

# InfraStructures

**CONSTRUCTION • PUBLIC WORKS • NATURAL RESOURCES**

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THIS ELECTRONIC VERSION OF INFRASTRUCTURES IS MADE AVAILABLE FOR THE SOLE PURPOSE OF GIVING OUR ENGLISH SPEAKING READERS A TASTE OF THE ORIGINAL PRINTED VERSION OF THE MAGAZINE.

WE WILL TRY TO PUBLISH AS MUCH OF THE EDITORIAL CONTENT OF THE PRINTED VERSION AS POSSIBLE GIVEN THE TECHNICAL LIMITATIONS.

## Welcome

Throughout its eight years of serving the French speaking users of heavy machinery and specialized equipment in Canada, InfraStructures has established itself as the most acknowledged reference in its field. All other magazines have a different scope or focus. None offer a better mix of local content, important industry news, good circulation and reasonable rates for both readers and advertisers.

As you may know, our next major step for 2005 is in the making: an English print version of InfraStructures – distributed by mail across Ontario and the Maritimes. If you are interested in receiving the English print version of InfraStructures next year, please send us your coordinates by mail or e-mail.

For the year 2004, issues of the English online version will feature more content than last year. We encourage you to send in your news releases and articles which we will gladly publish free of charge.

Finally, we offer a great advertising package: Buy space in our French print version and get published in the English online version free of charge. Please call us to discuss your advertising plans in detail.



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On the front cover : A Daewoo Solar 470LC-V recently bought by Marobi Inc., a contractor based in Saint-Hyacinthe, working on a sewer and watermain project in Sainte-Madeleine, south of Montréal, Québec.



## In the News...

### SR TELECOM SIGNS \$13 MILLION CONTRACT IN SENEGAL

SR Telecom(TM) Inc. announced that it has signed an agreement valued at approximately \$13 million with Sonatel, the national telecommunications provider in Senegal. Sonatel has selected the SR500 fixed wireless access system for a rural communications

development project aimed at meeting the Senegalese government's ongoing universal access objectives. Sonatel expects to issue the majority of its equipment purchase orders in 2004. The remaining orders will be placed in early 2005.

Adding to its already large network of SR500 systems, Sonatel will deliver voice, fax and Internet services to its customers. Upon completion of this project, SR500 will be installed in more than 650 villages across the

country. SR Telecom will also provide certain services, including field surveys, network design, installation, training and project management.

"This contract is the result of the long-standing business relationship we have built with Sonatel," said Pierre St-Arnaud, SR Telecom's President and Chief Executive Officer. "Since the late 1980's, Sonatel has demonstrated a strong belief in the benefits of fixed wireless access technology and services that SR Telecom provides. We are pleased with Sonatel's choice of SR500, which has proven to be the ideal choice for meeting universal access objectives in remote communities."

The SR500 is a high-capacity point-to-multipoint fixed wireless access system that enables operators to extend their reach and deliver a full range of tailor-made voice and data applications to end-users in remote locations. Designed for the harshest environments, SR500 is a robust system built on field-proven technology and supports a variety of network and end-user interfaces. With a reach of up to 720 kilometres from the central station, the SR500 boasts the longest reach in the industry and has the largest installed base in the world.

Source: SR Telecom Inc.

### DATACOM HELPS THE BOROUGH OF POINTE CLAIRE INCREASE ITS OPERATIONAL EFFICIENCY

Datacom Wireless Corporation helps the City of Montreal, Borough of Pointe Claire achieve their objective of eliminating the paper documentation completed by their employees with the installation of their GPS tracking system, Mobicom™. Over 300 commercial clients, including some of Canada's largest corporations, currently use Datacom's systems and benefit from their advantages.

Once the units were installed, the Borough of Pointe Claire was able to start the transition from paper forms filled out manually by the employees to customized reports produced automatically on daily basis. They increased their ability to trace the routes taken by their employees, the actions of each truck, whether it is snow removal or salt spreading, and if the trucks were in good working condition. "When we started working with Datacom, the system did not entirely respond to the needs of a municipality, however, Datacom worked closely with us to adapt the system to our specific needs" says Daniel McDuff, Director of Public Works

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for the Borough of Pointe Claire.

After using the Mobicom™ system for only five months, the Borough realized that there was some discrepancy in the assignment of the snow removal routes that were then revised in order to optimize the use of the vehicles.

"At Datacom, we pride ourselves on working with our clients to meet their needs. With the aid of our new messaging feature, Mobicom Celera™, we will be able to seamlessly integrate with CompuSpread units" says Paul-André Savoie, Datacom's President and CEO.

The implementation of the new system and technology was easily accepted and used by the Borough's employees. With the new system in place, the Borough was able to respond to citizen complaints quicker and with greater accurateness. A complaint was received concerning a vehicle that was exceeding the speed limit on a residential street and the Borough promptly created a report of that vehicles speed on the day in question which was used to prove the driver's innocence.

Mobicom™ is a versatile GPS management and tracking system, which provides an unprecedented view of business operations. Mobicom™ operates over next generation wireless networks using global wireless standards (GSM/GPRS) and includes mapping software utilized for real-time or historical tracking throughout North America, geo-fencing capabilities, integrated two-way text messaging and customized reports. Mobicom™ provides customers a very cost effective solution that enables optimization of fleet operations to achieve significant operational savings.

Source: Datacom Wireless Corporation

#### DEERE CONFIDENT THAT IT CAN MEET NEW EPA GUIDELINES

Deere & Company said that new regulations for off-road diesel engines announced by the U.S. Environmental Protection Agency would be challenging to meet but that John Deere Power Systems is confident in its ability to do so.

"We have a proven track record for producing off-road diesel engines offering increased fuel economy and power as well as improved environmental performance," said James D. White, senior vice president, John Deere Power Systems Group. "John Deere has long been known for its environmental stewardship and product innovation."

The new EPA Tier 4 rule continues the progression toward cleaner off-road diesel engines. Since EPA first adopted off-road regulations in 1996, emissions have been significantly reduced. The new standards, when fully implemented, will provide a 90% reduction in NOx and more than a 95% reduction in particulates, as compared to uncontrolled emission levels.

The EPA has recognized differences between on-highway and off-highway engines

in the new Tier 4 rule - a move that was supported by Deere and others.

"Off-road engines have lower sales volumes, broader power ranges, more diverse equipment use and harsher operating conditions," White said. "We support the EPA's plan of a phase-in provision, allowing for emission reductions to be achieved in the earliest year that is technically and economically feasible, while allowing additional time for those engines or machines



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for which compliance is particularly difficult or expensive.”

White said a phase-in provision helps promote better air quality while reducing compliance costs for manufacturers and enabling consumers to replace their older engines with newer, more affordable, cleaner emitting ones.

Deere also supports the 2007 technical feasibility review and harmonization of the rule with the European Union, White said.

The 2007 technical feasibility review will ensure that those after treatment technologies necessary to comply with the standards, many of which have yet to be developed, will keep pace with the rule’s implementation dates, allowing for midcourse corrections, if necessary.

Harmonization of the rule with the European Union provides consistency between the U.S. and European standards that will help reduce compliance costs by spreading

development expenses across a greater number of engines.

Technical and economic feasibility are critical elements toward a successful rollout of the rule, White said. He said that Deere fully supports the feasibility review and urges the EPA to continue working with the EU to ensure harmonization.

“Although a number of technical issues remain to be resolved, such as the measurement and certification procedures, we are pleased with the overall direction taken by the agency in crafting the rule,” White said. “John Deere will continue working with the EPA and others to address these remaining issues and will continue to be a leader in the progress that has been made over the years toward cleaner, more efficient, off-road engines.”

