AsphaltReview

Volume 31 Number 1 **October/November 2011**

AAPA
AUSTRALIAN ASPHALT PAVEMENT ASSOCIATION

14TH INTERNATIONAL FLEXIBLE PAVEMENTS CONFERENCE

25 – 28 SEPTEMBER 2011
AUSTRALIAN TECHNOLOGY PARK, SYDNEY, AUSTRALIA

www.halledit.com.au/pavements2011

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SUSTAINABLE ROADS

CEO'S REPORT

John Lambert,
CEO, AAPA

This edition of Asphalt Review highlights the 14th International Flexible Pavements Conference to be held later this month.

This biannual conference provides a great opportunity for those involved in pavements to meet with their colleagues and to hear a range of up to date presentations. This year, there will also be a very large number of international presenters talking about current and future issues and technologies.

This year's conference is certainly not one to miss. The theme for the conference is Sustainability, recognising the importance we must all give to the environment. However, it is important to remember that our industry, the road surfacing industry, is one that is already very sustainable. This point is highlighted in the Chairman's report in this edition. In his Report our Chairman, Sergio Cinerari states:

"Asphalt is not consumed, but remains asphalt indefinitely. This is unlike other materials such as concrete that can be used for pavement surfaces once and then, if it is recycled at all, can only be used for lower value purposes such as fill or road base."

He emphasises that asphalt surfaces are 100% recyclable and save significant amounts of new materials and energy (greenhouse gas).

It is important that we remember this fact and ensure that our clients, politicians, friends and family, and all other stakeholders are aware of this. Then, as we listen to some of the papers at the AAPA Conference, we will be able to better understand that these are even further improving a green industry.

One of the key issues to be discussed at the conference will be perpetual pavements. This is an international term used to describe long life, full depth asphalt. The AAPA Asphalt Pavement Solutions – for Life Project is studying the use of perpetual pavement designs in Australia. At one level this may be seen as an attempt to promote the sale of asphalt, but in reality, it is a project to promote the increased sustainable use of asphalt.

Perpetual pavement designs ensure that pavement thicknesses are optimised. That is, they are not too thin causing premature failure and they are not too thick, wasting material. Perpetual pavements also only require very infrequent resurfacing, again reducing the environmental impacts. When resurfacing is necessary it can be done quickly with minimal traffic congestion, further reducing environmental and social impacts. Being 100% recyclable, the asphalt removed from the old surface can also be reused in new asphalt mixes.

The Asphalt Pavement Solutions Project is being led by Dougall Broadfoot and Ian Rickards and is supported by a steering group of technical experts from across our industry. Geoff Jameson from ARRB is also a key member of the steering group.

The links between our industry and sustainability are strong and we will continue to promote sustainability as a key goal. However, many of you will be aware that sustainability is only one of seven Strategic Goals as described in the AAPA Strategic Plan for 2009-2014. These goals were recently reviewed by the AAPA Board and with a few minor changes were endorsed.

- PROMOTION: Bituminous based pavement materials recognised as the appropriate solution for most construction and maintenance in the pavement industry.
- HEALTH & SAFETY: The health, safety and wellbeing of every person involved in or connected with pavement surfacing, including the public continually improved.
- TECHNOLOGY: Members' position relating to improvements in the application of technology are developed and accurately represented.
- SUSTAINABILITY: Appropriate industry specific environmental initiatives and opportunities are identified and promoted.
- INFORMATION: Full and timely access to relevant industry information available to members.
- KNOWLEDGEABLE: A well trained, skilled and knowledgeable industry.
- REPRESENTATION: The interests of the industry represented.

As the Board was reviewing this goals, it noted that all seven are closely related. For example; to promote the use of bituminous surfacing the industry must apply relevant and appropriate technology, it must work safely and it must ensure that its activities are sustainable. And further, to do this, requires the industry to be informed, knowledgeable and well represented.

AAPA is already highly regarded in the technical area of our industry with both a very active national technology committee and state committees. It has also been a strong supporter of health and safety, and will increases it focus in this area to ensure that all members are able to apply industry best practice.

AAPA has a strong reputation in the area of information and knowledge with AAPA training courses providing the industry standard of training. However, this is an area that can be constantly improved and AAPA will be looking to obtain information from our industry about further training needs. We are in the process of developing our training calendar for 2012 and this will be available from our website later this year. Opportunities are also available for individual companies to approach AAPA Training for customised courses as and when required. Contact AAPA Training on 9853 5322 or email trainingcentre@aapa.asn.au.

In the area of information and knowledge, AAPA will be offering a study tour during 2012 to Europe. This will coincide with the 2012 Euroasphalt and Eurobitume Congress in Istanbul Turkey on 13–15 June next year. The theme for this conference is Winter Maintenance and Surface Transportation. However, the AAPA 2012 study tour will focus on three or four key themes identified by members, based on the current issues in Australia. This tour is expected to be of great significance to the industry and provide results of similar value to the 2010 study tour to the US. If you are interested in attending, please contact one of our Regional Executives.

Of course, even with a very active program, an industry association such as AAPA is only of value if it can represent the whole of the industry. AAPA has for a long time represented all the major companies involved in asphalt and bitumen including all the state road authorities. It has also had a large number of


Avoiding
CRACKS
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MAX

Ceo's Report Continued...

representatives from associated companies, particularly those that supply equipment and services to our industry.

It is therefore pleasing for me to announce that over the last couple of months several companies have applied for and been accepted for membership of AAPA.

These are

- SQG – (formerly Sunstate Bitumen) a Queensland-based company elected to Category of Producer Member – Sprayed Sealing Operator;
- GHD – a major engineering, management and specialist technical services provider elected to the category of Associate Member;
- ISS – a facility services company providing a wide range of services elected to the category of Associate Member;
- Position Partners – a specialist company operating in the area of global positioning;
- Suncoast Asphalt – a surfacing and profiling operation in Qld; and
- University of the Sunshine Coast (Prof John Yeoman) – Prof Yeoman is a Professor of civil engineering and the University has been elected to the category of Associate.

On behalf of the Board and all members of AAPA, I welcome these companies to our Association and look forward to working with them for the betterment of all of our industry.

One of the benefits of membership is the opportunity to network with other members. This is a crucial way to ensure that members are kept informed of new developments and opportunities. The AAPA Conference is a key opportunity to enable networking and technical development, but each AAPA Branch also holds a number of workshops each year; workshops where presentations are made on current and emerging issues. With this in mind AAPA is proposing to hold three workshops immediately following the Conference. These will provide the opportunity for members to meet some of the international key note speakers to follow up on issues raised at the conference. It will also provide those members not able to attend the conference with the opportunity to meet these international experts.

The workshops are to be held in Sydney (Friday 30th September), Melbourne (Monday 3rd October) and Brisbane (5th October). For further information, please contact the relevant AAPA Executive or call the AAPA National Office (03 9853 3595).

I hope you all enjoy the Conference.

CHAIRMAN'S REPORT

Bitumen is a unique substance that starts as crude oil, is refined and then combined with aggregates to make asphalt and sprayed seal road surfaces. These surfaces provide safe, quiet and long lasting pavements that connect people, goods and services right across Australia.

Without these durable surfaces, society would be vastly different, but most people take asphalt pavements for granted. Those of us who work in the pavement industry, know the significance of asphalt pavements and I encourage each of you to be proud of the work we do. I also encourage you all to promote the importance of what we do to others around us.

Even more importantly, we should ensure that all stakeholders in our industry are aware of the environmental advantages of asphalt over other paving materials.

Firstly, asphalt paving is 100% recyclable and can be recycled over and over again.

Asphalt surfaces are 100% recyclable and save significant amounts of new materials.

A deep lift asphalt pavement or perpetual pavement that is over 20 years of age may have suffered some surface damage, but generally this damage is only "skin deep". The minor surface damage in a wearing course can be milled off and quickly replaced with a new wearing course, with minimal interruption to traffic flows and at low cost.

Asphalt removed from a road pavement remains asphalt, a valuable combination of bitumen and high quality aggregates. This material is referred to as reclaimed asphalt pavement or RAP. RAP can be readily returned to an asphalt plant where it can be combined with virgin materials and applied to another road or pavement project. In another 20-plus years the same process can be repeated.

Asphalt is not consumed, but remains asphalt indefinitely. This is unlike other materials such as concrete that can be used for pavement surfaces once and then, if it is recycled, can only be used for lower value purposes such as fill or road base.

Sergio Cinerari, Chairman, AAPA

Asphalt surfaces are therefore 100% recyclable and save significant amounts of new materials.

Using RAP not only reduces the demand for new materials, it also greatly reduces greenhouse gas emissions. The manufacture of bitumen is a low source of greenhouse emissions but some energy is used in its manufacture and in the extraction, crushing and transport of aggregates. The use of RAP reduces the greenhouse emissions by removing the need to make and supply new materials. The use of RAP in asphalt readily reduces greenhouse emissions by at least 10-20%. RAP also has great synergies with warm mix asphalt providing even more environmental benefits as well as performance benefits.

Those of us working in our industry can be proud of the part we play in society, not only as we build quality roads and pavements, but also because we are a green industry. An industry that produces low greenhouse emissions compared to other road surfaces and an industry that can recycle asphalt over and over again.

The benefits of asphalt as an environmentally friendly product are clear and we should help to educate communities and all stakeholders that asphalt is more than sticky black stuff, letting them know that, as asphalt is 100% recyclable, it is one of the greenest construction materials available on the market today.

As an industry that takes its impact on the environment very seriously, we should continue to encourage the use and development of green pavements through practices such as the increased use of RAP and low energy technologies such as warm mix.

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Avoid cracks. Specify **MAX.**

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14TH INTERNATIONAL FLEXIBLE PAVEMENTS CONFERENCE

25 – 28 SEPTEMBER 2011 AUSTRALIAN TECHNOLOGY PARK, SYDNEY, AUSTRALIA

The Australian Asphalt and Pavement Association (AAPA) is proud to present its 14th International Flexible Pavements Conference. This significant event on the industry's calendar is being held at the Australian Technology Park, Sydney, Australia, from September 25-28, 2011.

The conference features high profile presenters from Australia and around the world, including invited key speakers who are acknowledged internationally for their expertise in the flexible pavement sector.

It contains a balanced technical program, supplemented by a major supporting exhibition, which make this event one not to be missed.

The Australian Asphalt Pavement Association presented its first International Technical Conference in Sydney in 1971, and has since hosted an International or National Flexible Pavements Conference every two years.

For more information visit www.halledit.com.au/pavements2011

KEY SPEAKERS AT THIS YEAR'S CONFERENCE INCLUDE:

DR. DAVID H. TIMM

Gottlieb Associate Professor of Civil Engineering, Auburn University USA.

- Associate Professor in Civil Engineering at Auburn University.
- At Auburn since 2001 – moved there after completing doctoral degree at University of Minnesota. Obtained Bachelor and Master Degrees at University of Minnesota in 1996 and 1997.
- Research interests are in flexible pavement modelling and structural pavement design.
- Dr Timm works extensively with the National Centre for Asphalt Technology Pavement Test Track.

DR R. BUZZ POWELL

NCAT Assistant Director & Test Track Manager, USA.

- Assistant Director & Test Track Manager, Auburn University, and Assistant Director, Auburn University.
- Test Track Manager 1999-2007.
- Principal Engineer, REGIS Engineering Solutions, Inc 1997-1999.
- Assistant Testing Engineer Alabama Department of Transportation 1996-1997.
- Ph.D. in Civil Engineering – Auburn University 2006; Master of Civil Engineering – Auburn University 1996; and Bachelor of Engineering – Auburn University 1990.
- Research interests are in Accelerated Performance Testing of Flexible Pavements; Pavement Management Testing; Pavement Construction; and Development of New Technologies.

