



 **BARDON ASPHALT**

The supplier of choice for asphalt
surfacing materials

Aggregate Industries

Welcome and introduction

Supplying high quality asphalt and specialist asphalt products to the UK construction and contracting industry is about more than just delivery of the 'black stuff' - a proportion of it's not even black anymore.

It's also about understanding our clients and customers, partnering with them to meet both their needs and those of the end user across a range of demanding sectors, each with its own set of performance, scheduling and cost criteria.

To do this, we have developed an astonishing range of more than 50 products all supported by total commitment to safety, sustainability and service.

A brief read of this brochure will give you an insight into Bardon Asphalt, how we stand apart from our competitors, and importantly how you can call upon all our attributes to add value to your projects.

Sustainability

Aggregate Industries is the first company in the world to be awarded BRE BES 6001 and certified as a responsible source. The ethos of sustainability carries through to our products, including Life® - a revolutionary sustainable, low temperature asphalt process that provides up to a 45% reduction in carbon emissions per tonne compared to a comparable hot mix product.

Experience

Our products have been used in major highways, ports, airfields and other construction and transportation projects as well the domestic markets for more than 60 years.

Our customers and clients include the majority of major highways contractors, as well as working with clients such as the Highways Agency, Defence Estates, British Airports Authority (BAA) and major developers. We are working with consulting engineers to provide outstanding technical advice or logistical solutions to their challenges.

Aggregate Industries

Aggregate Industries is an international aggregate, construction and building materials group and was incorporated into the Swiss Holcim Group in April 2005.

The group has leading regional market positions in the UK, as well as operations in the Channel Islands and Norway. Aggregate Industries has become a major producer and supplier of primary, secondary and recycled construction aggregates, asphalt, ready-mixed concrete and precast concrete products.

Trading under the Bardon, Yeoman and Express brand names amongst others, the company has a strong reputation among contractors, clients, stockists, small businesses, and has become the supplier of choice for its customers, by delivering value in construction materials and services.

All of this gives us at Bardon Asphalt access to a unique set of resources, knowledge and skills and therefore the ability to choose the most appropriate elements from our business and to perfect our service to you.

Photography

Opposite

Bardon Asphalt's Haughmond Hill plant in Shropshire is part of a network capable of supplying the full range of bituminous products

Bottom

Resurfacing at Silverstone

Aggregate Industries trades under the Bardon Aggregates, Bardon Asphalt, Bardon Concrete, Express Asphalt and Charcon brand names.





Responsible

in everything we do

We are one of the leading asphalt suppliers in the United Kingdom, supplying a full range of both British/European Standard products and proprietary products to satisfy the needs of the transport and construction industry.

We operate a nationwide network of plants with the ability to reach almost all the major UK population centres.

The vast range of asphalt products we make and install include environmental options as well as a number of products designed for specific applications such as motorways, airfields or sports arenas.

Our innovative products include cold-mix materials, high recycled content products, coloured asphalts and low-noise road surfaces. See page 7 and pages 10-12 for more detail on these innovative, sustainable and high-performing products.

Sustainability

Bardon Asphalt, as all parts of Aggregate Industries, has sustainability at the core of its business strategy and has developed a wide range of approaches to sustainable manufacture and construction.

These include:

- Our use of state of the art machinery to maximise energy efficiency with minimal emissions
- Throughout our business we measure emissions, energy usage and waste as part of our key performance indicators. This has also been adopted by some of our key supply chain partners
- The use of mobile asphalt recycling plants to recycle asphalt surfacing into a new base and binder course for footways and minor highways whilst reducing double haulage and handling.

Our position as a manufacturer, and experience with contractors and materials providers (including in-house), enables us to consider the impact of our projects in terms of the whole life of the products used throughout the chain of custody.

With every project we undertake for a client, we are able to suggest sustainable options. Utilising our expertise will not only protect the environment now, but also protect it for future generations.

Photography

Opposite

Contractors resurfacing a minor road in Leicestershire with Life asphalt

Bottom left

Laying our airfield surface course Bardon Airflex at Birmingham Airport

Bottom right

Laying Bardon Hitex on a major trunk road





Key sustainable products

The Responsible Source™

As a supplier and manufacturer of asphalt, concrete and aggregate products, Aggregate Industries has been working for more than a decade to create sustainable solutions for all our markets.