John Deere is the world’s leading manufacturer of agricultural and forestry equipment; a leading supplier of equipment used in construction and in lawn, grounds and turf care. John Deere Power Systems produces diesel and natural gas engines and other power train components for nearly 200 Deere models and 1,000 models of machines made by other manufacturers, primarily for off-highway and marine applications. Throughout its history John Deere has been recognized for its leadership in environmental stewardship and product innovation.

Source: Deere & Company

#### **CSDA INTRODUCES BLADE CODE FOR DIAMOND SAWS**

The Concrete Sawing and Drilling Association (CSDA) has introduced standard CSDA-BC-107 Blade Application Code for Diamond Saw Blades. This standard establishes an application code for diamond saw blades to help end-users identify the intended use of the saw blade. The new standard is recognized and endorsed by the Masonry and Concrete Saw Manufacturers Institute (SMI), a product-specific group of the Association of Equipment Manufacturers (AEM).

The standard covers diamond saw blades that are 12 inches in diameter or larger. The markings will be permanently imprinted on the blades with a stamp, laser or similar process. The code format consists of letters placed in three positions and spaced by dashes (X-X-X). The first position will have either a “W” or a “D.” The “W” implies that the blade is designed for wet use only while the “D” indicates that the blade can be used in dry or wet applications. The second

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position specifies the media type according to the following applications:

C – Cured Concrete

G – Green Concrete

A – Asphalt

The third and final position specifies the saw type according to the following legend:

F – Flat Saw

W – Wall Saw

H – Hand-held Saw

If a blade has multiple applications, it is acceptable to use several categories. For example, a blade with a code W-GAB-F is a wet blade that can cut green concrete, asphalt, brick, block, masonries and refractories and is intended for use on a flat saw.

The Blade Application Code for Diamond Saw Blades was developed by the CSDA Standard & Specifications committee. "The development of this code is just one more example of CSDA ensuring the needs of its contractor and manufacturer members," said Ted Johnston, president of CSDA. The new standard is available on CSDA's Web site at [www.csda.org](http://www.csda.org) under the "Standards & Specs" section. Other standards are also available.

"CSDA is committed to advancing the professionalism of the concrete cutting industry with major focuses in the areas of safety, training and specifications," said Patrick O'Brien, executive director.

Source: Concrete Sawing and Drilling Association

#### MAGNA AND DAIMLERCHRYSLER CORPORATION SIGN AGREEMENT CONCERNING NEW VENTURE GEAR

Magna International Inc. and DaimlerChrysler Corporation have signed an agreement by which Magna would acquire the worldwide operations of DaimlerChrysler Corporation's wholly-owned subsidiary, New Venture Gear, Inc. (NVG). The U.S. operations will be acquired by a new joint venture, named New Process Gear, Inc., which will initially be owned 80% by Magna and 20% by DaimlerChrysler Corporation and will have facilities in Syracuse, New York and Troy, Michigan. The European operation, located in Roitzsch, Germany, will be acquired directly by Magna. Magna will acquire the remaining interest in New Process Gear, Inc. in September 2007.

The total purchase price payable by Magna for 100% of NVG's business is approximately US\$435 million based on NVG's financial position at December 31, 2003 and

is subject to various price adjustments to reflect changes since that date and certain other matters. The purchase price will be satisfied in cash and notes.

Frank Stronach, Magna's Chairman, interim President and interim CEO, commented: "This transaction is an important step in establishing our newly formed Magna Drivetrain group as a leading global supplier of technologically advanced four-wheel and all-wheel drive systems. With a strong

manufacturing and development presence in both North America and Europe, we are well positioned to support the expected growth in our drivetrain business in the coming years."

Dieter Zetsche, President and CEO of DaimlerChrysler Corporation, added: "This agreement will allow us to focus on our core business of creating and building exciting cars and trucks. In addition, our relationship with Magna will provide us with access to the latest drivetrain technology, while providing

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opportunities for employment with a leading global enterprise. Once again, we've entered into an agreement that makes both good business and good 'people' sense."

NVG is a leading supplier of transfer cases and other drivetrain products in North America, with 2003 sales of approximately US\$1.5 billion. Its customers include DaimlerChrysler, General Motors, Ford, Volkswagen and Porsche. Closing of the transaction is subject to various conditions, including obtaining all

necessary antitrust and other regulatory and third-party approvals, as well as reaching a satisfactory collective bargaining agreement with the UAW.

Source: DaimlerChrysler  
Magna International Inc.

#### **CITY OF FREDERICTON ACHIEVES ISO 9001:2000 CERTIFICATION**

The City of Fredericton has become the first city in Canada and one of only a few in

North America to achieve ISO 9001:2000 certification for its entire corporation. The official certificate presentation for obtaining this prestigious, international recognition was made during a special City Council ceremony.

ISO 9001:2000 is a rigorous, international standard that provides a framework for quality management. It assists organizations in improving the quality of their products and services. The certification was confirmed by QMI through an independent audit of the City's management strategies and business processes.

The standard represents an international consensus of good management practices and is recognized worldwide as assurance that an organization is operating effectively. Registration to ISO 9001:2000 is a tangible expression of a firm's commitment to quality that is internationally understood and accepted.

The City began working toward ISO 9001:2000 certification in 1999. The exercise has required a great deal of work by staff. The City of Fredericton is a large operation, which can best be described as not just one organization, but as many businesses working under one umbrella. The municipality provides over 150 services.

While other organizations often register only part of their operation, the City of Fredericton decided it was important for the entire organization to become registered. This is because so many processes are interrelated and impact on the quality of municipal services. Widely used in the private sector, the ISO 9001:2000 standards are generic enough to apply to any organization.

Although registration has been achieved, the City's commitment to quality continues. Registration is not permanent and must be renewed every 3 years. At the City's request, the Registrar will return every 6 months to monitor progress.

First published in 1987, by the International Organization of Standardization in Geneva, Switzerland, ISO 9001:2000 has earned a global reputation as the basis for establishing quality management systems. ISO helps organizations to institutionalize the right attitude by supporting it with the right policies, procedures, records, technologies, resources and structures.

Source: City of Fredericton

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## A RESEARCHER FROM THE GAS TECHNOLOGY INSTITUTE RECEIVES AN AWARD FOR BIOMASS CONTRIBUTIONS

Dr. Suresh P. Babu, Assistant Vice President, Research & Deployment, Gas Technology Institute (GTI), has been awarded the David Hall World Prize for Bioenergy, for his long involvement in biomass conversion technologies and for his leadership in the gasification area of the International Energy Agency (IEA) Bioenergy Agreement.

Babu was recognized on May 10 during the opening session of the 2nd World Conference and Technology Exhibition on Biomass for Energy, Industry and Climate Protection, in Rome, Italy.

"I'm extremely honored to receive such a

prestigious award," said Babu. "To those of us in the biomass sector, Professor Hall was a man with innovative vision for bioenergy utilization. GTI has for years believed in the potential of advanced biomass gasification as a conversion technology that will become an important part of the future sustainable energy scenario."

Hall, a former Professor in Kings College, University of London, was considered a leading pioneer in the promotion of bioenergy. He is most recognized for analyzing the potential of biomass for energy and how it could benefit mankind and positively impact the climate. Hall passed away in 1999.


During his almost 30 years at GTI, Babu has worked on all aspects of thermal conver-

sion of coal and biomass as well as natural gas utilization, and has particular expertise in high-pressure conversion operations. He managed a team of GTI professionals to develop and demonstrate the high-pressure, RENGAS biomass gasification process.

In recognition of his contributions to advancing the state of the art of biomass gasification, the U.S. Dept. of Energy (DOE) has, since 1989, recommended Dr. Babu as the Task Leader to lead "Thermal Gasification of Biomass," under the IEA Bioenergy Agreement, which constitutes ten participating Western countries.