DR RALPH HAAS

CM, FRSC, FCAE. Norman W. McLeod Engineering Professor and Distinguished Professor Emeritus, University of Waterloo, Canada.

- Dr Haas has lectured and consulted globally for about 40 years.
- Has pioneered applications of systems concepts and developed technologies for managing networks of paved roads.
- Has achieved national and international recognition for work which is used by municipal, state and federal government agencies.
- Has published more than 400 papers and authored 12 books.

DR. DAVE NEWCOMB

Vice President Research and Technology, National Asphalt Pavement Association.

- Has 32 years experience in research, education, and technology implementation in the area of asphalt pavement. Has published more than 90 papers and reports.
- A past Chair of the International Society for Asphalt Pavement Executive.
- Formerly Associate Professor at University of Minnesota. Educated at University of Washington, Texas A&M University. Dr Newcomb is a registered professional engineer in Minnesota.

DR. MARSHALL THOMPSON

Professor Emeritus Civil Engineering, University of Illinois

- Member of the Hot Mix Hall of Fame of the National Asphalt Pavement Association (NAPA). Associated with the new Illinois Centre for Transportation (ICT), founded in 2005.
- Specialist in conventional asphalt emulsions, and problems associated with their use.

IAN RICKARDS

Consultant to Australian Asphalt Pavement Association

- During the 80s, Ian Rickards was the Technical Director of AAPA and was instrumental in initiating the industry's research program. He has remained active in the research program over the intervening 20 years as Chair or member of the National Technical Committee. Over the same period, he guided the technical development of Pioneer Road Services in the position of General Manager, Pavement Solutions Group. Is currently consulting to AAPA and the industry.

DR HELEN MURPHY

Director Environmental Sustainability for VicRoads

- As Director Environmental Sustainability, Dr Murphy was responsible for development of VicRoads' first Sustainability and Climate Change Strategy. Led development of national greenhouse assessment protocols for road construction and maintenance.
- Prior to joining VicRoads in January 2008, was instrumental in developing Australia's first Greenhouse Gas Reduction Deed with one of Victoria's brown coal power stations. Managed development of Victorian Government's Strategic Policy Framework for Near Zero Emissions for Latrobe Valley Brown Coal. Has over 30 years experience in both public and private sectors.

FLOORPLAN & EXHIBITOR LISTING

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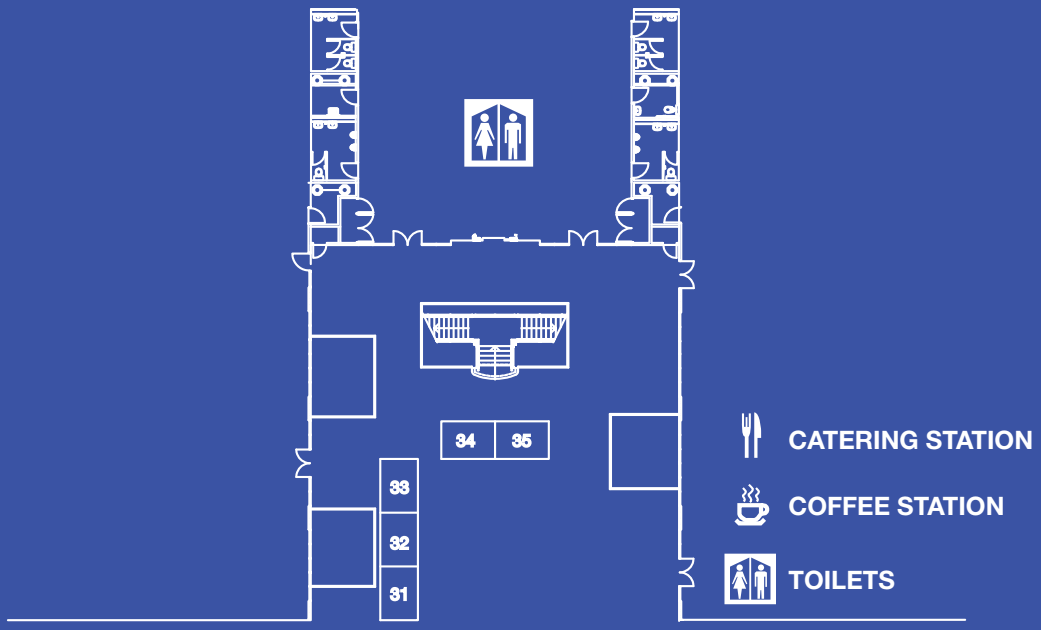

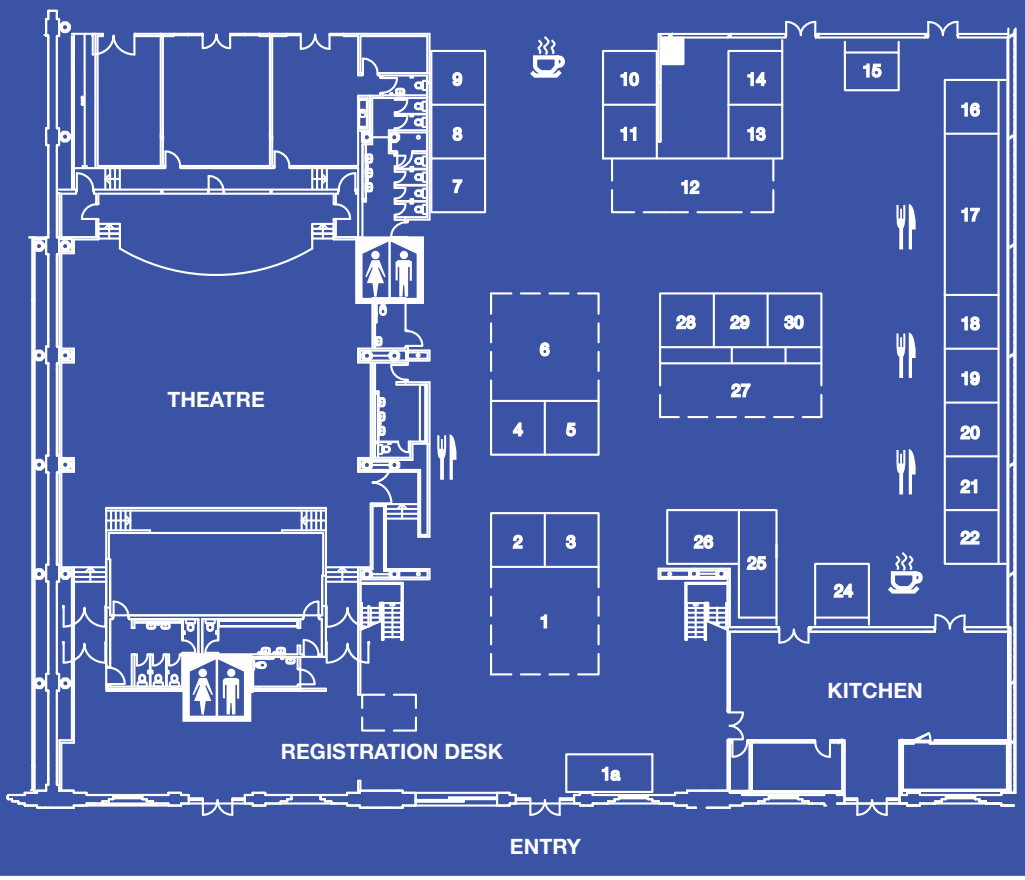

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AMMANN AUSTRALIA PTY LTD

STAND 17

The Ammann Group is recognised as a global leader in the Asphalt business, with a primary focus on Asphalt Plants, Compaction and Paving machines. Ammann is a privately owned, Swiss business that prides itself on continuous innovation, in-house research and development and having 100% owned manufacturing facilities and support offices across the world. From inception of the company some 135 years ago, the business philosophy of "Productivity, Partnership for Lifetime" is a true statement to Ammann's commitment to the asphalt industry, with on-going development of advanced technologies, quality products and a strong customer commitment, allowing Ammann to locally support customer needs and Ammann equipment, for its whole working life.

As the dynamics of the asphalt plant business have changed in the Australian market, with end users focusing more on their energy consumption, carbon footprint, environmental impact and whole of life costs; Ammann has strengthened the support network for current and future asphalt plant customers, with the establishment of its subsidiary, Ammann Australia Pty Ltd, in late 2009.

With the focus of the 2011 AAPA conference being "Sustainable Roads", come and visit the Ammann display to learn more about the latest technologies available in asphalt manufacturing and compaction equipment. Alternatively, please contact National Sales Manager, Paul Vandersluis on 07 3266 6910 or 0439 468 649

APOLLO

STAND 20

Apollo, a leading manufacturer exporter of road construction equipment of India, holds consolidated position in road construction industry, wide product range and turnover exceeding USD 70 MLN. With a lion's market share of Indian road construction industry and good references of asphalt plants already supplied to Australian road contracting community; APOLLO all set to increase its foot print in Australia.

ASTEC AUSTRALIA

STAND 6

Astec Australia has been established as part of the Astec Industries Group to ensure the continued support, service and expansion of its product base in Australia and New Zealand.

Astec Industries is a family of companies that manufactures equipment for building and restoring the world's infrastructure. The companies include rock breaking, rock crushing and screening equipment for the aggregate and mining industry; asphalt plants, heating and storage equipment and mobile paving equipment for the asphalt industry; trenching, drilling and boring equipment, and wood processing and grinding equipment.

BENNINGHOVEN

STAND 21 & 22

The company Benninghoven was founded in 1909 in Hilden, Germany by Otto Benninghoven and was set up to produce gear wheels and various machine tools. In the 1950s the company diversified into the field of industrial combustion technology. The beginning of the 60s saw a move into the asphalt industry with the first products being burners, dryers, bitumen systems and mastic asphalt equipment. The continued demand for Benninghoven products made it necessary in 1970 to construct a new fabrication facility located in Mosel. Another huge expansion took place in 1990 with the addition of a manufacturing plant in Wittlich to accommodate the ongoing growth of the business. Today the Benninghoven Group is manufacturing in two locations in Germany and one in England. With over 100 years of tradition in pioneering advanced technology together with the excellence of a dedicated workforce, Benninghoven endeavours to maintain the success story to ensure the satisfaction of our most valued asset – our customers. Over 800 employees distribute the good name of Benninghoven products worldwide.

We are also proud to inform that we are now represented in Australia by Bliss & Reels, they have more than 65 years experience supplying plant and production machinery in Australia and New Zealand and we look forward to selling and servicing Benninghoven asphalt plants here in the future.

BORAL ASPHALT

STAND 4 & 5

Boral is a national supplier and applicator of asphalt with over 40 plants situated across Australia. Boral's products and services are not limited to asphalt but also include spray sealing and speciality bituminous products. Boral prides itself as being a leader in asphalt technology by offering our clients sustainable solutions to help them solve their road maintenance and construction challenges. This is achieved by undertaking research at our laboratories to enable us to develop innovative products which can improve the performance and life of their surfacings and pavements.

BP BITUMEN

STAND 27

BP Bitumen specialises in the development, production and supply of bituminous products.

Supported by a team of highly skilled and experienced staff, unique product technology and comprehensive quality assurance programs, BP Bitumen offers a wide range of bituminous products that are designed to meet the most diverse conditions and application requirements for the Australian road network. OLEXOBIT – BP Bitumen's premium range of polymer modified binders – deliver outstanding performance in a range of sprayed seal and asphalt applications.