We have been addressing issues such as health and safety, quality control, ethical trading, carbon and water management, biodiversity and social responsibility so that we can offer our customers truly sustainable solutions.

This work has culminated in us becoming the first company in the world to be certified to BRE BES 6001, and certified as a responsible source.

This means that all of Aggregate Industries' products produced in the UK, including Bardon Asphalt products, are certified as coming through an audited chain of custody. Using these products within construction projects where buildings will be registered for BREEAM ratings, or the scheme itself is registered for CEEQUAL, can help maximise potential points and ratings.

Life® - Breathing new Life into asphalt

Life is a revolutionary sustainable mix process that provides the engineering performance of hot mix asphalt yet can be produced and laid at reduced temperatures. Life ensures that much of the binder's light oils are preserved and therefore leads to enhanced durability, long-term performance and an extended product life.

Summary of key Life benefits:

- Dramatically reducing energy consumption with up to an impressive 45% reduction per tonne in carbon emissions
- Enhanced durability through reduced binder aging and long term performance. Standard asphalts will harden by up to 40%. The Life process can reduce this hardening by up to 70%
- Same stiffness and permanent deformation as hot mix asphalt
- Good workability and compaction at reduced temperatures
- Life is installed using conventional surfacing equipment and laying techniques

- Life can be produced using BS EN Standard descriptions, gradings and binder contents
- Life can be used in base, binder and more importantly surface course layers
- Can be used for all infrastructure and commercial asphaltic concrete projects.

The Life process can be applied to all Aggregate Industries' asphaltic concrete ranges produced by Bardon Asphalt and Yeoman Asphalt to BS/EN standards.

Aggregate Industries has an in-house contractor available to install all our products providing a complete project life solution as required. Alternatively other approved contractors can install Life.

Photography

Bottom left

Bardon Thinpave on a major trunk road

Bottom right

Bardon Superflex, A3 Coombe Lane



Case study



St Johns Hill, Shrewsbury

Photography

Right

Life, St Johns Hill, Shrewsbury

Bottom left

Operative mixing Life at Haughmond Hill asphalt plant

Bottom right

Asphalt technician quality check at Haughmond Hill asphalt plant

Bardon Asphalt provided Shropshire Council with a Life® surface course that offered significant reductions in carbon. The 10mm close-graded asphalt demonstrated hot mix equivalence in terms of deformation resistance, stiffness and compactability but was produced and transported and installed at a lower temperature.

Shropshire County Council was looking for a sustainable asphalt that could be used in a base, binder and importantly a surface course layer with a 125 pen. Bardon Asphalt developed a Life mix using half warm mix technology that is not only revolutionary in the UK but also radical in terms of carbon footprint savings.

Produced at Aggregate Industries' Haughmond Hill plant, approximately 130 tonnes of Life 10mm close-graded surface course 100/150 was delivered to St Johns Hill in Shrewsbury. The asphalt was produced at temperatures between 95-100°C and laid at 70-85°C. This meant that the light oils in the mix never reached boiling point (140°C), allowing them to keep their structural integrity and reduce the binder aging process.

Bardon Asphalt not only met the client's sustainability agenda but also importantly satisfied material engineering criteria for durability and performance.

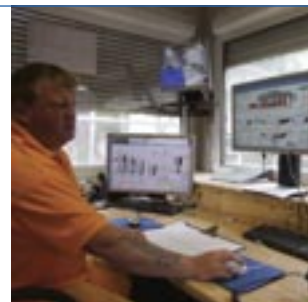
Shropshire County Council were actively seeking more sustainable solutions within their highways programme. Not only was sustainability key, but the product needed to have performance benefits comparable or better than the original material. Bardon Asphalt was able to help on both the sustainability and capabilities of the product.