GTI is the leading research, development and training organization serving the natural gas industry. For more than 60 years, GTI has been meeting the nation's energy and environmental challenges by developing technology-based solutions for consumers, industry, and government.

Source: Gas Technology Institute



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## MERX LAUNCHES A NEW VERSION OF ITS E-TENDERING SERVICE

MERX, the leading provider of government e-tendering solutions in Canada and subsidiary of Mediagrip Interactive Technologies Inc., announced the launch of a new version of its electronic tendering system.

This new version follows namely the award of two contracts to Mediagrip by both the Federal Government and the province of Ontario for the development and operations of their respective e-tendering services. MERX will also continue to carry tender information and documents from several other Canadian jurisdictions.

"MERX's new service will be more flexible and allow our users to benefit from significant savings," said Jocelyn Poirier, President of MERX. "We intend to continue to improve our services and add new features in order to complete our offering and continue to serve the needs of our users. This will include tender information on the private sector and international opportunities and other services that have been required by our clients," added Mr. Poirier.

With an average of more than 1,000 opportunities open at any given time on MERX, and over 100 new procurement opportunities posted daily, MERX is the most complete source of public sector tenders in Canada. MERX is the official distributor of tender documents for the Governments of Canada, Ontario and Manitoba, and acts as the primary distributor of tender documents for





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most of the Canadian provinces and broader public sector (municipal, academic, school and hospital sectors) either through legal requirement or on a voluntary contractual basis.

Source: Mediagrif Interactive Technologies Inc.

## GL&V INTENSIFIES ITS INTERNATIONAL DEVELOPMENT

GL&V announced that its Process Group

(Dorr-Oliver Eimco) was recently awarded three new contracts in Australia, Brazil and Singapore, two of them in the ore processing sector and the other in the water treatment market. Dorr-Oliver Eimco obtained an \$11.0-million contract from a large alumina producer in Western Australia to supply four thickeners as well as related equipment and services. Scheduled for delivery in June 2005, the new equipment is part of a capital spending program of almost US\$200 million to increase

the production capacity of the installations. GL&V's Process Group also obtained an order worth more than \$8.0 million from one of Brazil's largest iron ore producers to whom it will supply, by the end of 2004, a number of flotation cells and other equipment for use in ore production and mine tailings treatment, destined to a new mine to be built at a cost of US\$250 million. Lastly, Dorr-Oliver Eimco achieved another promising breakthrough by being awarded a \$2.0-million contract for new municipal wastewater treatment facilities in Singapore. In addition to supplying a variety of equipment, the contract includes engineering services and supervision of the installation and commissioning, scheduled for July 2005.

Richard Verreault, Executive Vice-President and Chief Operating Officer of GL&V said that these new contracts are excellent news on a strategic standpoint, as they relate to the major target markets the Company plans to develop in the coming years. "In the future, GL&V's growth strategies will be based largely on developing our presence and expertise in the wastewater and drinking water treatment market, which offers phenomenal growth potential in the short, medium and long term. The global mining industry will also be one of our major sources of growth."

"Our new entity, Eimco Water Technologies, which holds a very good portfolio of technologies in the water sector, will concentrate on consolidating its presence in North America and gradually expanding into international markets through acquisitions and internal growth. In view of the rise in the price of most metals, the outlook for the global mining industry is also favourable in the short and medium term, providing a growing number of producers with an incentive to push ahead with large capital spending projects, mainly in regions with significant mineral resources and attractive production costs, such as China, India, Brazil, Chile, South Africa, Australia and Russia. Our Process Group has built up its presence and its reputation in each of these regions, where it also has a significant installed base of equipment."

"For its part, our Pulp and Paper Group faced harsher than expected market conditions this year. In this context, the restructuring program we implemented to reduce its operating costs is all the more timely. Since the beginning of this fiscal year, conditions in this market have improved, as reflected



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notably in higher prices for pulp and certain grades of paper. This Group's objectives over the next fiscal year will be to complete the restructuring of its activities, continue to increase its share of the North American aftermarket, and develop its presence in certain emerging regions," Richard Verreault added.

Source: Groupe Laperrière & Verreault Inc.

#### PERKINS AND ISM DEDICATE NEW ENGINE ASSEMBLY PLANT

Perkins Engines, a Caterpillar Inc. company and a world leader in the manufacture of off-highway diesel and gas engines, and its long-time business partner for sub-60 hp engines, Ishikawajima Shibaura Machinery Ltd (ISM), of Japan, dedicated a new small engines manufacturing facility in Griffin, Ga.

It is called Perkins Shibaura Engines LLC and is the first-ever Perkins plant in North America. It is expected to eventually produce as many as 60,000 engines annually.

Perkins Shibaura facility is housed in a dedicated 55,000 sq. ft. plant. The facility is near a larger Caterpillar operation in Griffin.

Located about an hour south of Atlanta,

the new Griffin plant will provide the popular Perkins 400 Series engines to North American original equipment manufacturers (OEMs), to Caterpillar for a significant number of compact Cat vehicles, and to the Perkins and Caterpillar distribution and dealer networks for smaller OEMs and the aftermarket.

Production at the Perkins Shibaura plant at Griffin will start in summer 2004.

"One of the most important benefits is that it will reduce lead times in terms of delivery to our customers because of the centralized location. The engine is very much in demand here by our distribution network and our

Source: Perkins Engines

#### AGREEMENT TO SITE LICENSE TERMS FOR QATAR GTL PROJECT

Syntroleum announced the execution of two agreements with Marathon Oil Company, a wholly owned subsidiary of Marathon Oil Corporation. The first agreement establishes the terms for a Syntroleum Process Site License for the proposed Marathon-led Qatar GTL Project. The execution of the definitive license agreement will be contingent upon the signing of a Heads of Agreement (HOA)

between Marathon, its project partners and Qatar Petroleum for a nominal 120,000 barrel per day GTL project. The revenue to Syntroleum under the Site License for this size plant would be approximately \$125 million. This includes royalty fees on Syntroleum's Fischer-Tropsch (FT) process technology and proprietary FT catalyst. Approximately 40% of Syntroleum's revenue would be realized upon achievement of certain project milestones over the first five years following the HOA. The remainder of the revenue to Syntroleum would be based upon actual production volumes from the plant over the first 15 years of the plant's operation.

Marathon and Syntroleum also signed a second agreement that amends the \$21.3 million promissory note associated with the DOE Catoosa Project.

Source: Marathon Oil Company  
Syntroleum Corporation

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# A Membrane Larger Than a 17-Story Building, 150 Meters Underground

*Trelleborg Building Systems*

and temperature variations that occur when the cylinder is filled with and emptied of gas in order to meet market demand throughout the year. Existing materials were unable to handle such large pressures without lasting deformities.”

It was a major challenge. A technical solution for the project would be a world's first and would provide a conceptual solution for similar kinds of projects and customers in the future. However, there was really no previous experience to fall back upon, other than the business area's expertise in the field of

The Swedish energy company Sydkraft had a problem: where could they find a protective cover for an enormous steel cylinder, as tall as a 17-story building, containing ten million cubic meters of natural gas and located in a rock cavern 150 meters underground? Trelleborg Building Systems was able to solve their problem.

Building rock chamber storage facilities for raw energy materials has become increasingly common over the past decade. Four years ago, construction began on a storage facility designed specially for compressed natural gas, inside Skallen mountain, situated near Halmstad, Sweden.

“We received an inquiry as to whether it would be possible to line this large rock chamber with bitumen material – a membrane for a Lined Rock Cavern,” says Ola Hansson, technical manager for Trelleborg Building Systems.

“The problem was that while demand for natural gas varies throughout the year, supply remains constant. They needed a membrane that could withstand the large movements

bridge membranes.

