groundwater pressures of up to 7.5 bar on the Central tunnels two slurry TBMs were specified.

In these conditions, both techniques are being pushed to their limits. "The ground can change from dense clays to fine sands within just a few feet, which can play havoc with a slurry system," explains MWH Geotechnical Engineer, Joe Clare. The risk of soil abrasion, damage from boulders and clogging in sticky clays are also concerns.

In an effort to mitigate these risks, MWH/JA developed a strict set of operational requirements for the TBMs. In addition, the number and location of TBM inspections, as well as the availability of certain equipment and wear parts, has

Right: View down one of the Central Tunnels; **Below: Segment** erection on the East drive; **Bottom left: Figure 1 - Plan** of the contracts and internal pipe configurations



also been stipulated.

Cutterhead interventions are undertaken in either compressed or 'free' air environments, depending upon the prevailing ground conditions, and all four TBMs have been fitted out with state-of-the-art compressed air working facilities. However, a stringent 3.4 bar compressed air working limit exists in Washington State and gaining the permit variations for hyperbaric interventions at over 5 bar on the West and Central drives, was an

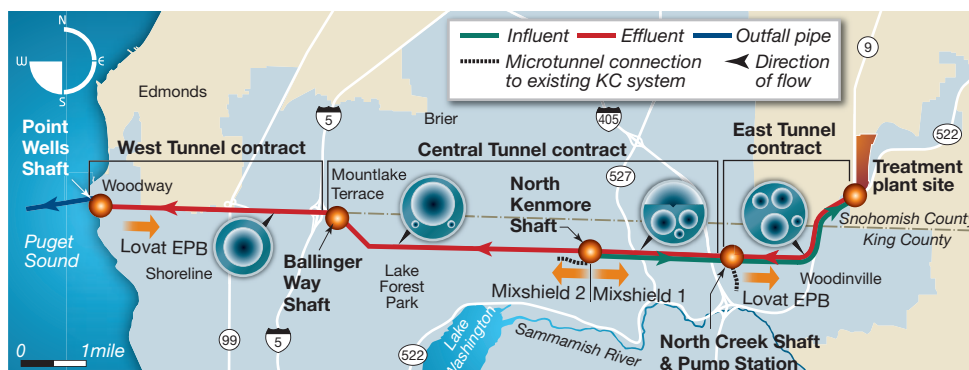
early challenge on the project.

East Tunnel Contract

Having been awarded to the Kenny/Shea/Traylor JV (KST) in December 2005, at a bid price of \$130.9 million, the East tunnel EPBM drive (BT1) was the first to get underway on the project.

Following construction of two slurry diaphragm wall shafts at North Creek - a 74ft deep (22.5m) influent structure/portal shaft, and a 83ft (25m) deep 'figure of eight' Influent Pumping Station (IPS) shaft with twin intersecting cells - the JV began assembly of a new 19.5ft (5.9m) diameter Lovat EPBM in July 2007 (*T&TNA*, Sept '07, p13). By early-October, the EPBM was ready to be launched eastwards on its 14,050ft (4.28km) drive to the 40ft (12m) deep open-cut reception shaft at the treatment plant site.

From the outset, it was expected the start to this drive would be tricky. The TBM was launched from the base of the influent/portal shaft straight into a 1000ft (305m) radius curve, through cohesionless sands with a watertable situated 4-5ft





(1.2-1.5m) below ground surface. Unfortunately, in addition to the difficult launch conditions, serious problems with the TBM's passive articulation joints meant that by the time the JV eventually managed to get around the curve, eight weeks had been lost on the schedule.

"Completion of the East Tunnel is on the critical path for a site handover deadline with Kiewit for the completion of IPS structure," explains Anthony Pooley, Project Manager for the Jacobs Engineering-led construction management team. "So the delay was a major concern."

Once up to speed however, the JV soon began to achieve good advances rates, of about 360ft (110m) per week, working two 10hr shifts/day, six days per week. In May 2008, the JV also introduced a maintenance shift, which greatly reduced downtime and boosted production rates even further, up to 550ft (168m) per week.

Despite concerns previously voiced by the JV about grouting through the tailskin, there have been no problems with plugging of the grout lines says Pooley. "Tailskin grouting is the norm for soft ground tunneling in Europe, but it's still not that common in the US. I think the issue was somewhat cultural, but everything has gone well. All the contractors are building

very good quality linings"

Steel fiber reinforced segments for all three of the tunnel contracts are being manufactured by CSI-Hanson at a custom facility located 40 miles south of the project. Designed on behalf of CSI by Hatch Mott MacDonald, rings for each contract differ in terms of diameter, build-type and design criteria. But all are produced to a similar six segment, bolted, doweled and gasketed ring configuration and are 5ft long x 10-13in thick (1.5m x 250-325mm).