“ When looking for a more sustainable asphalt solution for Shropshire, Life fulfilled all the right criteria. This was not only down to its sustainability and whole life cost credentials, but also for how well the material could be laid and how Bardon Asphalt supported us throughout the process. ”

Paul Smart, Programme and Contracts Manager, Shropshire Council

- Client:** Shropshire County Council
- Contractor:** Bardon Contracting
- Companies:** Bardon Asphalt and Bardon Contracting
- Product:** Life asphalt
- Quantities:** 130 tonnes close grade surface course



Intelligent resourcefulness

Research and development

We benefit from the resources and capabilities of a highly skilled research and development team, based in the UK, with dedicated laboratory facilities looking at bringing together the products from Aggregate Industries with the latest surfacing technology and innovation.

There is also no substitute for learning from and with our clients, and very often we work together to develop solutions to their challenges. Bardon DrainAsphalt for example has been developed to provide an alternative solution to permeable concrete block paving.

The team have developed many new products to meet the demands of clients, end users and the sectors we work within. As a result our products, methods and services have been recognised by a number of industry accolades.

Health and safety

We know that health and safety is integral in many of our customers' businesses, just as it is in ours. It is vitally important to you, and it is vitally important to us. Throughout our business we have established a deeply embedded health and safety culture, focusing on the single idea that no-one's health should be put at risk by what we do.

As a business, we have signed up to industry initiatives designed to drive down all incidents to zero, and we report our progress in our corporate and social responsibility report (see www.aggregate.com for details).

We have detailed procedures in place for communicating safe practice and potential risks, including a 'Near Hit Hotline' which employees can call 24 hours a day to report any potential incidents which occurred on their sites.

Major incidents and significant near hits result in a 'Safety Pause'. This involves the entire business stopping work and listening (by phone conference) to a live briefing by our Managing Director. This briefing explains the event, its implications to the wider business and what steps can be taken to eliminate the risk of reoccurrence.

The senior management team, alongside external specialists, also deliver regional annual safety road shows. These involve a full day of presentations to every employee covering our safety performance for the previous year and how we can improve as a business.

One small example of how we have improved

We regularly revise our PPE provision based on our understanding of the risks within our operations. For example our incident analysis has identified a trend of upper foot injuries. To prevent these we replaced all safety boots in the business with boots featuring specific metatarsal protection. This action almost completely eliminated upper foot injuries.

Quality and performance standards

We are certified to BS EN ISO 9001:2008 and BS EN ISO 14001, as well as Highway Sector Scheme 14. In addition as part of Aggregate Industries, our products are certified as coming from a responsible source, certified under BRE BES 6001. This is of special relevance when working on CEEQUAL schemes.

Technical services

Our regionally based technical advisors are able to offer specialist help and guidance on all aspects of our products, including specifications, performance and suitability for applications. This service is provided free of charge.

For further information, please refer to Bardon Asphalt technical services on 0845 600 0860 or email techhelp@aggregate.com

Photography

Opposite
Bardon Asphalt supplying at night to the M1 junction 25 to 28 widening project

Bottom left
Signing up to the ABC of safety

Bottom centre
Resurfacing at Brands Hatch

Bottom right
Testing at our research and development department in Derbyshire





Where we can help - key products for key market sectors

Our customers and clients can benefit from our assistance in pavement design and guidance in selecting the most appropriate solutions for the task. Our integrated approach means that technical advice and practical logistical solutions encompass the entire project.

Early Contract Involvement (ECI)

Bardon Asphalt has the ability to deliver real value to any project where our products are utilised. Involving the company at Early Contractor Involvement stage (ECI) could see us tackle the vitally important areas of saving time on the project, saving unnecessary costs, or a combination of the two.

An example could be selecting a porous asphalt such as Bardon DrainAsphalt in a SUDS scheme, eliminating channel and kerb drainage. In this instance, like many others, a slightly increased initial budget will provide an enhanced asphalt product, leading to an overall saving on the project.

Examples of where we have delivered value on an ECI project include:

M1 - Juncs 25 - 28, Derbyshire and Nottinghamshire

M1 - Juncs 10 - 13, Bedfordshire

A3 - Hindhead, Surrey

M6 - Thelwall Viaduct, Greater Manchester (see case study, page 10)

M60 - Juncs 1 - 2 Stockport, Cheshire

On projects where we have been involved early on, many thousands of pounds have been saved, and challenges that could have lead to time overruns have been averted.