“We had to create a polymer blend with sufficient strength and flexibility and combine that with sheathing and other reinforcing materials. Our development efforts took approximately two years, with major efforts involving theoretical simulations and analyses, as well as ongoing practical testing in the laboratory and under live conditions.



*The natural gas storage chamber inside Skallen mountain was a major international project in which Trelleborg's membrane played an important role.*



*The steel cylinder can withstand pressure of 200 bar, or 200 times atmospheric pressure.*

That development work resulted in a number of production modifications.”

The project is now complete with the bitumen material assembled and fully tested on site within the Skallen mountain. The customer is satisfied. Ola Hansson, the development team and Trelleborg's fitters can take pride in having created the world's first lined rock cavern for compressed natural gas storage.

“And we certainly have a concept that will pave the way for a whole new market,” says Ola Hansson.



# The 2004 AORS Municipal Trade Show

The oldest Road Supervisors Association in Ontario, the Elgin County Municipal



Supervisors Association (since 1946), hosted the Association of Ontario Road Supervisors 2004 Municipal Trade Show on June 2nd and 3rd, 2004 in Aylmer, Ontario.

The 2004 Elgin County Trade Show Executive Committee wishes to thank all the suppliers of products and services who took part in this event. All our Local, Regional & Provincial Staff, Politicians, Contractors, and Ministry of Transportation Officials attended making this an excellent opportunity for suppliers, to display their products and services,

and have direct contact with individuals who specify, purchase and utilize these goods.



The Association of Ontario Road Supervisors Municipal Trade Show for 2005 will be hosted by the Haliburton County Road Superintendents Association on June 8 and 9, 2005 at the S.G. Nesbitt Memorial Arena in Minden.

Source: The Association of Ontario Road Supervisors  
[www.aors.on.ca](http://www.aors.on.ca)

## The Canadian Public Works Expo

The Canadian Public Works Expo, an annual event hosting over 300 companies, will take place at the International Centre in Mississauga (Toronto), Ontario on December 1-2, 2004. Entering its 3rd year, this leading industry show will once again be co-located with the 7th annual Canadian Waste & Recycling Expo.

The show welcomes approximately 5,000 participants representing municipal, provincial and federal levels of government.

The Canadian Public Works Expo is Canada's only national trade show serving this booming, multi-billion dollar industry.

Source: Messe Frankfurt, Inc.

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# Emergency Water Pumps Driven by Ordinary Farm Tractors

In the Netherlands, where the sea level is higher than that of the grounds. People have a lot of expertise using emergency pumps in the event of high tide or flooding.

It is in response to a request from the Dutch government for a system of pumps which can be installed within 1 to 2 hours that BBA Pompen has developed a

The pumps are either on frame, skid or trailer-mounted. Moreover, the plastic HPE tubes and connections line up on a very light trailer which can be easily handled by two people.

In the event of urgency, it is possible to install a system of thirty 600 m<sup>3</sup>/min pumps with their tubes within six hours!



on the site of a flooding. On the spot, it is easy to mobilize the farm tractors required to actuate the pumps.



series of emergency self-priming pumps. The innovation lies in the fact that the pump can be actuated directly by the power take off of a farm tractor. Very simple and very fast!



Because of their light weight and easy transportability, only a few units, localised in strategic places, are necessary to face the catastrophes. They can be conveyed quickly



BBA Pompen also offers a complete range of pumps to electric motor and diesel to meet all the needs.

Source: BBA Pompen

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Source: Hydraulics Continental Hydraulics Inc.  
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# News From bauma+mining 2004

## TOPCON INTRODUCES REVOLUTIONARY NEW PRODUCTS AT BAUMA

During bauma+mining 04, Topcon introduced a series of new products that will change the way survey and construction measurements and controls are being done today!



With GPS rapidly increasing acceptance in construction due to its many advantages over traditional methods, the major limitations of RTK GPS control are the accuracy (1 to 4 cm in vertical), and the necessity to have a clear view to the sky. These both factors have so far been the main limitations that prevent GPS positioning from being applied in more applications, and more job sites.

With the new MillimeterGPS, Topcon offers a millimeter elevation accuracy for GPS applications like survey, stake out and machine control. By adding Topcon's unique LazerZone™ technology to standard GPS rover survey sets or machine control systems, the elevation accuracy is now increased at least 10 times! Making GPS usable in more applications, saving huge amounts of material, and offering overall increased productivity and reduced costs! Millimeter GPS was successfully demonstrated at a motorgrader in the outside booth.

During bauma+mining, Topcon's unique GPS+GLONASS receivers demonstrated their ability to the maximum! With an outside demonstration area, located between two exhibition halls, an approx. 30 meter wide area existed, with on both sides halls that blocked the view to approx 50% of the sky. Regular GPS only receivers could be demonstrated only for approx. 2 hours during the day, simply because not enough satellites were visible.

With Topcon being the only manufacturer to offer the use of all signals currently available, Topcon's GPS+GLONASS worked over 8 hours each day. During the entire show, Topcon staff was up and running, demonstrating the advantages of having availability

of 35 GPS+GLONASS satellites vs only 24 GPS satellites. Nearly continuous production, working at places where normal GPS doesn't work!

A GPS rover set without any wires has been introduced by Topcon about a year ago. Now, the World's first completely integrated base station is available! No more cables, no more external components; one integrated unit which houses antenna, receiver, batteries for more than a day work, and transmitting radio. Ideal for quick set up, ideal for transport, ideal in use.

All control is handled via Topcon's compact FC-1000 or FC-100 Bluetooth controllers that offer a Windows CE solution for true graphical, easiest to use interface.

Topcon's rugged FC-100 is a new controller for all Topcon total stations and GPS+ receivers, using the powerful Topcon Topsurv controller software. A PDA, with full colour graphical screen, rugged to withstand the toughest environment!

On the occasion of the exhibition, Topcon launched its new GPT-7000 prismless total station with Windows CE operating system. For ultimate ease of use, flexibility and connectivity! Log on to the internet in the field! Via the bluetooth capability you call up wireless, connect to the office and transfer data sets back and forth. Ultimate ease of use, flexibility and interconnectivity.

## REDESIGNED PUTZMEISTER 62Z-METER PUMP, A HIGHLIGHT OF BAUMA 2004

Visitors at bauma+mining had the opportunity to view a range of new products and innovations within 122 acres of indoor and outdoor space, which is triple the size of the ConExpo/ConAgg exhibition and almost eight times the size of World of Concrete.

Of special interest to the concrete pumping industry was the debut of the fully redesigned Putzmeister BSF 62Z.20H concrete boom pump, which now provides both the largest vertical reach and highest pump output of any model worldwide.

Putzmeister originally developed the 62Z-Meter in 1986 as the world's largest boom pump. The second generation of the machine offers several more advanced features for improved performance. These include a five-section boom with unique Multi-Z configuration, a large 9- to 7-inch "Big Mouth" S-valve, and a highly compact outrigger footprint.

When the version earmarked for the United States is introduced, it will be road legal with a highly versatile seven-axle chassis.

Along with the redesigned 62Z, Putzmeister introduced 15 other new products and innovations at bauma+mining. Those most



applicable to the North American concrete pumping industry include a high-pressure BSA 1005-D GRF trailer-mounted concrete pump, mounted on a rubber crawler track, as well as an enhanced version of the company's optional Ergonic® control system, which is a trademark of PM innovation.

From the service side, the company revealed its initial design concept of a removable flat pack which provides better access to the unit during maintenance. Hydraulic and electric interfaces are optimized and the flat pack can be removed in about 30 minutes.