Unlike the other two contract sites, a lack of storage space at North Creek has meant the East contract's segments have been supplied as required from the factory. However, despite specified delivery routes and rush-hour haul restrictions, segment supply along the north-south Seattle commuter corridor has not been an issue.

Following a great performance over the last six months, the BT1 drive broke through into the treatment plant reception shaft on November 14th, a week ahead of schedule. "It's been an absolutely superb effort by Kenny," says Pooley. "Good use of the TBM's foam conditioning system, along with careful thrust control, meant the entire drive was completed with a single set of cutters and 60 working days were cut right back



Top left: View of the East Tunnel; **Above:** The North Creek site, with the twin-celled IPS Shaft to the left and influent/portal shaft on the right; **Left:** KST's breakthrough on BT1 in early-November

off the schedule."

The Lovat machine is now being dismantled and was due to be out of the ground before Christmas, in plenty of time for the January 14th site vacation date at North Creek.

In February, Kenny will start to install the tunnel's four steel carrier pipes - a 48in and a 66in influent force main, a 84in effluent pipeline and a 27in reclaimed water pipe - the tunnel will then be backfilled with cellular concrete, with contract completion set for November 2009.

Central drives

The Central contract was awarded to the Vinci/Parsons RCI/Frontier-Kemper (VPFK) JV in July 2006, at a bid value of \$209.8 million. This contract comprises two slurry TBM headings, each driven from a single 90ft deep (27.5m) diaphragm wall shaft at the North Kenmore site. The BT2 combined tunnel runs 11,600ft (3.5km) eastwards towards the North Creek portal shaft and BT3 is a 20,100ft (6.1km) drive west towards the Ballinger Way shaft (BT3).

In order to excavate the complex soils expected on these drives, VPFK purchased two 17.4ft (5.3m) diameter Herrenknecht Mixshield TBMs. The BT2 machine was launched first, in October 2007 and driven 400m before stopping so that the BT3 machine could be installed in the shaft. At 6500ft, BT2 is now 55% complete and, as predicted, dealing with the ground conditions has been a big challenge for VPFK. Boulders, silty sands and gravels have been tough

on the machine, creating problems with the stone crusher and causing wear of the cutterhead and tools.

High groundwater pressures have also hampered progress, with interventions of up to 3.5 bar having been performed to date. "This is likely to go higher, especially on the BT3 drive," explains Pooley. "We expect the highest interventions will be at around 5-6 bar. That will mean the use of tri-mix gasses, as well as shorter exposure times and longer decompression cycles."

As discussed, gaining the permit variances to perform these interventions has not been an easy task. The County and both the contractors on the Central and West tunnels have been required to submit detailed compressed air working plans to the State. They have all also been required to engage independent specialist hyperbaric consultants with proven experience of managing pressures of more than 5 bar.

Clay reaches have also caused problems for the twin MSD/Derrick solids separation systems, which have had difficulty coping with the high variances between fine and coarse materials. "It is tricky, you have to go with the set-up that suits the predominant conditions," explained VPFK Superintendent, Pierre Pissouraille, when T&TNA visited the contract this June. "But we will have to make adjustments soon to deal with the longer clay sections that are coming up, which will require another centrifuge."

All of these issues have meant that the BT2 drive has currently fallen behind schedule, so to try and address this, VPFK have stepped up from a 24hr/five day to a 24hr/six day working week.

The key challenge on this drive now that Kiewit is working on the Influent Pump Station (IPS), will be meeting a 60-day floating window in the second quarter of 2009, for



Left: VPFK's North Kenmore site set-up and, far left, launch of the first Herrenknecht slurry machine on the BT2 drive



Left: The portal structure at Point Wells and assembly of the BT4 Lovat EPBM prior to launch under the railway

breakthrough into the influent/portal shaft at North Creek.

One tool that the CM team has found particularly useful in assessing production rates is Babendererde's TPC software, which is currently installed on all of the project's TBMs. "The system classifies all the data produced by the TBMs," explains Pooley. "We have been using this to examine downtime make suggestions for improvements."

Since launch in March 2008, VPFK has driven the BT3 machine about 4100ft (1.25km) through predominantly granular material. The TBM has been suffering from quite a large amount of wear and has this has required numerous interventions and tool changes. Therefore, with the TBM soon due to reach some of the highest pressures on the project, the JV is currently looking at places to stop at atmospheric pressure within a clay section, so that the cutterhead can be completely refaced and redressed. Looking ahead, if all goes to plan, the BT3 drive should reach the Ballinger Way shaft at the beginning of 2010.