Our products are thoroughly tested at every stage – from the raw materials at the start of the production process, right through to delivery.

That's why you can confidently turn to BP Bitumen for roads that perform.

For further information please visit the BP Bitumen stand.

CATERPILLAR OF AUSTRALIA PTY. LTD.

STAND 1

Caterpillar® offers a complete range of paving products supported by an outstanding Australia-wide dealer network. Using Caterpillar Paving Products, you will have a single, convenient point of contact for purchasing, maintenance and support. Call your Cat Dealer now. You're not just building roads, you're building a business.

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DESIGNED TO MEET CHALLENGES

Shell Bitumen has always been a leader in bitumen manufacturing, both globally and nationally.

Through ongoing research and committed local and offshore production, Shell Bitumen is creating bitumen products that help meet the challenges of road asset owners.

Shell Bitumen's high performance track record is further demonstrated in technically innovative products such as Shell Cariphalte Racetrack, specifically developed for the extremes that motor racing places on a bitumen surface.Shell Bitumen's policy of leading through technology, has also created unique, purpose designed, multigrade bitumens and environmentally sensitive bitumen products like Shell WAM Foam, with its reduced CO^2 output.

However, leading edge products are only part of the equation for success. Shell Bitumen has a dedicated team of sales people, engineers and technologists who are all working at local production sites and around Australia to deliver solutions and products that perform and continue to meet our customers' varied needs.

Enquiries contact Shell Bitumen on:

Phone: 13 16 18
Fax: 1300 658 294
Email: bitumen-au@shell.com

www.shell.com.au/bitumen

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CONSEP PTY LIMITED

STAND 29

Consep Pty Limited is an Australian company with a fifty year history of providing innovative engineering solutions to the asphalt industry. Services include:

- Provision of High Quality Original Parts and Upgrade Services for Holland Asphalt Equipment
- Custom Engineering and Upgrade Services for existing plant of all makes
- Supply and Manufacture of Bernardi Impianti International plant incorporating the Latest in European Asphalt Technology
- Local Manufacturing, Service and Support

CR KENNEDY

STAND 10

C R Kennedy brings you the world's best in survey, machine control and paving solutions from Leica Geosystems .

LeicaGeosystems Power Grade 2D and 3D provides solutions for dozers and graders and Power Digger 2D with its unique PowerSnap concept for total flexibility and interchangeability.

Or select from a Leica Basic Paving System such as Moba-Matic or full 3D machine control. There are Leica PaveSmart 3D solutions for Slipform Pavers, Curb & Gutter machines, Trimmers, and Asphalt Paving, developed in cooperation with, and endorsed by leading paving equipment manufacturers such as WIRTGEN, VOEGELE and GOMACO.

DYNAPAC

STAND 7 & 9

Dynapac is proud to introduce its new F1000 paver series to the Australian market which truly makes superior paving simple. Designed and manufactured in North America, the new pavers give contractors what they asked for – simplicity, durability, reliability and serviceability. Uptime is a prime feature of the pavers and centre line segregation is eliminated with Dynapac's patented external auger design. The F1000 series features the industry's lowest operator platform, a dual controller system and reliable logic controls complementing the rugged design of the pavers. The pavers join Dynapac's other asphalt products including the innovative Compactasphalt® method of asphalt laying to state-of-the-art tandem asphalt rollers.

Part of the Atlas Copco Group, Dynapac is strongly committed to sustainable customer performance and is an expert on developing innovative equipment for paving, compaction, and concrete applications. Dynapac offers solutions and support via a global sales, service and knowledge network to help customers achieve lasting results. For more information, call on 1300 667 044 or visit the website: www.dynapac.com.au.

FULTON HOGAN

STAND 2 & 3

Fulton Hogan is one of Australia's leading civil construction, surfacing and maintenance companies employing approximately 2000 people across Australia.

With over 40 asphalt plants in Australia alone, and numerous emulsion plants and spray seal crews, we are one of the most technically advanced surfacing companies within Australasia. We continually build Australia's smoothest roads and then maintain them for years to come.

In addition, Fulton Hogan also specialises in major and minor civil construction projects particularly in the road, structures, airports and ports sectors. It is this unique, vertically integrated business model that allows us to provide our customers with whole-of-life pavement solutions that are focused on value, innovation and quality.

GEOFABRICS AUSTRALASIA

STAND 11

Geofabrics Australian made and manufactured geotextiles, drainage products, containment lining systems and specialist erosion control products have supplied to the civil construction and road pavement industry for over 30 years. Sealmac paving fabric has been produced for over 25 years from its manufacturing facility in Albury NSW, tailored for Australian conditions and supplied to suit a variety of road applications and widths.

Design and installation support for Sealmac is provided by Geofabrics branch staff in all states, providing assistance for rehabilitation applications for spray seals and asphalt overlays in road maintenance applications. Manufactured from Polyester, Sealmac is designed to suit temperatures experienced in its installation with bitumen and is produced to a consistent quality with Quality Assurance compliance provided.

IPC GLOBAL

STAND 19

IPC Global is the market leader in easy-to-use advanced laboratory asphalt testing systems. We've coupled our experience with highway authorities, contractors, research organisations and universities, and our expert knowledge of control systems and materials to produce the best, and most flexible, range of advanced road pavement testing available.

IPC Global works closely with world-renowned asphalt research organisations, such as ARRB, ASU, TU Delft and FHWA to design superior testing technologies that include recent advances and meet strict international testing standards. They are perfect for characterising HMA, improving pavement design, QC&QA and forensic analysis. Come and speak to us about our AMPT, UTMs, 4 Point Bend Apparatus, Specimen preparation equipment and accessories. www.ipcglobal.com.au

KRATON PERFORMANCE POLYMERS, INC.

STAND 30

Kraton Performance Polymers, Inc. through its operating subsidiary Kraton Polymers LLC and its subsidiaries, is a leading global producer of engineered polymers and, we believe, the world's largest producer of styrenic block copolymers ("SBCs"), a family of products whose chemistry was pioneered by us almost fifty years ago. SBCs are highly-engineered thermoplastic elastomers, which enhance the performance of numerous products by delivering a variety of attributes, including greater flexibility, resilience, strength, durability and processability.

Our polymers are used in a wide range of applications, including adhesives, coatings, consumer and personal care products, sealants and lubricants, and medical, packaging, automotive, paving, roofing and footwear products. We currently offer approximately 800 products to more than 700 customers in over 60 countries worldwide, and are the only SBC producer with manufacturing and service capabilities on four continents. We manufacture products at five plants globally, including our flagship plant in Belpre, Ohio, as well as plants in Germany, France and Brazil, and a joint venture plant operated in Japan.

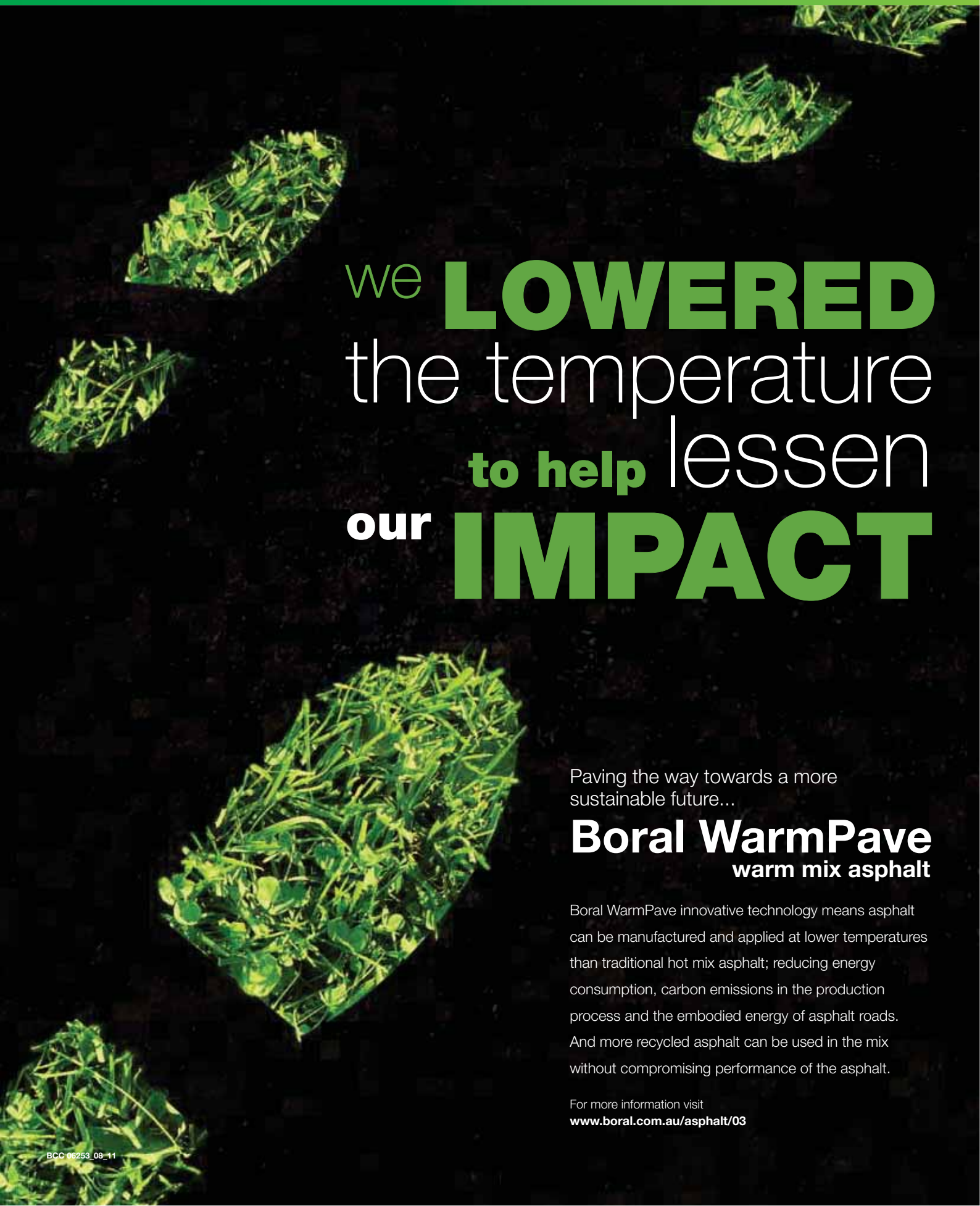
LINTEC

STAND 31

Lintec is a German manufacturer of both Asphalt and Concrete Mixing Plants at highest quality level in 100% ISO sea containers granting high mobility, short erection and dismantling times as well as economical transport. LINTEC Mixing (Batching) Plants are available with the following capacities: Asphalt Mixing Plants: 80 – 400 t/h & Concrete Mixing Plants: 60 – 240 m"/h.

BORAL ASPHALT
Build something great™

BORAL®



we LOWERED the temperature to help lessen our IMPACT

Paving the way towards a more sustainable future...

Boral WarmPave
warm mix asphalt

Boral WarmPave innovative technology means asphalt can be manufactured and applied at lower temperatures than traditional hot mix asphalt; reducing energy consumption, carbon emissions in the production process and the embodied energy of asphalt roads. And more recycled asphalt can be used in the mix without compromising performance of the asphalt.

For more information visit
www.boral.com.au/asphalt/03

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MARINI

STAND 34

MARINI, founded in Alfonsine in 1899, is a worldwide renown company in the field of asphalt plant manufacture.
The range of products includes:

- batch mix and continuous asphalt plants, stationary, portable, mobile and ultracompact/ultramobile, with maximum productions, according to the type, from 35 to 500 tons/hour.
- Self-propelled plant for "in situ" hot and cold recycling of asphalt pavings.
- Cold Mix, Stabilization and Cement Mix Production Plants
- Plants for the production of Polymer Modified Bitumen and other bituminous hydrobinders.
- Systems for storage – heating of bitumen and production of cut-back.
- Melting furnaces for bitumen.