With respect to training, the company displayed a hands-on M10 training unit for instruction on Putzmeister's optional EBC boom and OSS outrigger controls. The lower section of the training unit has self-leveling outriggers while the upper part features a rotating boom with fully operational EBC and OneTouch™ functions. This training tool will make its way to Putzmeister America later this year.

## PURE RAW MATERIAL – IRON-FREE!

High-performance, large overband magnetic separators applied in the mining industry worldwide: this offer proves that the Cologne-based company Steinert has both innovative capacity and a definite lead in know-how compared with its competitors. On the bauma+mining trade fair, the company presented the electric suspension magnet UME.

The mining industry is interested in electric suspension magnets which are distinguished by their larger working distances for the removal of tramp iron. The increased performance can guarantee the treatment of large





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Terex SKL 853, NEW, 6800 kg (14 990 lbs), 1,55 v<sup>3</sup> bucket  
Terex SKL 863, NEW, 8550 kg (18 853 lbs), 2,4 v<sup>3</sup> bucket  
Terex SKL 873 SP, NEW, 13 500 kg (29 735 lbs), 3,5 v<sup>3</sup> bucket  
1999 Schaeff HR14, 2855 kg (6488 lbs), very few hours  
1999 Schaeff HML22, 6100 kg (13 436 lbs), very few hours  
Terex TX760, NEW, depth 4,5 m (14'8"), power 86 hp  
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quantities of material without any problem, caused by large conveyor widths, high conveyor speed and high burden depth. In addition, iron items can be reliably captured. At the same time, they protect grinders, mills and other further treatment plants from wear and tear.



Tramp iron items such as drilling rods, tools or screws are often found directly on the belt of a conveyor belt system, with mineral burden depth 20 to 60 cm on top of them. As a result, extremely powerful electro magnets are required, which reliably capture the tramp iron while displacing the bulk material above. In addition, the given high belt speed and the short time the material spends in the magnetic field is extremely short so a high

performance of the magnetic separator is absolutely necessary.

Steinert electro magnets are equipped with the very compact magnetic coils of anodised aluminium strips. In contrast to products offered by competitors they are not round but rectangular; they fill almost the complete volume of the housing and guarantee an optimal performance. For special fields of application, magnetic separators with an active air cooling are available, a design singular at the market. They are used wherever an extremely high performance and low surface temperatures of the magnet are required – for example with coal. In addition, the coil resists high temperatures, which is a guarantee for a high operation safety of the coil itself and the magnetic separator as a whole.

#### **NEW LOADER JOYSTICK AND POWERSHIFT TRANSMISSION OPTIONS FOR VOLVO**

Volvo Construction Equipment unveiled two major new options for the BL71 backhoe loader during bauma+mining 04 that will be available globally.

The new loader joystick features a proportional thumb roller to operate multi-

purpose bucket and buttons that control the forward/neutral/reverse. It is available as an option with the new Powershift transmission.

The standard joystick on the BL71 is a state-of-the-art servo-controlled joystick that permits the operator to shuttle between forward/neutral/reverse at the press of a



button, so the operator always has a hand on the steering wheel and another on the joystick. However, the new option will take that technology a step further.

"Rather than twisting the joystick to control the 4-in-1 bucket, the proportional thumb roller does the job – and it really puts the control at the operator's fingertips," John Matthews, Product Line Manager for the Volvo backhoe loader line stated.



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In addition to the joystick, Volvo is offering a Powershift transmission as an option on the BL71. The speeds are selected by twisting the forward and reverse lever on the left side of the steering column. The Powershift gearbox has four forward and four reverse speeds with a standard kick down shift.



#### NEW PRODUCTS FOR MICHELIN

Michelin presented its new products for earthmovers and construction equipment at bauma+mining. The new Michelin X-TRAC-TION RD is designed for rigid dumpers operating in short cycles, notably in iron and coal mines, in muddy environments or on wet ground, requiring a large degree of traction in addition to high resistance to stress.

The new Michelin 23.5 R 25\* is an innova-

tive approach to equipping articulated dumpers. It is ideal in conditions requiring a high degree of mobility, characterized by major traction requirements, but also demanding increased resistance to stress.

Designed for road cranes and special vehicles driven on public roads, the new Michelin 445/95 R 25 X-CRANE AT is equipped with a carcass which ensures an excellent distribution of constraints in the contact area. Its wear pattern is therefore improved and contact with the ground is optimized. This new tyre thus provides a higher level of safety as well as excellent ride comfort.

#### SHEER DRIVING POWER FROM BONFIGLIOLI TRASMITAL

The presentation of the new type 20 in the 700C series (720C3H) at bauma+mining marks a move by Bonfiglioli to extend its widely used and proven travel drives to crawler machines of up to 180 tons. With a torque delivery of 220,000 Nm, sheer driving power for heavy-duty machinery is in no short supply. The 720C3H represents best-in-class drive technology in a compact form.

The unit, comprising a planetary gear unit

and hydraulic motor, is the basis for machine-specific customisation. The standardised core allows low-risk adaptations to be made in no time at all.

Its superior power, make the new travel drive the ideal solution for applications where space is at a premium and a high level of



performance is required. It has a standard reduction ratio of 1:174 to 1:287.2 and, thanks to a wide range of motors, allows for an even greater torque range. Hydraulic motors from 160 to 250 cm³ are integrated, allowing additional space to be saved along the unit's length.

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# Autocar Expands Lineup of Cummins Alternate Fuel Engines

During WasteExpo, the largest solid waste and recycling tradeshow in North America, held last May in Dallas, Texas, Autocar Trucks announced the addition of the new L Gas Plus from Cummins Westport bringing to three the number of Cummins alternate fuel engines/ratings now available on the full range of Xpeditor models. The other available alternate fuel engine is the Cummins C Gas Plus which is available in 275 and 280 hp ratings.

"We're working closely with Cummins to be the first OEM certified to factory-install the L Gas Plus engines in our complete Xpeditor line-up," says Bill Dolesh, vice president of engineering at Autocar. "Presently we are installing the C Gas Plus engines at the factory and the addition of the L Gas Plus allows Autocar to offer the largest choice of Cummins engines of any LCF (low cab forward) manufacturer."

"Customers can now choose from these

three alternate fuel power plants plus 11 conventional Cummins engines ranging from 280 to 385 horsepower."

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Autocar LLC of Hagerstown, Ind., is a leading manufacturer and marketer of low-cab-forward (LCF) class 8 trucks and sells its products into an array of vocational



truck markets, primarily in refuse and waste disposal. Autocar supports its products through "Autocar Solutions," a comprehensive product support system accessible at [www.autocartruck.com](http://www.autocartruck.com) or by toll free phone at 877-973-3486. Autocar is a wholly-owned subsidiary of Grand Vehicle Works Holdings, LLC of Highland Park, Ill.

Source: Autocar LLC  
Cummins Westport Inc.

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# The Université de Montréal and Ecole Polytechnique de Montréal Redefine the Way Research is Done

The Université de Montréal and Ecole Polytechnique de Montréal are significantly enhancing Montreal's reputation as a knowledge centre with the inauguration of the J.-Armand-Bombardier Pavilion, a new research centre where professors, students and researchers will explore the most important scientific issues of the day.

"Today, we are taking the first step toward the university of tomorrow, toward a future predicated on research and knowledge," said Robert Lacroix, Rector of the Université de Montréal. "It has already been acknowledged that the investments made in the new building, along with the major research funding it will receive, will add to the already considerable impact that the university's activities have on Montreal's socioeconomic life," he added.

"The building, whose location on campus

reflects its association with both of our institutions, will bring together research teams of chemists, engineers and physicists to work on common projects in five cutting-edge sectors: nanotechnologies and nanosciences, biotechnologies, aeronautics, aerospace and new materials. The complexity of these new research fields requires a multidisciplinary approach, and this was what we had in mind when we designed this new pavilion," said Robert L. Papineau, Director of Ecole Polytechnique de Montréal.