Our sectors and key products

Infrastructure/highways maintenance

An area in which we excel, and have developed products with noise reduction, spray reduction, enhanced skid resistance, and increased resistance to permanent deformation. As a major UK asphalt supplier, our products are utilised by most of the UK's major highways contractors, across all types of road and pavement construction. For minor road repairs and footways, including term maintenance work, we have a range of cold lay asphalts some of which can be held in stock for up to a month to be called off when required.

Key products for this sector are:

Specification for Highway Works; Clause 942 materials

A high performance range of polymer modified binder and pen grade asphalt thin surface courses designed for high speed, high traffic volume roads. It is a BBA/HAPAS approved product designed to give long term performance in a durable mixture.

Key benefits:

- Noise reduction compared to HRA surface course exceeds 3dB(A)
- Spray reduction
- Enhanced skid resistance properties

- Excellent resistance to permanent deformation.

Ideal for: motorways and trunk roads.

Bardon Safepave

A thin surfacing asphalt material incorporating polymer modified technology. The product offers excellent spray, noise, and friction and strength characteristics. The material is installed by a paver with an integrated spray bar to deliver a polymer modified bond-coat immediately before the placement of the asphalt mixture. This ensures no degradation of the bond coat.

Key benefits:

- Enhanced spray reduction characteristics
- Noise reduction
- Increased speed of application (to conventional materials)
- Impermeable.

Bardon Safepave is also a clause 942 BBA/HAPAS approved product, therefore ideal for: motorways, trunk roads, other major highways and airports.

Photography

Opposite bottom left
Bardon Airtex being laid at Birmingham Airport

Opposite bottom right
Resurfacing at Bournemouth Airport

Bottom left
Bardon BioSynergy at Quantum Leap, Shrewsbury

Bottom centre
Bardon Airmat, Manchester Airport

Bottom right
Bardon Hitex on M62



Airfields

We produce and install asphalts for both civilian and Defence Estates projects. many of these airfield resurfacing projects have used our specially developed airfield asphalt mixtures to give improved performance.

Key products for this sector include:

Bardon Airmat

A stone mastic asphalt (SMA) derivative designed to meet both the Defence Estates and BAA specifications for SMA. The product is suitable for use in airfield taxiways, aprons and runways where its tough and durable properties provide an economic alternative to traditionally specified Marshall Asphalt. Bardon Airmat has been used successfully for many regional and major airports.

Key benefits:

- Economic alternative to Marshall Asphalt
- Tough and durable
- Good texture that does not require grooving - appropriate for light runway use.

Ideal for: Airfield taxiways, Airfield aprons, runways on smaller airports.

Bardon Airflex

A range of advanced airfield asphalt mixtures appropriate for use in runways and taxiways designed to comply with the French airfield standard Béton Bitumineux pour chaussées Aéronautique (BBA). For runway use, the surface course mixture is normally not grooved, however the mixture has been independently assessed to show that it can receive grooving to provide a more economic alternative to traditional grooved Marshall asphalt.

Key benefits:

- Applicable for heavy duty airfield use; both taxiways and runways
- High level of rut and scuffing resistance
- Can be grooved for runway applications
- Available as a standard penetration grade binder or polymer modified for more heavy duty use.

Ideal for: Airfield taxiways, airfield aprons and runways.



Where we can help - key products for key market sectors

Commercial and industrial

These particular types of building projects contain a mixture of surfaces, including car parking, driveways, and on-site service or access roads. Specialist permeable asphalts to deal with water runoff, coloured asphalts, and high strength asphalts for loading areas all feature here. Our products are also suitable for industrial use, especially in areas subject to HGV traffic, or in areas where fuel spillages may be an issue.

Key products for this sector are:

Bardon DrainAsphalt

As many new buildings now require SUDS, Bardon DrainAsphalt is permeable asphalt which allows water to pass freely through to the underlying structure. The product comes in various sizes to suit a range of applications and can be combined with our wide range of other sustainable drainage products to offer the perfect solution.