SAMI BITUMEN TECHNOLOGIES

STAND 19

SAMI Bitumen Technologies is a company focused on innovative road technologies, products, partnering with road paving businesses, and adding value through focus, expertise and innovation. As an importer of bitumen into Brisbane (QLD), Melbourne (VIC) and Perth (WA), SAMI is a supplier of a range of bitumen grades and manufacturer of a complete range of Polymer Modified Binders (PMB) as well as many Specialty and Standard Grade Bitumen Emulsions for use in asphalt production or sprayed sealing. SAMI also manufactures a variety of specialty products for the maintenance of road pavement surfaces. SAMI's manufacturing facilities are located in Sydney (NSW), Brisbane and Perth.

SEALANTS AND PAVEMENT ADHESIVES

STAND 25

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WARM MIX ASPHALT AND RECLAIMED ASPHALT PAVEMENT (RAP)

The following article is based on a paper presented by Warren Carter, National Technical Manager, Downer Australia. It was presented at an AAPA NSW Breakfast Meeting on 12 July 2011. The paper highlights the synergies between warm mix asphalt and RAP.

There are many potential advantages to using warm mix in place of hot mix in many situations. An example featured in this magazine is to extend the pavement construction season (see page 44). The State Road Authorities around Australia are therefore increasingly allowing the use of warm mix. This includes the NSW RTA which has amended its Heavy Duty Dense Grade Asphalt Specifications (R116) to allow for the use of warm mix.

Clause 2.16b states:

> *Warm mix asphalt additive may be added to the asphalt to reduce the asphalt manufacturing temperature and/or improve workability during the paving and compaction operations."*

Similarly other state road authorities are increasingly permitting warm mix although some are waiting the final outcome of the AAPA/Austroads Warm Mix Validation Project. The commencement of this project has been reported on previously in Asphalt Review. It involves conducting detailed performance assessments of a wide range of warm mix wearing courses against several hot mix control sections on a heavily trafficked section of the Hume Highway. The final results of this project will be obtained at the end of summer in 2012. At present the results confirm the hypothesis that warm mix performs at least as well as hot mix.

Initially those promoting warm mix highlighted its environmental benefits, particularly the use of less energy and hence lower greenhouse emissions. However, there are many other benefits and these were particularly highlighted during the AAPA 2011 study tour to the US. As an example other benefits include:

- Improved working conditions;
- Less fumes and emissions;
- Less energy consumption;
- Less plant wear;
- Decreased binder aging;
- Early site opening;
- Cool weather paving;
- Compaction aid for stiff mixes;
- Increased plant production;
- Longer storage;
- Longer haul distances; and
- Potentially increased durability.

One additional benefit is the synergy between warm mix and increased percentages of RAP. Combining warm mix and RAP has both substantial environmental and technical (performance) advantages.

Initially those promoting warm mix highlighted its environmental benefits, particularly the use of less energy and hence lower greenhouse emissions. However, there are many other benefits...

RAP is obtained from three major sources:

- Profiling;
- Plant waste (wet and dry); and
- Processing.

If this material is disposed of to land fill it would take up a lot of valuable land fill space and waste a material that has the potential to be reused over and over again.

What exactly is RAP? It is a mixture of bitumen and aggregate, the material that is used to make virgin asphalt. However, it is also reclaimed material that is free from foreign materials such as road base, tar, plastics etc. Reclaimed asphalt that has these impurities should not be used as RAP as it cannot be guaranteed to be able to produce a quality, consistent pavement material. This contaminated material (other than tar) may be able to be used in a road base, but should not be used as RAP. (Tar should be disposed of in accordance with the relevant regulations)

To get the most benefit from RAP, it should be blended (old millings with fresh plant waste), crushed and screened (and preferably fractionated into appropriate sizes).

The sustainability benefits of RAP are many. These include the reuse of a material that would otherwise need to be disposed of into land fill. RAP also significantly reduces the amount of virgin aggregate and bitumen required. This not only reduces the use of those materials but also reduces the energy (greenhouse gas) associated with the extraction, crushing, transportation, etc, stages of virgin materials. Reductions in greenhouse gas emissions of 20% and more are common when RAP is used.

Importantly, RAP can also be reused again

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State Road Authority	Percentage of RAP Permitted			Comment
	Surface course layers	Intermediate course layers	Base course layers	
WA	Nil	Nil	Nil	Considering allowing 15% in non surface
QLD	Nil	15	15	Recent amendment
SA	Nil	15/201	15/201	1.C320/C170
NSW	15/202	15/25/302	15/25/302	2. Based on 2 year experience
VIC	10/203	20	30/404	3. Hwy/C170 local 4. Additional testing

and again, saving virgin materials and energy each time. This compares to other materials such as concrete that can only be used for paving once and then, if it is recycled, must be used for a lower value product such as fill.

The performance benefits when used with warm mix include the increased viscosity of the co-mingled binder and the ability to "dry" aggregates. The aging process associated with the RAP has the potential to increase the performance of the warm mix by increasing the stiffness of the resultant binder – addressing potential concerns regarding a tender binder.

There are therefore many benefits of using RAP and warm mix. However, as with all asphalt mixes, there must be an appropriate level of care when using RAP. For example the RAP must be consistent, the binder and aggregate properties must be known and there must be an appropriate source of RAP. This requires the application of an appropriate RAP management plan.

Warren Carter identified a check list for a RAP management plan in his presentation at the AAPA NSW breakfast meeting as:

- Selection of Materials Suitable to be Processed into RAP
- Processing Methods, Equipment and Standards
- Stockpiling of Processed RAP
- Delivery and Stockpiling of Processed RAP at the Asphalt Plant
- Quality Control on RAP Material
- Incorporation of RAP into the Asphalt Mix
- RAP in the Asphalt Mix Design
- Concerns Related to Reduced Binder Thickness
- Warm Mix Technology and High RAP Mixes

Currently the use of RAP in each state varies considerably.

However, the environmental and performance benefits of using RAP are very significant and AAPA encourages the use of RAP across all states.

As Warren recommended in his presentation properly managed RAP limits should be applied nationally. He also proposed that (in his personal opinion) for hot mix these be:

- 15% maximum in wearing courses;
- 15% maximum in intermediate and base courses (if not crushed and screened);
- 30% maximum in intermediate and base courses (if crushed and screened and binder; viscosity adjusted - where appropriate); and
- Alternative proposals considered on own merit (including increasing these by 10% for warm mix applications).

It is salient to note that in the US RAP is by far the most recycled material with nearly all of the 100 million tonnes of reclaimed asphalt materials being recycled back into pavements each year.

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With the increased use of warm max and the synergies with RAP, every kilogram of RAP should be reused. As Warren said at the conclusion to his presentation, "Warm mix and RAP go together like Fish and Chips. Each of them is good, but together they're BETTER!"

A copy of Warren's power point presentation is available from the AAPA website www.aapa.asn.au.

Warm mix and RAP go together like Fish and Chips.

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ADVANTAGES OF WARM MIX ASPHALT

Most people involved in the flexible pavement industry believe that in the future, warm mix asphalt will replace hot mix as the standard paving material.

Often the lower energy demands and hence lower greenhouse emissions are cited as the main advantage of warm mix, but this is not the case. Instead there are many other reasons for using warm mix. These were summed up in a presentation made by Warren Carter – National Technical Manager, Downer Australia – in a paper given at the 2011 International IPWEA Conference in Sydney on August 23. They include:

- Improved working conditions;
- Less fumes and emissions;
- Less energy consumption;
- Less plant wear;
- Decreased binder aging;
- Early site opening;
- Cool weather paving;
- Compaction aid for stiff mixes;
- Increased plant production;
- Longer storage;
- Longer haul distances; and
- Potentially increased durability.

One of the advantages, cool weather paving, is highlighted in the following article written by Dan Brown and published in the US National Asphalt Pavement Association's HMAT Magazine July/August 2011. David is the Principal of Technicom and the article is reproduced with the permission of NAPA.

The article highlights the use of warm mix to extend the effective paving season.

WARM MIX EXTENDS PENNSYLVANIA'S PAVING SEASON

Pennsylvania contractors use warm mix for critical winter paving projects to support natural gas drilling.

By Dan Brown - Principal in TechniComm, a technical communications company based in Des Plaines, Illinois.

An economic boomlet is happening in north central Pennsylvania, and it starts several thousand feet underground in the Marcellus Shale formation. Last year energy companies drilled 375 natural gas wells in Bradford County's portion of the Marcellus Shale and another 261 were placed in Tioga County.

All that drilling takes trucks to haul the drill rigs and equipment, and the back roads in Bradford and Tioga Counties were run down and not ready for heavy trucks. Voila! Instant demand for warm-mix asphalt!

Normally the cutoff date for paving asphalt in Pennsylvania is October 31. After that, restrictions kick in. But with the advent of warm mix, PennDOT has loosened those restrictions. Indeed, Glenn O. Hawbaker Inc., State College, Pa., ran a bit more than 140,000 tons of warm mix after October 31 last year. Hawbaker was not alone; HRI Inc., also of State College, placed approximately 56,500 tons of warm mix after the hot-mix cutoff date.

"There is much more truck traffic and they are breaking up all of these back roads," says Bill Smith, HRI's corporate quality control manager.

"They are going from being almost dirt roads to high-quality pavements. We are paving them for the different gas companies."