The pavilion will be dedicated to fundamental and applied research and to training graduate and post-graduate students. It represents total investments of \$60.5 million by the Université de Montréal, Ecole Polytechnique, the government of Quebec, the government of Canada, private donors including the J.-Armand-Bombardier Founda-



*Janine Bombardier, Presidente de Fondation J.-Armand-Bombardier, with Robert Lacroix, Recteur of the Université de Montréal, and Robert L. Papineau, Directeur of the École Polytechnique de Montréal*

tion and a number of other sources. It will house researchers and students who will study new issues arising from an increasingly complex world.

Source: Université de Montréal  
Ecole Polytechnique de Montréal



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# Haldex Continues Sponsorship of STRANA and the Tonka Super Truck Racing Series

With excitement and fanfare, Haldex completed its first North American year with the Super Truck Racing Association – STRANA. As a sponsor and the exclusive supplier of brake systems for the super trucks, Haldex provides the air-operated disc brake systems for all the STRANA super trucks.

“We’ve had an exciting first year with STRANA, and are proud to continue our sponsorship as the exclusive supplier of brake systems,” said Chuck Kleinhagen, COO.

Rather than the drum brakes normally used on the vehicles operated on the highway, the STRANA super trucks use air-operated disc brakes. The braking feedback on every super truck further proves the durability and toughness of Haldex air disc brake design.

“And, because the brake hardware on the super trucks is remarkably close to that used

in actual truck brake production,” said Kleinhagen, “The super truck racing provides Haldex with rapid feedback on improvements to disc brake technology.”

Haldex sponsorship continues for 2004 in six races across North America, including:

July 16-18 Infineon Raceway in Sonoma, California

July 23-25 Portland International Raceway in Portland, Oregon

August 6-8 Mosport International Raceway Bowmanville, Ontario Canada

August 20-22 Road America in Elkhart Lake, Wisconsin

September 23-25 Road Atlanta in Atlanta, Georgia

October 15-16 Mazda Raceway Laguna Seca in Monterey, California

“Our relationship with Haldex has played



a key role in the development of STRANA and our effort to bring Super Truck racing to North America,” said STRANA Executive Director Brian Till. “We have enjoyed working with the folks at Haldex in the development of the Super Trucks and the racing series.”

Haldex Commercial Vehicle Systems is a part of Haldex Group, an innovator in vehicle technology and supplier of proprietary products for trucks, cars and industrial vehicles on a global basis.

Source: Haldex Commercial Vehicle Systems, [www.hbsna.com](http://www.hbsna.com)  
Super Truck Racing Association, [www.stranaracing.com](http://www.stranaracing.com)

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# Did You Say Warm Asphalt?

*Jean-François Dubois*



A new technology was born recently in the asphalt Industry and it is likely to revolutionize the way it has been done for decades. The technology comes from Europe and it uses a new processes of mixing that is commonly known at Warm Mix Asphalt (WMA)

In conventional asphalt mix, bitumen is incorporate in aggregates which is heated at temperatures of 160 °C to 170 °C. These temperatures allow an adequate coating of the aggregates while offering a mixture that transports well and stays man able during the installation. Among the known disadvantages, are of course the risk of oxidation of the bitumen, the toxic fumes emanating from the product and the effects on the environment.

The idea behind the concept of the WMA is to manage to create a mixture having the same characteristics as a conventional mixture, but at lower temperatures. To achieve this, it was necessary to invent a method which would make it possible to reduce the melting point of the bitumen normally used in the traditional mixture and allow the reduction of the necessary temperatures. At the present time, there are three processes that exist: Aspha-Min, WAM-Foam and organics additives.

This method consists in introducing, at the time of mixing, a synthetic zeolite (Aspha-Min) in order to create a "sparkling" effect in the mixture. Manufactured by the firm Eurovia Services GmbH (Bottrop, Germany), zeolite is a crystallized silicate in very fine white powder which contains 21% of water. The water contained in zeolite is release when heated at temperatures varying between 85 °C and 180 °C.

By adding Aspha-Min to the mixture at the same time as the bitumen, a fine water fog is created, which produces an expansion of the bitumen. This foamy mixture allows an adequate coating of the aggregates even at a mixing temperature of 100 °C to 120 °C as well as a good manoeuvrability at the time of the installation on roadwork.

## **WAM-FOAM®**

This method, resulting from a research by the joint venture of Shell Petroleum International Ltd (London, England) and Kolo-Veidekke (Oslo, Norway), proceeds in two subsequent stages. Initially, first, soft bitumen is introduced with the aggregates at a temperature of 110 °C in order to coat those well. Then, in a second stage, foamy bitumen is added to the mixture. To create foamy bitumen, cold water is injected in the hot bitumen to create a fast evaporation resulting in a sparkling effect.

## **ORGANIC ADDITIVES**

Sasobit produced by Sasol Wax (South Africa) and Asphaltan B manufactured by Romonta GmbH (Amsdorf, Germany) are two organics additives which have a molecular structure which enable them to dissolve at a temperature of 100 °C. By incorporating them in the mixture, those transmit these characteristics to the bitumen what allows a reduction of the viscosity of the bitumen.

The advantages linked to this new technology are; the reduction of the costs of energy associated with the heating of the mixture, the reduction of the fumes rejected into the air, a longer life span of the mixture due to the less intense oxidation of the bitumen and, in certain cases, the increase in compactness and the resistance to rutting of the finished product. For the moment, no one can say if there are some disadvantages connected to this technology, but it seems that the cost of the added products does not exceed the generated economies.

The National Asphalt Pavement Association (NAPA) joined the National Center for Asphalt Technology (NCAT) in order to initiate a research to evaluate the performances of Aspha-Min® and WAM-Foam® in the production of the WMA. Federal Highway Administration (FHWA) ensured its collaboration in this study.

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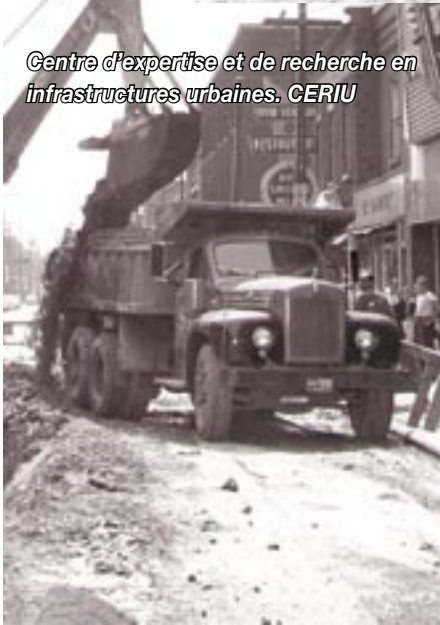
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Fact Sheet CS 4.2.2  
Flexible Municipal Pavements  
Maintenance & Rehabilitation Techniques  
Stabilization of Subbase Using  
a Bituminous Binder (In-Plant)

### DESCRIPTION OF THE TECHNOLOGY

In-plant operation whereby subbase aggregates are mixed with a bituminous binder to improve their mechanical properties and watertightness.

### OPERATING PRINCIPLE

This technique involves generating a degree of cohesion in the upper layer of the subbase. This is achieved by mixing aggregate with a binder capable of bearing some of the stress acting on the subbase, thereby helping to stabilize it. In this case, the binder is emulsified asphalt.

The operation is carried out in an off site plant using the appropriate equipment to mix

aggregate with an asphalt binder.

The technique is often complementary to that of pulverization (fact sheet CS 4.1.1) and is done after pulverization operations are completed and before a new surface is laid.