Key benefits:

- Porous material allows surface water to drain
- Developed for use as an asphalt porous surface and binder course component in a SUDS pavement
- Reduced surface water spray and headlight glare in wet weather
- Inverted texture provides traffic noise reduction.

Ideal for: Retail parks, car parks, office developments, industrial units.

Bardon Synergy

A range of distinctly coloured asphalts that uses a translucent penetration grade binder. The special binder is readily pigmented and provides a wide range of asphalt colours including red, green, yellow, white and blue. The intensity of colour can be varied by altering the amount of pigmentation enabling subtle colours that harmonise with site surroundings to be achieved.

Key benefits:

- Allows option of visual variety for road surfaces and public areas
- Allows clients to enhance safety through colour-coded demarcation areas
- Can lead to a significant reduction in the energy required for lighting and improve visibility and safety
- Bardon BioSynergy available which utilises binder technology manufactured using plant based renewable ingredients.

Ideal for: Prestige schemes, commercial offices and car parks, bus lanes or other demarcated areas.

Domestic

We are able to offer a number of products suitable for estate roads and individual or shared driveways. These include long life asphalts, low noise products and coloured asphalts. Also of importance is permeable asphalt for SUDS applications, especially in light of new guidelines for driveway drainage.

The key product for this area is:

Bardon Prodrive

Bardon Prodrive asphalt has been specifically designed for domestic drives to give an aesthetically pleasing finish whilst being tough enough to cope with the demands of wear and tear from shear forces exerted by the turning wheels of private vehicles. Prodrive is also available as a part of our Plus range (Bardon Prodrive Plus) to give additional properties such as fuel resistance and better hand-laying performance through use of a modified binder.

Key benefits:

- Aesthetically pleasing
- Tough and durable
- Highly resistant to scuffing and tearing from tight turning vehicles
- Fuel resisting properties and improved laying workability.

Ideal for: Domestic drives, communal car parks, cycleways, pedestrian areas.

Photography

Opposite

Bardon Leisuretex

Bottom left

Bardon DrainAsphalt,
Croydon

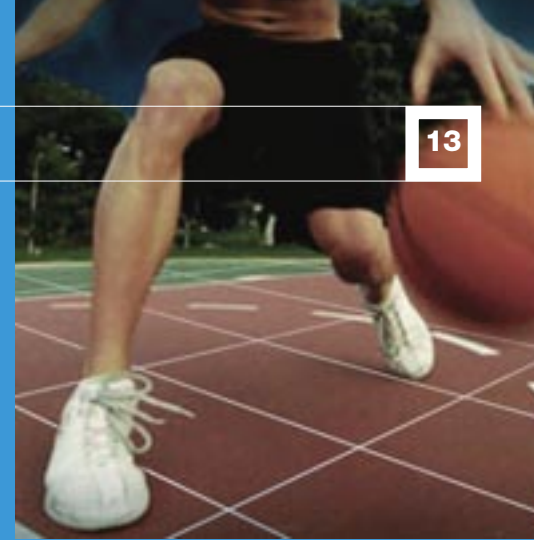
Bottom centre

Bardon Colourtex

Bottom right

Bardon Prodrive





Sports and leisure

A further area of expertise where our enhanced product range is second to none. Applications include tennis courts, as well as Multi Usage Games Areas (MUGA's); permeable asphalt products also feature here. Specialist products are available for use on motor racing circuits (we have resurfaced both Silverstone and Brands Hatch), go-kart tracks and test tracks, with extra grip for maximum safety.

Key products for this sector are:

Bardon Leisuretex

Bardon Leisuretex is a range of asphalt products designed to meet job specific requirements and offer a range of benefits for tennis courts and MUGAS. A selection of binders are used, including both normal penetration grades, polymer modified grades and our Plus binder, to provide job specific requirements and benefits. Leisuretex can also be produced as a coloured product.

The range includes:

Bardon Leisuretex Multi Use

Leisuretex Multi Use is the ideal product for MUGA's where the area is used for a variety of activities including basketball, hockey, football and netball.

Bardon Leisuretex Tennis Court

Leisuretex Tennis Court is a fast draining material that is designed to meet the stringent demands of this sport. It is fully compliant with the requirements of the sports governing body.