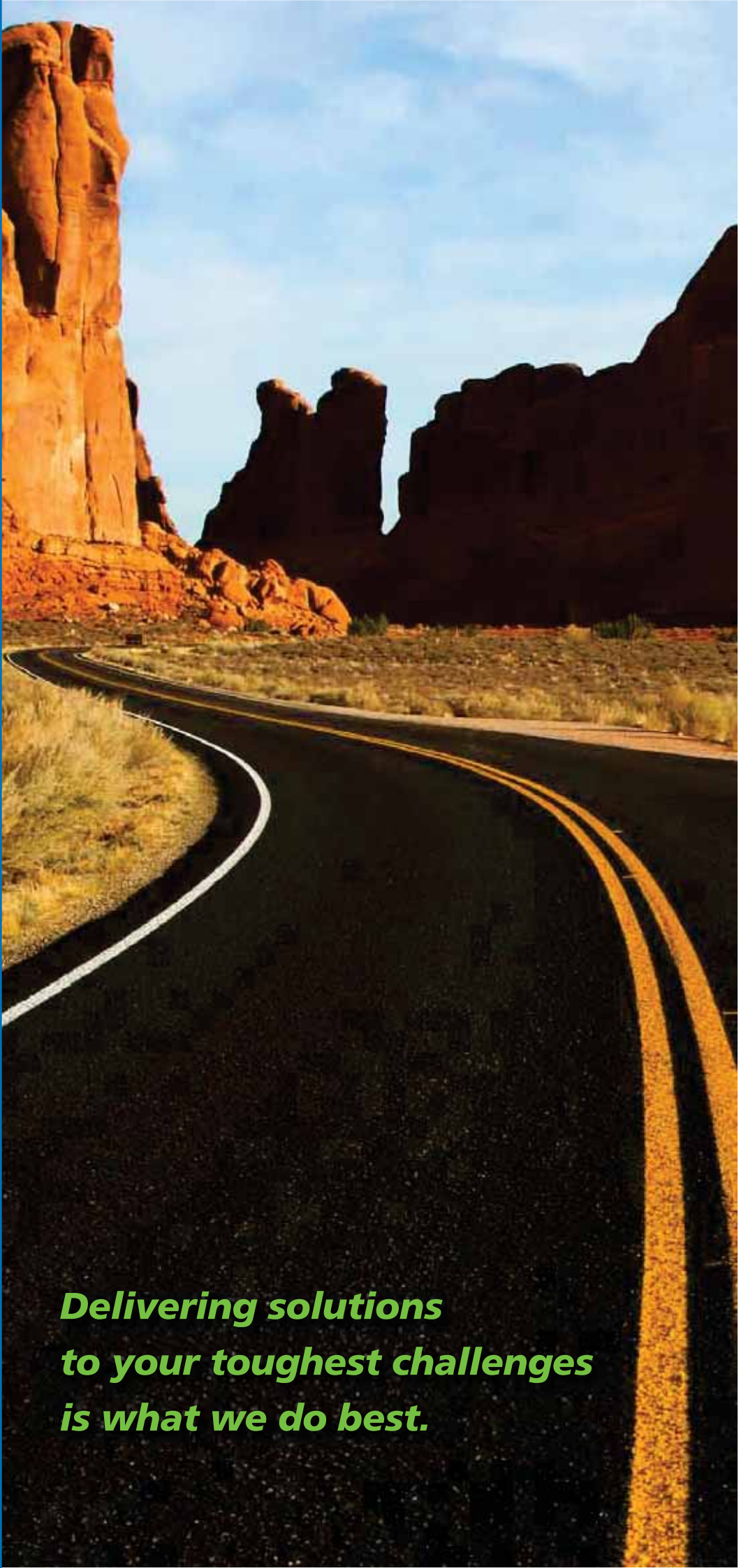
LOOSENED SPEC

Prior to the advent of warm mix, a contractor could place base mix only – not intermediate or surface courses – if the temperature was 35 degrees and rising.

"Right now, instead of a date restriction, we just have the temperature restriction," says Smith.

"You can still place the base (in hot mix), but

A boom in shale gas production has created the need for road reconstruction in north central Pennsylvania.



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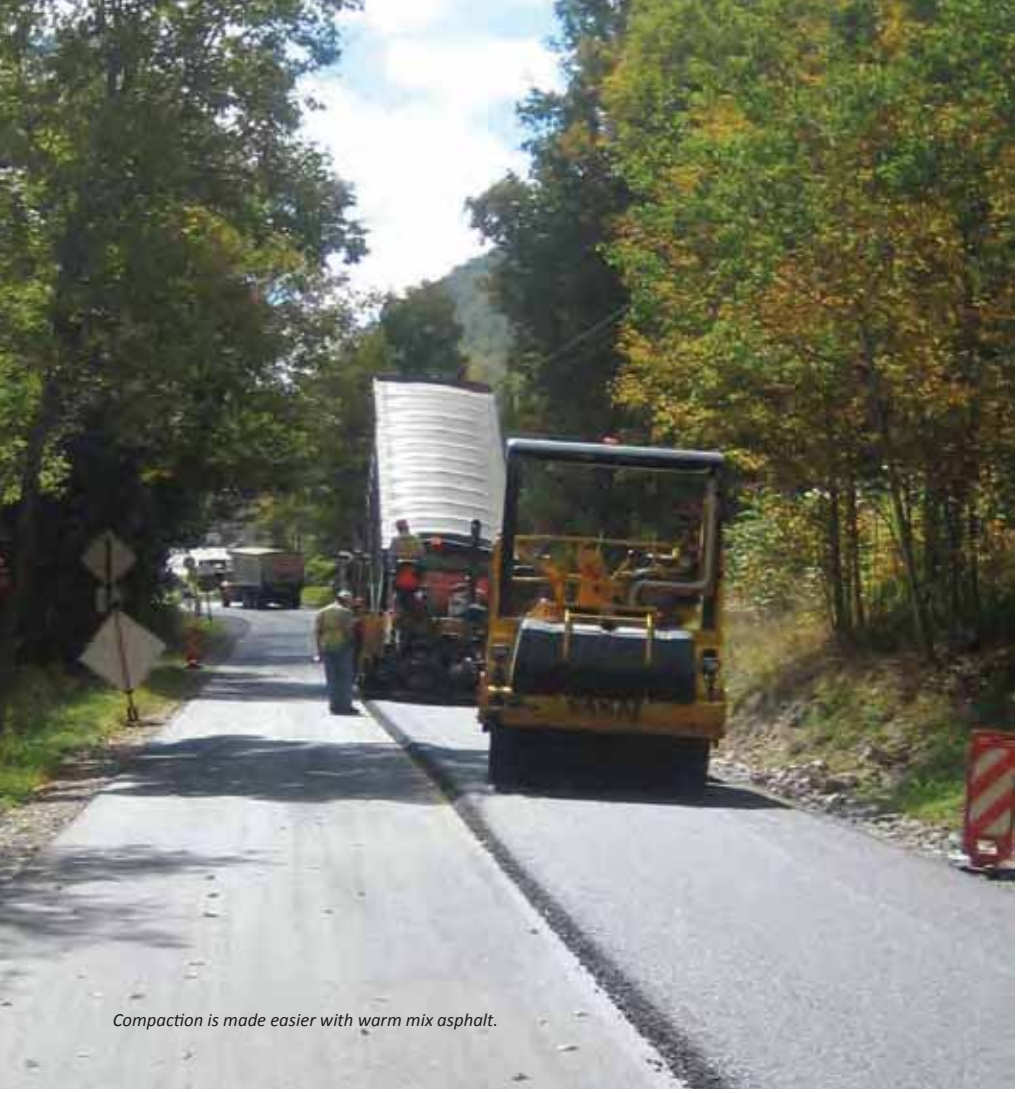

Compaction is made easier with warm mix asphalt.

with warm mix you can haul it further and get better compaction. Plus you can place binder courses and wearing courses after October 31 as long as it is 35 degrees and rising. We could not have done that prior to having the warm-mix systems. The state basically removed the date restriction."

Both HRI and Hawbaker produce warm mix using foamed asphalt systems. Such systems inject a tiny bit of water into the liquid binder, which then expands greatly to coat the aggregates thoroughly. The heat of the mixture evaporates the water into steam.

"Now if I look at the 56,500 tons that we produced, of course, most of it is actually base material," says Smith. "So we could have placed it as hot mix. But there are other advantages to warm mix besides just being allowed to place it. We averaged 94 percent compaction on 42,000 tons that we produced from one drum plant. And we hauled it more than two hours away to roads that were being rebuilt because of all this Marcellus Shale drilling."

On S.R. 3008 in Bradford County, HRI paved 41,650 tons – all warm mix – from November 1 through November 26. "The temperatures were right down at the bottom of what PennDOT would allow," says Smith.

"We were paving in 35 to 50 degree weather. As I look at the rest of those tons that were placed after November 1, we placed about 13,000 tons of binder and wearing course because it was warm mix. We could not have placed that under the hot mix spec."

The S.R. 3008 project received a full-depth reclamation treatment to create a new base prior to the warm mix lifts. For this road, the old asphalt was pulverized and mixed with the underlying soil and measured amounts of Portland cement and water to a depth of 16 or 18 inches. Shortly after compaction, the new base was ready for warm mix asphalt.

For the base lift on the S.R. 3008 project, HRI used 25% RAP and a PG 58-28 binder to soften the RAP. The resulting blend was a PG 64-22. HRI typically produces warm mix at 275 to 280 degrees. Smith says foamed asphalt improves compactability because the water/asphalt mixture expands into the aggregate, coats all particles, and lubricates the particles somewhat.

Like HRI, Hawbaker has found that warm mix improves compactability. Tom Abbey, Hawbaker's director of quality control, says his company averaged 93.6% of maximum theoretical density on 233 cores of warm mix – all of it produced after October 31.

Five of Hawbaker's seven asphalt plants are equipped with foaming systems to produce warm mix. Abbey credits Dan Hawbaker, the owner of the company, with making the push to produce warm mix. It offers other benefits besides extending the paving season: reduced exposure to fumes and heat for the paving crews; reduced stack gas emissions from the plant, and lower energy use.

The 140,000 tons of warm mix produced by Hawbaker after October 31 was a combination of base and intermediate mixtures.

"There was an intermediate kind of leveling course," says Abbey. "Some roadways were milled and profiled and then they received a binder leveling course of variable thickness – maybe 2.5 to 4 inches or so just to profile the road. After the winter, PennDOT will tell the gas company that is bonding the roads and paying for the work what surface treatment to put on it."

In normal temperatures during the construction season, Hawbaker runs warm mix at 255 to 275 degrees. But in the colder conditions, Abbey says, the company raised the mix temperature from the plant to 275 or even 300 degrees. Abbey says at colder temperatures the company may have produced hot mix at 285 to 320 degrees, especially if the mix needed to be hauled two hours from the plant.

Abbey says Hawbaker paved beyond December 31, into January, because the state allows that under a provision for emergency-type repairs. The temperature was anywhere from 20 degrees or more. The contractor milled out the edges of some roads that were falling apart and paved back 2- to-4-foot wide sections with warm mix to repair the shoulders.

Typically Hawbaker uses PG 64-22 for the repair work, and adds at least 15% RAP to most mixes.

"One of our plants actually uses 25 percent RAP in our base and intermediate mixes," says Abbey.

"I think warm mix is great. "And our paving crews like it. Every one of our crews that have used it say they are willing to use it again. So our company has had some great experiences so far with warm mix.

"There are three contractors that deal in this PennDOT district pretty much, and we have all requested that we go to 100 percent warm mix with our foaming systems," says HRI's Smith.

"We had a meeting, and they listened to us. They have a follow-up meeting scheduled for us to present our cases again. I think they want to do it, but they don't want to place hundreds of thousand tons of warm mix and then find out that there is an issue."

Smith says PennDOT set a goal for both 2009 and 2010 of placing 20 percent warm mix. "I don't think we've met the 20% goal yet, but we're trying," says Smith.

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Frequently in Asphalt Review, a significant or innovative project undertaken by one of AAPA's members is featured. This provides an opportunity to better understand the high quality and often innovative work that our industry performs.

In this issue AAPA member Boral is featured with an article about some of the projects it has undertaken in constructing, extending and maintaining airports.

As the article shows, there are many unique and demanding requirements at an airport. These range from the need to design for a 600 tonne A380 Airbus landing at a couple of hundred kilometres an hour to the demands of a regional airport such as at Mount Gambier. One thing that seems to be common is that there are very strict time limitations on access. If a lane on a major road is kept closed for an extra hour there is a lot of congestion around that location, but if the main runway at Sydney Mascot is closed for an extra hour the impact would be even significantly greater potentially impacting on flight scheduling around the world affecting thousands of people.

This article highlights the importance to our industry to be able to design, manufacture and lay the appropriate mixes, and to do it in often very difficult situations.

ASPHALT'S PIN-POINT LANDING AT AIRPORTS

Every day airports ferry millions of passengers and provide a vital link between communities and economies locally, regionally and globally. Next time you're walking through an airport terminal, spare a thought for the infrastructure on which you just landed and stand. One piece of infrastructure, the runway and tarmac, plays a critical role in ensuring planes take off and land safely every time. AAPA members such as Boral Asphalt® have a long and respected history of paving and maintaining runways and tarmac areas throughout Australia.

Successfully, completing airport work is unlike any other project. Amongst the specific attributes that are required for airport projects is an ability to design asphalt mixes that meet strict requirements of airport material specifications by sourcing aggregates dedicated to the project. Having access to appropriate quarry resources, ideally located close to the works site is important to engineer the correct stone qualities. Additionally, being able to draw on an experienced pool of people to get the best crews and project management team in place is vital to delivering on time and budget.