### MATERIALS AND EQUIPMENT

Emulsified asphalt and aggregate, new or recycled; the grading curve may also be corrected by using new aggregates.

A specialised facility adapted to the treatment of materials is required, in addition to the usual roadwork equipment.

### FIELDS OF USE

This technique can be used to slightly reinforce the bearing capacity of the subbase. It also improves the resistance of the subbase to structural sag due to thawing and/or water. It can also be used to standardize the properties of the subbase materials.

This method is especially useful when peripheral constraints (height of sidewalks, etc.) limit the possibility of adding reinforcing materials.

This type of stabilization can accommodate many types of traffic.

### RESTRICTIONS AND LIMITATIONS

The technique should not be used when there are frost-related distortions in the underlying soil.

### PRELIMINARY AND COMPLEMENTARY PLANNING

Choosing the right type, properties and amount of binder, based on the specific requirements of each project, is essential.

During the curing process, measures also need to be implemented to protect the stabilized material from deformation (e.g., impact from heavy traffic) and ravelling



(e.g., high-volume, high-speed traffic; poor weather conditions). These measures will help safeguard the structural properties of the stabilized base, as well as ensure optimal cohesion with the surfacing. Otherwise, fatigue cracks in the surfacing could appear prematurely.

It is recommended that this work be carried out in the summer, in dry weather at temperatures above 10°C, to prevent premature deterioration of the pavement, decrease curing time and ensure optimum coverage.

### MAIN PHASES

- Excavate the asphalt concrete and the planned thickness subbase materials;
- Level and compact surface, and do all other related work to prepare it for the stabilized subbase material;
- Prepare the mixture (subbase aggregates and bituminous binder) in the plant;
- Transport and apply the mixture;



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- Shape and compact material;
- Apply protective measures to the stabilized material;
- Let binder cure for the appropriate amount of time, according to type of binder and prevailing weather conditions;
- Lay the new surface.

Note: In the case of regravelling operations, the two first steps are not required (see fact sheet CS 4.4.1 on Regravelling).

## TESTS AND MONITORING

Proper monitoring of the thickness of the stabilization treatment is important.

It is essential to ensure that the grading of aggregates to be stabilized meets the design parameters.

The proportion of binder also needs to be checked to prevent potential coverage problems.

Finally, sufficient compaction is needed to obtain the appropriate stability and to avoid creep. A method of verifying the compaction that takes into account the longitudinal and transverse variations in the properties of the aggregates throughout the project site needs to be defined.

Special attention should also be paid to the atmospheric conditions.

## RESULTS

Given that the stabilized material layer must be covered by a surface course, the finished product may vary depending on the characteristics of this new asphalt layer.

## OPERATION AND MAINTENANCE

The design and execution parameters of the work should give the pavement a useful life of 10 to 15 years.

The stabilized layer itself does not require any specific maintenance. However, it must be properly backfilled if it is damaged when trenches are dug to install or repair underground pipes.

## REFERENCES

Asphalt Institute - MS-19 The Basic Asphalt Emulsion Manual (Third Edition)

## DISCLAIMER

It is recommended to consult the explanatory notes accompanying the fact sheets to ensure proper use.

*CERIU assumes no responsibility whatsoever concerning the application of the techniques and procedures described in the present fact sheet.*

*To obtain the complete collection «CERIU Fact Sheets» you are invited to contact Mrs. Céline Forest by phone at (514) 848-9885 poste 272 at the Centre d'expertise et de recherche en infrastructures urbaines (CERIU).  
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# CONEXPO-CON/AGG 2005 Brings Industry Together

Eight leading trade associations from the construction and construction materials industries will hold conventions at CONEXPO-CON/AGG 2005, adding to the mix of industry professionals from around the world who will gather at the show to exchange ideas and information. The show will be the world's largest exposition for the construction, aggregates and ready mixed concrete industries in 2005, showcasing the latest equipment, services and technologies.

CONEXPO-CON/AGG 2005 will be held March 15-19, 2005 at the Las Vegas Convention Center in Las Vegas, Nevada, USA.

The associations holding conventions at the show are:

American Concrete Pumping Association (ACPA);  
American Road and Transportation Builders (ARTBA);  
Associated General Contractors of America (AGC);  
Association of Equipment Management Professionals (AEMP);  
Construction Materials Recycling Association (CMRA);  
Land Improvement Contractors of America (LICA);  
National Ready Mixed Concrete Association (NRMCA);  
National Stone, Sand and Gravel Association (NSSGA).

These associations include groups that are returning to the show after holding successful conventions at the last CONEXPO-CON/AGG, held in 2002, and associations that are bringing their conventions to the show for the first time, such as ACPA, AEMP and LICA.

## INDUSTRY-WIDE SUPPORT STRENGTHENS SHOW

In addition to these conventions, many other groups will take advantage of CONEXPO-CON/AGG's ability to bring the worldwide construction and construction materials industries together. In all, more than 300 industry meetings are anticipated to take place in conjunction with CONEXPO-CON/AGG.

"The support of associations adds value to CONEXPO-CON/AGG for attendees and exhibitors by expanding the dialogue onsite and bringing important customer groups to the show," said CONEXPO-CON/AGG 2005 Co-Chair Gerald Shaheen, Group President,

Caterpillar Inc., Peoria, Illinois.

"The number of association conventions and industry meetings that will be held at CONEXPO-CON/AGG reflects the industry's sense of ownership of the event. Profes-



sionals from around the globe view the show as their own because it is put on by their industry for the good of the industry,"

agreed CONEXPO-CON/AGG 2005 Co-Chair Brenton P. Cook, Consultant to Aggregate Industries, Kalamazoo, Michigan.

CONEXPO-CON/AGG 2005 is expected to feature more than 2,100 exhibitors using 1.85 million net square feet of exhibit space. More than 100,000 attendees from around the world are expected to come to the show.

CONEXPO-CON/AGG is owned by the Association of Equipment Manufacturers (AEM), the National Ready Mixed Concrete Association (NRMCA) and the National Stone, Sand and Gravel Association (NSSGA). The show is produced by AEM and the International Concrete and Aggregates Group (ICAG). Co-sponsor is the Associated General Contractors of America (AGC).

For more information on CONEXPO-CON/AGG 2005, contact the show offices at 1-800-867-6060, 1-414-298-4141, or 1-301-587-3140, or visit [www.conexpoconagg.com](http://www.conexpoconagg.com).

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## INFRA 2004 - November 15-17, 2004

INFRA 2004 represents the culmination of a decade of ongoing commitment and decisive action on the part of CERIU and its partners to secure the sustainable and economical development of urban infrastructure. This year's theme, "Urban Infrastructure: Managing the Assets, Mastering the Technology," is an invitation to participants to focus on the various steps involved in the sound planning of investments related to urban infrastructure rehabilitation as well as on the avenues available to fund expenditures of this nature.

Essential infrastructure systems, including waterworks, sewer systems, municipal pavements and public utilities, occupy a critical place in the municipal framework, alongside public buildings, libraries, parks and recreational facilities. Keeping them in good working order and preserving their value requires a great deal of imagination and money. Recent innovations in inspection, rehabilitation and management have undoubtedly helped make the absolute most of the available resources – but this is simply not enough.

Recently, the Coalition pour le renouvellement des infrastructures du Québec and the Conference Board of Canada estimated that municipalities would need a little more than \$1 billion a year for the next 15 years to make up for the accumulated maintenance deficit. In this context, it is obvious that short-term federal and provincial subsidies are inadequate and that long-term infrastructure funding must be a core priority for municipalities looking to ensure the sustainability of their urban infrastructure systems.