Bardon Leisuretex Binder Course

Leisuretex Binder Course materials are available in 10, 14 and 20mm aggregate sizes, to suit their application and are recommended binder course materials for our Leisuretex surface course options.

Key benefits of the Leisuretex range are:

- Free draining, allowing for commencement of play after 10 minutes of heavy rainfall with an appropriate sub-base
- Plus range offers increased resistance to scuffing and reduces the potential for softening in extreme temperatures
- Produced in tennis court and multi games area grades.

Ideal for: Tennis courts, multi use games areas, school playgrounds.



Bardon Asphalt

associated companies

Bardon Asphalt deals with commercial scale asphalt production. However Aggregate Industries has a number of companies that are able to service other market areas.

Yeoman Asphalt

The company specialises in supplying quality asphalt to the construction industry in the South East of England. It utilises aggregates that are transported into the region by rail, road or sea, bringing them into our network of production units, where the asphalt is produced.

Yeoman Asphalt supplies a full range of both British and European Standard products and proprietary products to satisfy the needs of the transport and construction industry, and has supplied to many major road and infrastructure projects in the South East.

Express Asphalt

Fast and efficient, Express Asphalt supplies small loads of asphalt throughout the UK, (either collect or delivered) for smaller commercial, DIY applications and is used extensively by utility companies.

Each depot can manufacture and supply a range of specialist asphalt products in addition to the British standardised asphalts, taking orders from as little as ½ tonne loads.

The range is similar to Bardon Asphalt, incorporating asphalts and pre-coated chippings, coloured asphalts, Type 1 granular sub-base aggregate and complementary products.

Benefits of using Express Asphalt:

- More depots in urban areas than any other supplier saving time and money
- Depots dedicated to making the task of collecting asphalt easier
- Dedicated staff providing help and assistance when ordering
- Wide range of materials suitable for all types of surfaces
- Rapid small load turnaround.

Bardon Contracting

As one of the nation's leading surfacing contractors and strategic supply chain partners, Bardon Contracting consistently provides quality highways installation and construction services to clients in both the public and private sector.

The company is engaged on the Highways Agency's major projects and Local Authority term maintenance contracts and frameworks; where our depth of resources for asphalt surfacing is supported by extensive asphalt supply capabilities from Bardon Asphalt. For certain asphalt types which require installer knowledge and training, then Bardon Contracting acts as approved installers.

Bardon Contracting is complemented by Moxon Traffic Management, the largest traffic management operator in the UK, as well as Bardon Composite Pavements and Bardon Construction.

Photography

Opposite

Bardon Contracting resurfacing near Glencoe

Bottom left

Bardon Contracting laying red asphalt track at the Emirates Stadium

Bottom centre

Express Asphalt delivery truck

Bottom right

Shipping aggregates from Yeoman Glensanda to Northern Europe and Southern England





Case study

M1 junction 25 - 28 widening

This case study shows how an integrated approach to a project adds value.

Background

Aggregate Industries has supported the MVM JV (Morgan Est/Vinci/Sir Robert McAlpine) in the execution of the M1 widening contract between junctions 25 - 28 in the East Midlands.

The project has taken three years and was completed ahead of schedule.

The challenge

This widening of a three lane section of motorway to four lanes will ease a notorious congestion hotspot around Nottingham and the East Midlands Airport area. Improved infrastructure is seen as vital in attracting business to the East Midlands region.

Aggregate Industries solutions

This project has seen several Aggregate Industries companies working together to provide a complete solution for the client. These were Bardon Asphalt, Bardon Contracting, Bardon Aggregates, and Moxon Traffic Management.

During the preconstruction stage of the project, Bardon Asphalt was involved with the client in an Early Contractor Involvement (ECI) process alongside Bardon Contracting. This involved evaluating pavement construction and assistance with the finalisation of scheme designs and programme phasing of the works. The phasing of the project required up to 50,000 tonnes of asphalt in a single month, co-ordinated with the contractors, and the haulage sub-contractors. The majority of the asphalt for the project came from the Bardon Hill asphalt plant, utilising hardstone aggregates from the neighbouring quarry.