Companies such as Boral are given priority access to the materials and people throughout for their airport teams so the unique expectations and high profile pavement of an airport project can be met. Allocation of resources including the use of fixed and mobile production plants can become a crucial factor as airport works generally coincide with peak season demands as all clients attempt to undertake asphalt works during suitable weather conditions or around peak load conditions.

The entire project covered a quarter of a million square metres of pavement, equivalent to 25 kilometres of standard 10 metre wide roadway.

The main runway was four kilometres long and one of only four commercial runways worldwide capable of landing the space shuttle.

Also airports are not all the same. Instead there is a diverse range of airport environments complied with the specifications of different airport operators. The following case studies demonstrate the varied nature of these works.

Sydney Airport Resurfacing

Sydney airport is Australia's largest and requires regular upgrading. For example; in 1994, Boral placed 56,000 tonnes as part of the asphalting of the third runway and then again, in 1997, it delivered 12,000 tonnes for a runway overlay.

Last year, Boral commenced major runway overlay work at Sydney Airport, placing over 44,000 tonnes of asphalt on two main runways and several taxiways while adhering to the time constraints inherent at a facility of this importance. Runways at Sydney Airport are expected to support the 600 tonne weight of A380 aircraft and the asphalt delivered and placed met the performance expectations of a facility to international standards.

Since October 2010, Boral allocated more

than 90 people and 70 pieces of plant each night to remove existing asphalt and replace it with fresh material, clearing the runway by 6am so that air traffic could resume at Australia's busiest airport. With only a seven hour window each night, personnel must rally equipment, remove airfield lighting, remove existing asphalt, survey the section, replace the asphalt, compact and cool it, resurvey the new work, apply line marking and reinstate the lighting.

The entire project covered a quarter of a million square metres of pavement, equivalent to 25 kilometres of standard 10 metre wide roadway. The main runway was four kilometres long and one of only four commercial runways worldwide capable of landing the space shuttle as a contingency that was available to the space program.

Failure to complete scheduled work before the 6am deadline would lead to massive flight disruptions and so these tight constraints required extensive planning and precise execution. To achieve operational precision of this level, five months of planning preceded the October start date. Skills at planning and programming were further tested by the change to wetter weather conditions that followed the drought.

Other Airports

All airport asphalt work requires careful risk evaluation and mitigation to protect client and contractor interests as well as the amenity of the travelling public. Airport asphalting must allow for greater daily administration such as security checks and the more complex demands of project managing several sub-contractors so that there is a clear single point of accountability for all outcomes.

The following are three examples of different airport asphalt works.

Tindal Royal Australian Air Force Base
Taxiways used by fighter jets at Tindal RAAF Base were rehabilitated in 2010 by establishing a mobile asphalt plant in Katherine dedicated to the project.

Over 6000 tonnes of asphalt were supplied to the project. The project was delivered under the jurisdiction of the Defence Force and its exacting specification for asphalt pavement performance with a strong awareness of not disrupting normal duties. Multigrade asphalt was placed in a 50mm thick lift on greenfield taxiways. Asphalt was also supplied and laid to various new facilities around the base, involving construction of various car parks and access roads. Spray seal work was also completed around the fence lines of the base.

Edinburgh Royal Australian Air Force Base
At the Edinburgh Air Force Base in Salisbury South Australia, Boral® was engaged to undertake surfacing of the runway, taxiway and aprons for the C-17 Project through the head contractor for the project. The C-17 Project commenced in 2009 and its principle purpose was to widen landing strips to accommodate the newly acquired Boeing's C-17 Globemaster III RAAF strategic airlift planes. This aircraft has a maximum take-off weight of 265 tonnes and is capable of carrying 102 paratroopers and equipment including tanks and helicopters, necessitating a sound pavement on which to land and take-off.

Design mixes and the laying of asphalt was required to conform to prescribed smoothness levels and all batches were subjected to strict quality assurance checks. Trials of the C-17 after pavement works have been successful and during this process the quality control and management processes for air force bases with similar needs were refined.

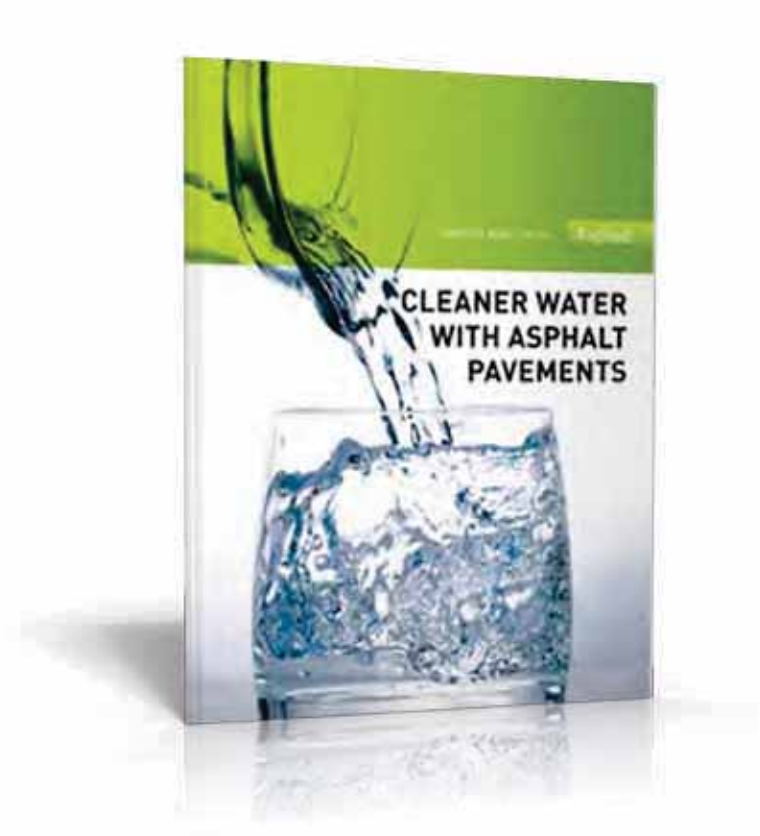
Mount Gambier Airport
Regional airports such as Mount Gambier Airport, offer a different perspective to asphalt surfacing compared to international airports or air force bases. Although loading requirements are generally lower, environmental conditions such as water tables and expansive subgrades can dominate rehabilitation treatments.

At Mount Gambier Airport, Boral® was engaged as part of a design and construct contract to resurface runways and correct the existing shape-loss in the existing pavement. To deliver the scope of works, a mobile asphalt plant was established on site and a dedicated and experienced crew was provided for the duration of the project.

Asphalt mix designs for the airport had to be prepared by trialling various sand combinations and coarse aggregates sources using similar quality assurance regimes applied to larger airports and this has included mobilisation of laboratory facilities to support the job.

As part of the project surveyors initially performed a 'level' survey of the pavement and recommended a strategy for regulation prior to asphalt overlay. Working with the client, the asphalt treatment has been refined to ensure that the quality of surfacing required by the airport authority can be achieved. Works at the airport, totalling about 11,000 tonnes of asphalt, are expected to be completed later this year once weather conditions improve.

CLEANER WATER WITH **ASPHALT PAVEMENTS**



The US Asphalt Pavement Alliance (APA) has recently released a publication highlighting one of the environmental benefits of asphalt pavements – cleaner water.

The report notes that bitumen is impervious to water as well as many other substances. As a result it has been beneficially used by humans for thousands of years. "But", the paper asks, "can today's asphalt pavements - made of five per cent bitumen, a petroleum product, and 95 percent stone - really provide cleaner water? The answer, although it may not be intuitively obvious, is YES."

The paper notes that asphalt pavement has been used extensively throughout the world for over a hundred years. It is therefore a tried and true road pavement material and is 100% recyclable. Asphalt pavement is also the ideal material to use for improved stormwater management, clean drinking water, and reduced roadside pollution.

APA's newest publication "documents the beneficial effects that asphalt pavements can have on water quality," according to Dr. Howard Marks of the National Asphalt Pavement Association. Dr. Marks is the report's principal author and serves as co-chair of the team that produced the document.

When presenting the paper, Dr. Marks remarked that he often encountered questions as to whether asphalt pavement or reclaimed asphalt pavement (RAP) leached petroleum into the earth.

"The answer to these questions is NO. Asphalt pavement's inert quality has been observed in a number of scientific studies that are documented in the white paper. Asphalt pavement has a small carbon footprint, especially compared to other paving materials. Additionally, smooth asphalt pavements save fuel – potentially billions of gallons every year"

In today's world where we are all concerned about the environmental impact of our actions, it is important to note that as well as being the most appropriate road surfacing material it will also not leech out any harmful materials. In fact, bitumen binders are used safely for fish hatcheries and for water pipes that supply potable drinking water. Open graded friction course asphalt can also improve the quality of water run-off.

The report is important reading for those interested in protecting our environment. It also contains a number of valuable references.

The publication, Cleaner Water With Asphalt Pavements?, is available as a free download at http://asphaltroads.org/why-asphalt/cleaner-water-with-asphalt.html.

BITUMEN BANDITS BACK **IN SOUTH AUSTRALIA**

Consumers in South Australia are again being warned to be on the lookout for dodgy bitumen layers after reports they are operating in the Port Augusta and Riverland regions.

State Minister for Consumer Affairs, Gail Gago, said groups of itinerant tradesmen had a history of dodgy workmanship and ripping off consumers.

"These traders are known for door-knocking households and offering supposedly bargain prices to pave driveways," the Minister said. "They are not offering bargain prices, but are in fact, overcharging in addition to being unlicensed to do the job.

"Their workmanship is also of such poor quality that the bitumen paving often breaks up and becomes unusable within a short period. This gives them just enough time to take the consumer's money and disappear, leaving the consumer with false contact details and the considerable expense of repairing or relaying the paving."

The dodgy traders usually claim that they have left-over materials after completing a major roadwork contract and can do a quick cash job at a bargain price.

"Consumers must take caution if these men knock on their door and check for their trader's licence card," Ms Gago said. "Anyone who spots suspicious door-to-door traders offering bitumen paving services should immediately report it to Consumer and Business Services."

Not all states require asphalt pavers to have a traders card. AAPA therefore recommends that consumers never agree to any immediate work on a cash basis without contacting previously satisfied customers. And note that asphalt companies do not have significant material left over from previous work. Instead they would only purchase the material they require for a job from an asphalt or bitumen supplier. If the company says they have left over material, they are more than likely lying.

AAPA has a warning concerning the so-called bitumen bandits on its website at www.aapa.asn.au.

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PAVING COMPLETED FOR AMERICA'S CUP

The Portuguese village of Cascais is a major tourist destination on the Atlantic Ocean. The city has a rich racing history, having hosted the FI Portugal Grand Prix and numerous motorcycle events. And this year, there was the arrival of one of the America's Cup, in August.

Cascais municipality realised it had to make improvements to Avenida Marginal, the waterfront thoroughfare that leads to the village and the main attractions.

The key issue with the road was its drainage. "In times of heavy rainfall, stormwater tributaries accumulate, forming a river and making it dangerous to cars and pedestrians," an engineer for the village of Cascais wrote in a report.

The importance of the street meant the work had to be completed before the America's Cup crowd arrived, but it also had to remain open during construction to cater for seasonal tourists. Sanestradas, a respected paving contractor, was chosen for the job.