In Quebec and around the world, efficient planning is a must. This requires stakeholders to rigorously analyze their respective situations and actively seek out innovative, cost-effective solutions. What's more, provincial and federal infrastructure policy is increasingly requiring municipalities to prepare an action plan. In order to establish their priorities in this regard, they must also eventually produce inventories and status reports.

The process is a long and time-consuming one, which requires the involvement of both the government and the public and which promises to dominate the attention of the various urban infrastructure stakeholders in the coming years.

Source: Centre d'expertise et de recherche en infrastructures urbaines, [www.ceriu.qc.ca](http://www.ceriu.qc.ca)





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# Controlled Hydraulic Movement Between Earth and Sky

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The deck of the world's highest bridge is being launched over a distance of 2460 metres over the Tarn Valley in the south of France. It is impossible to move the deck from pier to pier without intermediate support towers. Halfway between each concrete pier support towers enable the bridge deck to reach a temporary resting point. These huge steel cages are raised by telescopic hydraulic lifting systems from Enerpac metre by metre from ground level up to 163,7 metres for the highest temporary tower to allow insertion of towers segments to extend it's height.

## RAISING TEMPORARY TOWERS TO SUPPORT THE LAUNCHING OF THE 36 000 TON STEEL DECK

The Millau viaduct will cross the Tarn Valley at a maximum height of 245 metres, with 204 metres spans between the abutments and the first and last concrete piers and 342 metres between the remaining five concrete piers with heights from 77 metres up to 245 metres. Because

of the length of the spans seven temporary intermediate steel piers will have to be built to support the deck during launching.

The two temporary towers closest to both abutments will be erected with the use of cranes as they are only 12 m and 20 m high. The five other temporary support towers with heights from 87,5 m to 163,7 will be built up by hydraulic stage lifting. The hydraulic technique is developed by specialist Enerpac. Once a pier has been raised the machinery – including the hydraulic system – will be disassembled and moved to the location for installation of the next temporary support tower.

The telescopic system exists of two parts:

- The first is a cube structure of 12m bases, containing the entire system, fitted with 'toothed racks' graduated in meters at its vertices.
- The second part of the system includes the hydraulic cylinders and hydraulic control system forming the lifting mechanism. The

hydraulic cylinders are installed at the four vertices of the cube, anchored to supports linked to the toothed racks. As the system is raised, the successive insertion of locking chocks in the toothed rack permits the vertical displacement of both the pier structures and the hydraulic machinery, guided by

the structure of the machine.

## LIFTING IN STEPS OF 1000 mm

The operating process is simple; the supports for the cylinders are locked in the toothed rack by means of chocks, whilst the

structure of the pier is free. The operators, using controls provided with software incorporating all kinds of safety devices, starts pumping oil to the cylinders, thus raising the rams that thrust against the structure of the



pier. In this way cylinders raise the structure of the pier to the next slots in the toothed racks. The cylinders have a stroke of 1100 mm and the 'toothed rack' has notches every 1000 mm, such that there are 100 mm available to compensate for possible unforeseen circumstances.

Each hydraulic cylinder has its own control, with the option of immediate locking, and

sensors of all kinds in order to take cognizance of any unforeseen circumstance (wind, temperature, etc), which makes an adjustment in the raising of the pier structure necessary, each cylinder rising independently.

Once the desired height has been attained, the structure of the pier is locked

with chocks and then the cylinder support chocks are freed. The rams are withdrawn and the bodies of the cylinders are raised together with their supports to the toothed rack perforation immediately above, where they are then locked with chocks. In this





manner both the structure of the pier and the hydraulic machinery are raised by 1 metre, the process then being repeated until the first element extends beyond the structure of the machine and is locked underneath.

Once the element is in place the hydraulic system can be lowered to the ground by crane; a second element of the pier is then mounted on it and the procedure begins again, until the entire temporary pier has been completed.

#### CONTROLLING THE PROCESS

This lifting process must be very strictly controlled and thus the hydraulic cylinders are fitted with an internal position transducer. Similarly the pressure lines have pressure transducers, all being located internally such that they are protected from inclement weather, dirt, humidity, etc. All the information is received at a control panel, which, by means of a PLC, manages the data and sends orders to the electro valves. The raising of the cylinders is carried out in accordance with an established procedure. The control panel allows the operators to be constantly aware of the load and position of each of the cylinders and they can stop the lifting procedure if any of the system variables exceeds the maximum limits laid down.

The system has been designed to restrict deviation at any time to less than 3 mm in height, or a maximum 5% load difference between each of the cylinders.

Each cylinder has its own hydraulic pump such that, if necessary, each cylinder can be operated individually, always provided that an exhaustive protocol of request for, and granting, permission is carried out from the central application.

Operators at each end of the structure have a connection to the central control, by means of which they confirm the insertion or withdrawal of the chocks. Once

the signal has been received, the person in charge of the central control will give the order to continue the process.

In addition there are oil level and temperature monitors and alarms that stop the advance should there be any unforeseen circumstance, such as pressure drop, cable breakage and so on.

#### TECHNICAL SPECIFICATIONS

The hydraulic portion of the machine consists four cylinders, each of which is fed by its own pump, all linked to a central control panel. Each assembly has a 511 tonnes thrust capacity, so overall the system has a maximum thrust capacity of 2044 tonnes. A requirement of 420 tonnes is not expected to be exceeded during normal operating cycles, so the assembly has a generous safety margin. The nominal pressure is 700 bar and the stroke of the cylinders, as already mentioned, is 1100 mm. An overload of 675 tonnes is acceptable with a ram extended and 1500 tonnes with it withdraw.

The entire control system – cabling, control panel, visual display units and so on – is protected against the elements and electromagnetic disturbance and against accidents and possible impact during installation and operation.



#### THE MILLAU VIADUCT PROGRESS

The erection of the highest bridge in the world started in October 2001. The construction will take about 39 months ending in January 2005. In January 2004 six intermediate temporary piers have been completed and the highest one is being constructed.



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## Jobsite Recycling Works



The US\$ 6 Million utility work involving improvement of the water and sewer system on a Sundt Construction, Inc. project for Pima County Department of Transportation and Flood Control, near Tucson, Arizona, compelled the contractor to look for ways to save on the cost of handling the material.

The oversize material from the trenches would have had to be hauled to a dump, and then, suitable filling material would have had to be hauled back and compacted in those same trenches.

The traffic from trucks hauling 31 000 tons away and back to jobsite was given much

thought and, it was decided against adding that much traffic in an already congested area.

By crushing material on the jobsite, all the trucking was contained within the construction area and did not affect the local traffic. The crushed material was used as backfill over trenches and was hauled and placed as soon as it was crushed, thus alleviating the need for room to stockpile backfill material.

The savings to the contractor was approximately US\$ 25 000. The crusher plant was located on an area 12 x 60 feet, plus a small stock pile area and located in center of

the jobsite.

The dust was suppressed by water spray located on the crusher plant.

Getz Recycling's Rubble Hog crushed 31 000 tons of material in 30 days, and Cat 960 and Cat 950 loaders were used to handle it. Ed Farr, Project Manager and Greg Tynes, Project Superintendant for Sundt Construction, Inc., said that "The use of the Rubble Hog has worked very well and will be used in the future whenever possible."

Source: Getz Recycling Equipment  
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The offset track system offers more stability without increasing track width



Model	Operating Weight	Dig Depth
VIO15	1,680 kg	2,220 mm
VIO20	2,200 kg	2,620 mm
VIO27	2,850 kg	2,850 mm
VIO35	3,500 kg	3,350 mm
VIO40	4,360 kg	3,750 mm
VIO50	5,120 kg	4,000 mm
VIO75	7,950 kg	4,700 mm

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- Hydraulic Quick Coupler
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Variable  
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ViO15



ViO20



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ViO35



ViO40



ViO50



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