West Tunnel run

The West tunnel contract (BT4) was awarded in February 2007, to a JV of Jay Dee, Coluccio and Taisei (JCT), with a bid value of \$102.5 million. Mobilizing at the Point Wells site, the JV set about constructing a 35ft (11m) deep rectangular sheet-piled box for launch of the contract's 15ft 6in (4.7m) Lovat EPBM on a 21,000ft (6.4km) run to the Ballinger Way portal.

Originally due in March 2008, delivery of the TBM was ultimately five months late. "A good part, if not all of that delay, was the result the four chamber manlock in the body of the TBM," says Greg Hauser, Project Manager for JCT. Incorporation of this manlock, which was specified in the contract, results in an extremely tight and very long TBM that, amongst other things, makes turning quite difficult.

"It also puts the manlock between us and the motor room," says Hauser. "The equipment in there needs daily maintenance and access is very limited. It makes

keeping everything going that much harder, but it's something we're getting used to."

All this made construction of the TBM very difficult and involved some very creative engineering by Lovat. The motor room has to be capable of maintaining pressure and even the screw conveyor had to have a seal constructed, which can be installed whenever an intervention at pressure is required. All of this was very costly and time consuming and is now an issue with the JV and King County.

Thankfully, JCT have two particularly competent TBM crews working on the project. "We brought the majority of one from our previous project in Columbus, Ohio," says Hauser, "and we picked up the majority of the second from Obayashi's Sound Transit project." Additionally, the JV has invested a lot of time and money in the crew, sending many of them to Toronto to work at the Lovat plant and become familiar with the TBM. Hauser believes this has already paid off in better on site assembly and a smoother launch.

The launch itself was critical, as the JV only had about 85ft (25m) clearance to BNSF's main west-coast freight tracks, which carry over 40 trains a day including Amtrak passenger trains. Cover between the TBM and the tracks was about 16ft, 4ft of which was ballast, which made for a tense few days for the JV. "But because of good people who know their jobs, good supervision from General Superintendent Tom McMahon and walkers Martin Valles and Eucario Ramirez, we got past the tracks with absolutely no detectable movement and no disruptions to the railroad," says Hauser.

To date, the JV is currently about 2,500ft (760m) into the drive averaging about 350ft per week and ground has been pretty much as anticipated, sandy silty soils with pressures of up to 2 bar. The EPBM is currently on a 2% up grade that will bring the JV up into pressures of about 1 bar for about 6,000ft

Top right: Dual air locks on the BT2 slurry machine; **Right:** A decompression shuttle sits on the East tunnel rail wagon

(1.8km). At that point, about mid-way through the drive, the pressure jumps quickly to about 5 bar.

"We anticipate doing a manned intervention when we first get to the higher elevation and one more just before we get to the location where the pressure goes up again," explains Hauser. "Then we hope to complete the drive with no more cutter changes or interventions." The experience of KST on the East project suggests runs of this length can be achieved without changes if ground stays as expected, but Hauser says the JV will be prepared for the worst.

For now, the challenge is for the JV to maintain the advance through wet ground at high pressures and do it all from one portal. "We have a very competent staff and good support from our JV partners, so we are confident that we'll be successful," says Hauser.

Client relations

Described by one contractor as the best Owner group he has ever had the pleasure of working with, King County has made efforts to settle

claims quickly on the project. The County has a long history of successful tunneling projects and this experience, combined with strong tunnel design and management teams, has led to great working relations.

With the entire alignment located in rural and residential areas, good communication with the public has been a priority. Key to this has been keeping residents informed of the schedule through newsletters and public meetings. Contractors have also been required to limit dust, lighting, sound and site traffic impacts in any residential areas.

Environmental regulations on the project are stringent, with permits specifying site water discharge limits by the hour, day and week. With wild salmon currently listed as endangered, monitoring of several spawning creeks that cross the alignment is also required. To date the project has performed extremely well on all environmental issues, with just one local disturbance to the creeks. "BT2 was crossing a valley with artesian water pressure," explains Pooley. "The contractor [VPFK] had to stop for an intervention and compressed air migrated upwards causing a stream to bubble. This was a bit of a surprise, considering the TBM was 150ft below and 100ft behind."

With successful completion of the East tunnel marking the first major milestone for the Brightwater tunnels, T&TNA looks forward to monitoring future progress. ■



US push on airbag R&D



Above: Demonstration of the ceiling-mounted package and fully-inflated tunnel airbag

An airbag system designed to seal off tunnels in the event of emergency has been unveiled by West Virginia University (WVU) following a federally-funded research program.