Cascais municipality's project involved a one kilometre section of Avenida Marginal. Much of the road's surface was in good shape, with the exception of about 65m – that section of road had been damaged during a building construction project. The 65m also would be the location of a new drainage system, with rainfall channeled via curbs along the remainder of that 1km section.

Directing the water to the drains created another challenge – about 300m of the road was so level that water did not flow.

A simple solution would have been placing a new surface lift with a slightly steeper grade, but that choice was dismissed because of low curbs – and average of only 100 mm. Applying a new bituminous layer to create the grade would have simply caused rain to run over the curbs and flooding would have continued.

Cascais municipal officials proceeded with the new drainage system. The 65m of existing curb was removed, and the ditch floor area replaced with two 200mm layers of crushed aggregate base of extensive granulometry. The base featured irrigation fluidized MC70 bitumen at an impregnation rate of 1kg/m2.

A binder layer with a thickness of 11 cm was placed on top, followed by the wear layer with an average thickness of 6cm.

The remainder of the road did not need new base layers or improvements. Milling crews removed 6cm of material. The paving crew then placed an AC 14 Surf 35/50 (BB) wear layer over the rebuilt and milled portions of the project.

Crews were given just two weeks to complete the work, but the time was actually considerably less because work was only allowed overnight.

In addition, Avenida Marginal had to remain open to traffic with no limitations on Fridays, Saturdays and Sundays to allow tourists to come and go.

Further complicating the project was the requirement to keep traffic circulating, though in a limited manner. This led to a process of milling one lane for two nights, then tandem paving and compacting for the next night.

A Cat® PM102 Cold Planer removed the 6cm of asphalt in the required areas. The PM102 was chosen because its size fitted the narrow road. The machine delivered the required productivity, too, as it had to mill a lane in only two nights.

Because of the tight timeframe, two service technicians from STET, the Cat Dealer in Portugal, remained on the jobsite throughout the night in case they were needed.

When a lane was milled, tandem pavers went to work – delivery trucks end-dumped the material into the pavers.

Sanestradas chose the new Cat AP555E with an AS4252C Screed.

Tandem pavers helped crews meet tight deadlines.

Working just a few meters ahead of it was the tried-and-tested Cat AP655D.

Pedro Santos, project chief for Sanestradas, said the pavers' productivity enabled the job to be completed in a short time.

"With the two pavers working in tandem we succeeded in finishing the job much faster than expected, and with excellent smoothness results," said Sr. Santos.

Three Cat compactors – the CB434D, PS300B and CB34 – kept pace with the two pavers, and met density specifications.

The PS300B worked in breakdown mode, and was right behind the second paver, the AP555E. The longitudinal joint was done "hot," and easily compacted, because the first paver worked only a few dozen meters ahead of the second.

The compactors worked at a distance that enabled compaction and kept pace with the paving train. The number of passes depended on the pace of the paver and the delivery trucks. The compactors treated the two freshly placed mats as if they were one and worked across the entire width of the lane.

The Cascais street had to remain open while the work was done.

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The new Cat® AP555E Asphalt Paver — Big Capability in a New Portable Size.

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APOLLO – ROAD CONSTRUCTION EQUIPMENT WORLDWIDE

Gujarat Apollo Industries Ltd. is a leading manufacturer and exporter of road construction equipment in India.

The company has over 40 years of experience and the manufacturing capacity to supply more than 35 countries world-wide. It produces more than 50 batch type asphalt mixing plants; more than 150 drum type continuous asphalt mixing plants; more than 150 hydrostatic sensor pavers; more than 400 mechanical paver finishers; and other ancillary equipment every year and is a reliable and trusted supplier of road construction equipment.

Gujarat Apollo Industries is a Public Limited company listed on BSE, holding a consolidated position in the road construction industry with annual sales turnover of over USD 70 MLN with all subsidiaries. Apollo products conform to the expectations of the domestic and international market. The company is accredited with ISO 9001:2000 TUV NORD Certification.

Its asphalt plants have their design roots from an association with Barber Greene, USA and NIIGATA Engineering Co. Apollo also has

technical collaborations with companies like Terex USA, Max Peitsch Germany, Vielhaben Germany and Klaus Dieter Sprehe Germany for its various products.

Its capability to develop road construction equipment like Batch Mix Plants, Drum Mix Plants, Wet Mix Macadam Plants, Paver Finishers, Curb Laying Machines, Bitumen Pressure Distributors and Crushers is credited to the world class infrastructure in the leading industrialised city of India and a facility in Rathenow, Germany. The facility has a 1500 strong work force comprising of over 150 engineers which ensures that every production activity factors in adherence to Apollo's established high quality benchmarks.

With majority market share in India and export to over 50 countries in Asia, Africa, Middle and Far East, Europe; plus good references from asphalt plants already supplied to Australia's road contracting community, APOLLO is set to increase its foot print in Australia.

EXTRA-LARGE/LARGE WHEEL TRACKER/SLAB COMPACTOR

IPC Global, a market leader in advanced laboratory asphalt testing systems, has launched the AUSTRACK combination Extra-Large/ Large Wheel Tracker/Slab compactor.

AUSTRACK allows users to perform close to full-scale wheel tracking performance tests on asphalt and unbound granular material on 700mm x 500mm specimens up to 300mm thick; at a fraction of the cost of Accelerated Pavement Tester (APT).

AUSTRACK exceeds the specification for Extra-Large and Large wheel tracking to EN12697-22 and exceeds the specification for Extra-Large and Large roller compaction to EN12697-33.

The sectional moulds enable pavement engineers to test specimens with thicknesses up to 300mm on specimens that are 700mm x 500mm (Extra Large) and 200mm thick on specimens 500mm x 180mm (Large).

The 300mm specimen depth is designed for performing tests of full depth constructions of unsealed unbound pavements, chip sealed pavements and asphalt pavements. For asphalt testing, the insulated heated enclosure allows wheel tracking to be performed at temperatures up to 60°C.

Both Extra-Large and Large wheel tracking are performed using large diameter (550mm and 400mm) pneumatic tyred wheels. This facilitates almost full scale wheel tracking performance tests on asphalt and unbound granular material.

The programmable, automated, non-contact laser rut depth measurement ensures accuracy. The rut depth measurement system can be programmed to take laser readings after a given number of cycles. Therefore, AUSTRACK can be left to run unmanned with the wheel tracker stopping periodically for the automated rut depth measurements.

Laser rut depth measurements can be taken at multiple points across the specimen and multiple points along the specimen length. This gives a matrix of measurements over the specimen for superior materials performance analysis.

Easy specimen handling (note: 700 x 500 x 300 mm specimens are very large and heavy) is facilitated with fold out tracks and roller mounted mould carrier, allowing access for materials handling equipment.

Axial loads of up to 30kN are accurately applied using clean low power consumption pneumatic actuator, digitally servo controlled with IPC Global's integrated IMACS controller. Test set-up, monitoring and analysis couldn't be easier, with IPC Global's UTS software.

AUSTRACK will be of interest to leading research universities, state highway departments and road research organisations.

For further information go to http://www.ipcglobal.com.au/products/product-range/austrack-extra-large-large-wheel-tracker-slab-compactor.html or email sales@ipcglobal.com.au

ASPHALT-REINFORCEMENT GRIDS STAND THE TEST OF TIME

Ochtrup is a municipality in the northwest of the Münster region in Germany bordering the Netherlands. Rosenstrasse, in Ochtrup, runs to the east of the town centre, and as a through road, leads directly to the border of the Netherlands.

A by-pass was built with the aim of reducing the considerable amount of heavy-goods traffic in the town. On completion of the by-pass in January 2005, the former District Road 57 was downgraded to a municipal road, but even today, people frequently use the shorter route along the Rosenstrasse as an alternative to the by-pass.

Initial repairs in May 1996

Damage to the road's substance in the form of map cracking was established along the entire width of the road before repair work on Rosenstrasse commenced in 1996.

The plan to repair the road provided for removing and replacing the 50 mm layer of asphalt wearing course. Once the top layer had been removed, extreme cracking was discovered in the binder and base courses, which were found to be in a very poor condition (see Fig. 1).

This meant it would have been irresponsible to only renew the wearing course as this would have soon allowed cracks from the binder course to progress through to the top layer, making repairs necessary again after a short period.

A prolonged closure of the Rosenstrasse would not have been desirable in view of its role as a through road to the Netherlands.

The renewal of the upper structure would also have caused considerable additional costs.

It was decided to employ the HaTelit® asphalt-reinforcement system (initially as a short-term measure). The aim was to use HaTelit® to prevent cracks in the binder course from progressing through to the top layer with the intention of keeping repair costs low, extending the time between repairs and allowing the condition of the repaired road to be maintained at a high level for longer.

The surface remaining after the wearing course had been removed was, in accordance with the installation guidelines, sprayed with bitumen emulsion.

The asphalt-reinforcement was then placed on this surface and covered with a 50 mm thick 0/11 asphalt-concrete layer.

Project course: June 2002

Six years after the repairs, the HUESKER company asked the Steinfurt District's Chief Executive for a condition report on the Rosenstrasse. The reply stated "I'm happy to inform you that the repairs at the time to Kreisstrasse 57, Rosenstrasse, using HaTelit® 30/13 have fully stood the test of time. The use of the asphalt-reinforcement system under the 0/11 asphalt layer has meant that, to this day, no cracks have appeared in the asphalt-concrete surface. This method was chosen at the time to avoid the necessity of the additional work required for the binder and base course."

April 2009

Almost 13 years after repairs using the asphalt-reinforcement system were undertaken, HUESKER met with the municipality of Ochtrup for a site inspection. Still, no cracks were found on the road surface.

August / September 2009

With the permission of Ochtrup municipality, HUESKER commissioned TÜV Rheinland LGA Bautechnik GmbH to record the cracking and assess the condition of Rosenstrasse along the length repaired in 1996.

The appraisal also compared the current condition with the condition that existed before repairs were carried out. The comparison allowed conclusions to be drawn about whether the use of the HaTelit® asphalt-reinforcement system is able to delay the occurrence of cracks propagated from the lower courses.

In August 2009, a visual inspection was undertaken in accordance with Working Paper No. 9 by the Forschungsgesellschaft für Strassen und Verkehrswesen (FGSV – Research Association for Road and Transport) .

The LGA used the image documentation of the construction measures prepared in May 1996 as the basis for its assessment. The construction supervisor employed by the Steinfurt District at the time also provided additional necessary information.

Result

The cracking condition value (ZWRIS) for the section of the road repaired with HaTelit® was determined as excellent. According to the LGA, the visual inspection of the road surface revealed almost no damage to the substance.

Two repair sites were recorded over the entire section; these, however, were due to work carried out on the drainage system. A few lateral cracks were discovered at one point on the outer edge of the built-up road. Small cracks along the road surface were also found at a few other points on the outer edges (see Figs. 2 and 3).

The photos documenting the condition of the site in 1996 (see Fig. 4 and 5) show that the distance between the HaTelit® system and the road edge was always around 150 - 300 mm. TÜV Rheinland LGA Bautechnik GmbH confirmed: "The entire remaining road area is free of cracks."

For further information go to www.huesker.com

MAJOR BITUMEN INVESTMENTS BY SHELL

Shell Australia has announced two major investments in bitumen facilities to help meet demand across eastern Australia.

The investment will help Shell supply additional bitumen for road reconstruction efforts in Queensland and Victoria that is expected to last for a number of years.

The combined investment of $27 million will create construction jobs in both Brisbane and Geelong, while increased supply will help service civil construction customers into the future.

Shell's marketing general manager, Craig James, announced the construction of a new bitumen facility at Shell's Geelong Refinery, and an upgrade of existing facilities at the company's Pinkenba site on the Brisbane River.