Delivery to the contract went smoothly, even in some difficult weather conditions experienced during the life of the contract.

Moxon Traffic Management's services comprised temporary traffic management, temporary vehicle barriers, vehicle recovery, temporary CCTV monitoring and speed detection; using experienced in-house resources and supply chain partners. Moxon Traffic Management has maintained a constant presence on-site since works commenced providing routine maintenance, major phase change overs and emergency response services along the route of the works.

Bardon Contracting installed the asphalt for the construction of an extra lane in each direction requiring close liaison and co-ordination with other major activities taking place on this project.

Using our all round capability for the M1

Harnessing the all round capability of all of the Aggregate Industries companies, including Bardon Asphalt, and the robust control we have over the co-ordination of our internal supply chain, has facilitated the efficient delivery of the works, whilst maintaining the very high standards of quality for the manufacturing and laying of asphalt materials.



Photography

Bottom left

Trucks on site

Bottom right

Resurfacing in progress with three lanes of live traffic in each direction

Client: Highways Agency
Contractor: MVM Joint Venture
Consultants: WSP/Gifford
Project Partner: MVM Joint Venture

Companies: Bardon Asphalt, Moxon Traffic Management and Bardon Contracting
Products: Bardon Asphalt - EME2, Bardon Asphalt Hitex Surface Course, DBM, 400,000 tonnes in total. Traffic management services and contracting



Case study

M6 Thelwall Viaduct (north and southbound)

Photography

Below right
Resurfacing works
in progress on the
Thelwall Viaduct

Bottom right
Decking structure of the
Thelwall Viaduct

By contributing to an Early Contractor Involvement (ECI) process, Bardon Asphalt was able to suggest an alternative material for the works, saving both time and money on this prestige project.

Background

At the same time as deck bearing work was going on underneath the viaduct, resurfacing work was taking place above, making use of the necessary traffic management programme.

The challenge

The Thelwall viaduct has its own micro climate, in that it is very exposed to wind, and can get very cold. The project was to be laid during the winter months, and needed to be open over the Christmas holiday period. However analysis of the project also showed a south facing area with a gradient, which in summer could be prone to rutting from slow HGV's if certain materials were used. There should also be no water ingress that could damage the bearings and joints below.

Bardon Asphalts solution

Initially, it was proposed that 50mm of HRA surfacing was planed away, and replaced with 30mm of HRA binder course surfaced was a 20mm layer of thin surface course material. However Bardon Asphalt was able to point out that laying 20mm of a HRA surface course could be problematic on this site, as the product would cool quickly, possibly before compaction had been achieved. This would lead to a poor surface, and a rapid deterioration, with the pavement not lasting as long as anticipated.

As a result of discussions two alternative solutions were put forward, and the contractor, WS. Atkins, was able to choose between them.

In this instance, a departure was made from the original design to use a single layer reconstruction. 45-50mm of the in-situ surface course would be planed off to remove the existing surface course, thus avoiding the risk of de-lamination. This would then be surfaced with 45-50mm of Bardon Hitex CI942 surfacing and a 14mm nominal aggregate would be utilised for this thicker single layer installation. This product would out perform the HRA binder course in terms of deformation resistance whilst achieving good resistance to fatigue cracking. This is achieved through the polymer modification of the bitumen in the materials, which also resists water ingress.

The extra layer thickness would provide a greater window of opportunity for compaction to refusal density. Using this method the contractors had substantially more confidence in delivering a durable pavement system with excellent ride quality.

ECI involvement gets results!

The works took place in the December period, with constant quality assurance checks being made on the material. The Christmas deadline was made and the north-bound viaduct fully opened on the 22nd December in time for the Christmas holidays.

Ride quality and surface characteristics are vastly improved and the surface will be durable and much quieter for many years to come.

The early involvement of the specialist surfacing contractors in the project had delivered an excellent job on time with minimal disruption to the programme.



- Client:** Highways Agency
- Contractor:** WS. Atkins
- Company:** Bardon Asphalt
- Products:** Bardon Hitex C1942



Case study

Silverstone race track resurfacing and construction

Silverstone race track required some design upgrades and track improvements to meet new regulations, including a new section of track (lengthening it by 761 metres), five new corners and extensive construction of new hardened run off areas, specifically designed to enhance safety in preparation for 2010 British MOTO GP and the Santander British Formula1 Grand Prix races.