The system is aimed to be useful in helping prevent, or at least hinder, the spread of smoke, toxic fumes, or water, should there be a fire or flood in a road or rail tunnel, and to help seal breaks or holes in tunnels.

WVU's system is a ceiling-mounted package that contains a heavy duty, fully inflatable airbag, which is activated by signals from wall-mounted sensors. The rate of inflation depends on the power of the fan.

Tests have been able to achieve reasonable seal as the airbag inflates and deforms around obstacles. However, there will remain questions about effectiveness of such seals in tunnels that house protruding

equipment, and also how its use works with evacuation needs.

Funding for the research has come from the US Department for Homeland Security in collaboration with the Transportation Security Administration and the Pacific Northwest National Laboratory. First year funding for the three-year R&D studies was more than US\$1M, and the total budget is expected to be more than US\$3M. The studies have been underway for more than a year.

Further partners on the program are Lindstrand Technologies, a balloon and inflatable structures manufacturer based in UK, the Center for National Response and West Virginia Memorial Tunnel.

The researchers leading the programme are based in WVU's College of Engineering and Mineral resources. WVU said that the idea of using an airbag has been discussed in Europe but

the research had not reached testing stage – which happened in the US in August with the co-operation of the Washington Metropolitan Area Transit Authority. The tests employed strips with pressure sensors on the walls to measure the degree of contact.

However, almost a year ago Lindstrand supplied an inflatable structure, or "tunnel plug", for fire control tests in the new Hubertus tunnel in The Netherlands. Unlike the airbag, the plug has an inflatable rim that is contoured to fit the tunnel, and the remainder is a consequently tensioned, internal plastic sheet.

Plugs would be installed in intervals in a tunnels and activated either side of an incident - they have zipped escape doors to enable evacuation. The company said the material is silicone rubber and can withstand temperatures of up to 450°C. ■

BC tribunal rules against SELI/SNC Lavalin JV

On December 03, the British Columbia Human Rights Tribunal upheld a discrimination complaint, worth more than an estimated CAD\$2.4M, against SELI Canada and SNC Lavalin in regards to labor employed for the Canada Line, in Vancouver.

A total of 38 workers from Costa Rica, Colombia and Ecuador were awarded back pay and damages for "injury to dignity, feelings and self-respect" as a result of being paid less than Europeans doing the same work.

Following the ruling, the BC and Yukon Territory Building and Construction Trades Council (BCYT) called for better treatment of temporary workers in Canada. Wayne Peppard, BCYT Executive Director, said: "All workers in Canada have rights that must be respected."

The Construction and Specialized Workers' Union (CSWU), Local 1611, organized the workers after Building Trades officials discovered they were making less than CAD\$5/ hour.

Some local media reports have been less enthusiastic about the finding however - saying the issue arose because the JV could not find enough Canadians for certain jobs and offered jobs to its staff in other

parts of the world.

CSWU was subsequently certified to represent workers on the site and began negotiations to agree a contract. Reports say that union complaints to the Labor Relations Board (LRB) were dismissed when it established parity between Canadian and Latin American wages. The union then amended its complaint to compare pay to that of Europeans employed on the scheme. Despite 75% of workers voting to accept the agreement that ratified the differential pay rates, the tribunal ordered the contractors to pay the difference.

At the time of going to press, T&TNA was unable to obtain clarification, but it seems likely the tribunal made a decision based upon comparing laborers wages to SELI's international journeyman staff. Indeed, the ruling states: "The Respondents submit the Latin Americans, many of whom had worked for SELI on only one previous project in Costa Rica, were less experienced and skilled than the Europeans, and point to this as a non-discriminatory explanation for the different terms and conditions of employment between the two groups of workers." ■

With tunnel excavation completed, finishing works on Vancouver's Canada Line are moving along at a rapid pace. Pictured here is Vancouver City Centre Station. Further

works to be carried out as the station nears completion include electrifying the track, installing permanent lighting, tiling, painting and installation of furniture and fixtures.



Santa Ana site investigation

Extensive drilling in Southern California's Cleveland National Forest is to be used to determine if a commuter traffic tunnel between Riverside and Orange counties is feasible.

The Riverside Orange Corridor Authority, a public agency staffed with transportation officials from the two counties, has been carrying out site investigations for an 11-mile (17.7km) road tunnel as one of three options to ease traffic congestion. The other two measures under consideration

are the widening of Highway 91 and a new four-lane elevated roadway parallel to Highway 91.

John Standiford, spokesman for the Riverside County Transportation Commission, said the drilling carried out by San Diego's Kleinfelder had been completed in November and appeared positive.

A draft of the site investigation report should be due by the middle of 2009. A final report combining all the studies will likely be presented to the authority 4Q 2009. ■

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