He said the $20 million investment in Geelong would include four new hot bitumen tanks and a new road gantry for loading trucks.

He added the $7 million investment in Shell's Pinkenba bitumen facility would take advantage of the import capability of Shell's new wharf on the Brisbane River, and would double the plant's capacity.

"We view bitumen as a key growth area for Shell's Australian business and these facilities will improve supply to civil contractor customers for many years to come," Mr James said.

"In a country as large as Australia there is a high demand for the bitumen used to construct roads, but we are expecting a spike in local demand caused by flood damage that will last for some years."

Mr James said that as well as expanding Shell's bitumen capacity, the upgrades will support local manufacture of specialty products such as Shell's Multiphalte range - the leading product for Australian airport runway surfacing. This product was recently used on both Adelaide and Melbourne airport upgrades.

"Shell is working with civil contractors and road authorities across Australia to bring technologically advanced bitumen products to market," he said.

WARMPAVE GAINS SUPPORT OF LOCAL COUNCIL

Boral Asphalt recently rehabilitated Sphinx Ave and McPherson Street in Padstow for Bankstown Council using Boral WarmPave asphalt technology.

The project required the existing material from the distressed pavement to be removed and replaced with a new asphalt base, intermediate and wearing courses.

Two thousand tonnes of WarmPave was paved over four nights in the middle of winter, successfully meeting all compaction or density requirements. The moisture content of the mix was below the minimum specification limit despite the fact that Boral had experienced one the wettest July months in history. The use of WarmPave also allowed the paver to lay and compact multiple layers in one shift which would have faced a greater risk and challenge if conventional hot mix asphalt had been used.

Boral's WarmPave made use of a special additive to reduce the mixing and paving temperature of the asphalt by 30°C compared with normal hot mixed asphalt. Measurements taken during production of the WarmPave showed a saving of up to 30% in the amount of fuel consumed vis-à-vis for hot mix asphalt.

The reduction in temperature reduces the amount of fumes and greenhouse gases generated in the production process which benefits the environment and people working and living nearby. This technology also allows for increased use of recycled asphalt to be used without compromising the performance of the asphalt.

Reducing the aggregate temperature ensures that less ageing of the binder takes place during mixing when it is exposed in a thin film to super heated aggregates, generating a more durable mix.

Adding 20% RAP in the mix can be used to offset the risk of the less aged binder causing deform of the mix under heavy traffic loading and at high in-service temperatures if this is a requirement of the application.

These concepts are supported by tests that were performed at Boral's Baulkham Hills Testing laboratory on the WarmPave which showed that:

- Excellent rut resistant can be achieved. To-date, testing with the Coopers wheel tracking machine after 10,000 passes at 60oC has returned results for average rut depth of 2.5 mm for AC28 and 2.8 mm for AC20. According to the Austroads guideline on pavement technology, a value below 3.5 mm is considered as superior performance.
- Less ageing of the binder recovered from the WarmPave is possible compared with what would be normally achieved using new C450 bitumen – in spite of the fact that 20% RAP was used in the mix.
- High resilient modulus values are obtained indicating good stiffness and strength. Values of 6600 and 7000 MPa are in line with what would be typical for a C450 binder.

The laboratory test results that were conducted and the monitoring of the WarmPave will be reported on in a case study.

Boral's results are in-line with the findings and overseas experience with using warm mix asphalt following the recent study tour of the US organised by AAPA. This supports the global movement towards reducing the mixing temperature of hot mix asphalt while aiming to increase the use of RAP to reduce green house gases and preserve non-renewable resources such as bitumen without compromising the performance of the asphalt.

Bankstown Council must be commended for its initiative to use more sustainable technology with environmental benefits for the community and to provide a more durable asphalt product for its roads.

INCREASING INTEREST IN ASPHALT IN A BAG

Asphalt in a bag has been providing its permanent cold patch in 20 kilogram bags to local councils, roadtek depots and mines throughout Queensland for over two years.

It now holds stock in New South Wales, Western Australia and Victoria, and is soon to be in the ACT market.

Asphalt in a bag is looking for stockists to meet increased interest in the product and potential stockists should contact Jackie Thew to express their interest. They can be listed on websites at www.asphaltinabag.com.au and www.matrexaustralia.com.au.

There are currently three different grades of mix:

Mix 7–7 gauge stone – residential roads, car parks – cracks and small potholes;

Mix 10-10 gauge stone – rural roads, highways – larger potholes; and

Mix 14–14 gauge stone – specialised use – extra large potholes.

"Asphalt in a bag is not designed to replace traditional hot mix for road building purposes, but to provide a quick and reliable means of effecting permanent repairs," said Jackie.

"Many asphalt contractors and local councils now use it for repairs and maintenance all around the country."

Manufactured from selective aggregates, bitumen and polymers, the mixture is designed to suit the harshest of weather conditions. With an indefinite shelf life in its bagged form and a minimum of two years in a stock pile, the ready-mix is ideal for maintaining paths, driveways and roads, and can be safely stockpiled awaiting future use.

"Asphalt in a Bag expands and contracts with the surface and will bond to concrete, steel, asphalt and even wood," Jackie explained. "The application of the product is five times faster than the average solution and can be exposed to traffic immediately."

For more information, go to www.asphaltinabag.com.au or telephone 1300 789 967.

THE BENNINGHOVEN BURNER EVO-JET

Constantly rising energy costs, as well as the careful handling of limited resources, require innovative technologies and continuous development.

The Benninghoven Research team has developed the new burner type EVO-Jet which includes an operator friendly controls system. The burner has a modular design and easy access; it is mounted onto a movable base.

With the help of frequency converter technology, the burner-blower speed can be regulated and the oil pump can be regulated independently to work simultaneously throughout the burner's complete range. Therefore, the burner only requires the amount of power which is actually needed for the drying process.

The redevelopment of the silencer combines noise minimisation with improved combustion efficiency. This is achieved by the rearrangement of the air inlets. The higher efficiency is a result of trapping the radiated heat from the dryer endplate and feeding this preheated air to the burner. The energy demand for the preheating of the air is reduced and this results in lowering the fuel costs.

The EVO-Jet burner series has been fully developed and field tested for all kinds of fuel. The energy saving program is enhanced by the fact that Benninghoven already installs the electric motors in accordance with the future IE 2 standard.

For further information contact Bliss & Reels on (03) 9850-6666 or visit www.benninghoven.com.

ROADTEC PROVING ROADWORTHY

Roadtec, part of Astec Australia, has four profilers available in its product range from the RX400 through to the RX900 – three have already sold into the market.

The first was purchased by Road Profilers Queensland to replace an older machine. RPQ general manager, Craig Roubin, said; "We now own and operate two Roadtec RX500s. The RX500 Cold Planer is the perfect machine for the work we do in pavement failure repairs for regional councils, where the material being excavated is limited amounts of asphalt and big amounts of unbound gravel."

When Queensland company, Allens Asphalt, was in need of a one-metre width cut profiler for internal works, it chose the Roadtec RX400. With a big engine and the ability to add a 1.5-metre drum, the machine offered versatility. "Access to parts and service assistance only an hour away in Brisbane was another considering factor," said operations manager, David Bell.

Allens Asphalt has experienced Roadtec service before and Mr Bell said it was impressed this time with the quick commissioning of the machine. "Excellent training was provided both on-and-off-site, which enabled our operators to become proficient with the machine in a short time."

For independent road profiling company, K&L Profiling, ease of maintenance and simplicity of build were key factors when choosing their fifth machine, Roadtec's RX700 half-lane cold planer.

Operations Manager, Lawrence Parry, said; "We were looking for a non-complicated, powerful deep lift machine, plus reliable back-up service."

K&L Profiling's cold planer is due to arrive in November.

The RX700 has a 700 horsepower engine and a 356-millimetre cutting depth, and the Roadtec RX500, RX700 and RX900 cold planers are available with three or four tracks.

Visit www.roadtec.com for more information.

E-KRETE SURFACE TREATMENT FOR ASPHALT PAVEMENT

The article is based on the contents of a letter written by Alfred Crawley, a former official of the Mississippi Department of Transportation to Polycon Manufacturing in the United States.

Polycon is a leading supplier of product in the asphalt sector and its products are distributed in Australia and New Zealand by National Road Sealing (NRS), a provider of crack sealing, line marking and traffic control services in New South Wales and Queensland.

An extract from the letter follows.

This will document our conversation on the advantages of E-Krete for use as a surface treatment for asphalt pavement.

Let me first state that E-Krete has, without reservation on my part, exhibited the best adhesion to either Portland cement concrete or asphalt pavement of any product I have investigated over 25 years in the materials and research area of a state department of transportation.

I retired from the Mississippi Department of Transportation in 1999 with 20 years in hands-on design, construction and maintenance in the pavements and materials area and the last 10 years running a materials pavement research program.

A most attractive feature of E-Krete is the ease of surface preparation and application of the product. There are some fine products for coating applications but most are extremely expensive and usually involve expensive and time consuming surface preparation.

For the specific application of E-Krete as a surface treatment for asphalt pavement, there are numerous performance enhancing attributes. The worst enemies of well-designed and well-constructed asphalt pavement are environmental. Obviously, there are many poor designed and/or poorly constructed asphalt pavements in the infrastructure where traffic loading constitutes the primary destructive force. E-Krete can bring good attributes to these pavements as well. But for quality pavements, E-Krete offers the potential for significantly extending the pavement life.

This extended life comes about as a result of protecting the pavement from the ravages of moisture, sunlight, and high temperatures. It has been well documented that most asphalt pavements are moisture sensitive to some degree. Moisture in an asphalt pavement migrates throughout the asphalt matrix under the influence of traffic forces. A lot of money is spent to produce and construct an asphalt pavement that has very little moisture content. But asphalt and concrete are permeable to some extent and will allow naturally occurring moisture, mostly rain and snow to enter the pavement and fill the air void structure. A high quality surface treatment such as E-Krete provides a moisture barrier to eliminate the intrusion of the vast majority of this moisture.

When moisture in a pavement moves throughout the pavement structure as heavy truck tires knead the asphalt (it's called flexible pavement for a reason), the integrity of the asphalt film is degraded and often times the bond between the asphalt film and the aggregates is compromised. The asphalt film looses some of its adhesive quality. For some aggregates that are especially moisture sensitive, the bond between asphalt film and aggregate can be overcome and the asphalt film separates (called stripping), leaving uncoated aggregates and a loss of structural integrity. Even if stripping does not occur, the moisture often affects the bonding qualities of the asphalt film, resulting in a loss of service life.

In addition to moisture damage, sunlight damages asphalt pavement. The lighter fractions in the asphalt films volatize (commonly called oxidation) and cause the asphalt film to become brittle and lose resiliency. Pavements that do not get regular traffic, such as parking lots and general aviation airports, are especially prone to this type of damage since they do not receive enough kneading action of traffic loading to keep the pavement alive.

Another enemy of asphalt pavement is high ambient temperatures. Asphalt is a visco-elastic material, which means it behaves as a viscous liquid at higher temperatures and as an elastic solid at lower temperatures.

Much of the rutting potential of a pavement is a direct result of the highest temperatures to which the pavement will be exposed. Anything that will lower the pavement temperature will reduce the rutting potential of the asphalt pavement. It is well known that lighter coloured surfaces reflect a higher amount of the sunlight and absorb a lower amount. This results in significantly lower temperatures for light grey coloured surfaces as opposed to black or dark brown surfaces. For hot summer days, the temperature difference between light and dark surfaces can be 10° - 15° F. This difference can significantly reduce the rutting potential of asphalt pavement.

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