Project objectives

Main contractors, Buckingham Group, were awarded the contract to carry out the improvements. These were for construction of 50,000m² of run off areas and 30,000m² of new track, realignment and upgrade of a further 15,000m² of existing track, improved access and safety features, and additional ancillary works. Buckingham and Bardon Asphalt both have a long history of working at Silverstone. Both companies were involved in the last major track upgrade carried out during the late 90s. The scheme had to be brought in on time, and to budget, with the quality of the surface paramount.

Bardon Asphalt solutions

The Bardon Asphalt team had an early involvement with the scheme, and were tasked with reviewing the specified design with a view to offering alternative pavement solutions that offered a similar performance but reduced overall costs.

Only about 20% of the track was subject to the upgrade so it was essential that we matched the characteristics of the existing track in relation to the newer running surface. Bardon PRIXMAT, a specialist racing surfacing course, was the obvious choice.

Aggregate for the Bardon PRIXMAT was supplied from Bardon Hill quarry to match the existing race track surface previously supplied and laid by Aggregate Industries.

A consistent, high quality surface across the 15 metres width of track was achieved by laying both the Pad Coat and Bardon PRIXMAT surface layer using three paving crews laying in echelon, spanning the full track width in one pass. This was the first time this technique had been used in this type of application in England, and ensured a surface laid to very high tolerance, with no visible joins or gaps.

With Buckingham Group, we evaluated the pavement design for the run off areas and were able to provide substantial savings for our client whilst achieving their specification requirements.

Works commenced November 2009, programmed completion date was March 2010.

There was a twelve week window for the works to fit into Silverstone's programme.

Photography

Below
Resurfacing at Silverstone using Bardon PRIXMAT

Bottom right
Silverstone



Client:	British Racing Drivers Club, Silverstone
Contractor:	Buckingham Group
Architect:	Populous (London)
Companies:	Bardon Asphalt, Bardon Aggregates and Bardon Contracting
Products:	Track: AC 32 HDM base 40/60, SMA 6 Surf 40/60, Bardon PRIXMAT 10 Run off areas: AC 20 HDM 40/60, SMA 10 40/60 Ancillary works: AC 10 OGSC, AC 20 DBM bin 100/125, AC 6 DSC



Aggregate Industries

The complete service

Bardon Asphalt uses products and resources from companies within the Aggregate Industries group.



Aggregates

Bardon Aggregates supplies crushed rock, sand and gravel and fill materials. These can be delivered by road, rail or marine transport.

Tel: 01455 285 200

Email: midlands.sales@aggregate.com



Express Asphalt

Express Asphalt offers a fast, efficient collect or delivered service of small loads throughout the UK. Both standard and specialist products are available.

Tel: 0845 075 7799

Email: express.asphalt@aggregate.com

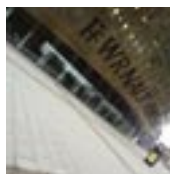


Contracting

Bardon Contracting complements Aggregate Industries' construction materials portfolio through its involvement in surfacing, traffic management, composite pavements and civil engineering contracting works.

Tel: 01530 510 066

Email: bardon.contracting@aggregate.com



Hard landscaping

Charcon flag paving, block paving and kerb products are available in both concrete and natural stone. Surface water drainage and SUDS are also part of a wide ranging product portfolio.

Tel: 01335 372 222

Email: sales.charcon@aggregate.com



Ready-mixed concrete

Bardon Concrete (and London Concrete within the M25) offers a complete range of ready-mixed concretes and screeds, operating from over 90 sites. The Elite Minimix operation caters for smaller loads.

Bardon Concrete

Tel: 01283 714 187

Email: bardon.concrete@aggregate.com



Structural products

Charcon Construction Solutions offers precast concrete solutions for structural applications, including precast stairways, retaining walls, bridges, flood defence, street furniture and service protection.

Tel: 01226 779 092

Email: sales@precasthq.co.uk

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