Each year the Asphalt Industry Alliance (AIA) commissions an independent survey of local authority highways departments in England and Wales. Its aim is to take a snapshot of the general condition of the local road network, based on information provided directly by those responsible for its maintenance, thus providing a means of tracking any improvement or deterioration. At the same time, questions are asked related to funding, the type of maintenance carried out and the issues affecting maintenance service levels, to help provide context to the results.

Questions in the survey relate solely to the maintenance of the carriageway itself – the road surface and structure – and only that part of the total highway maintenance budget which covers the carriageway specifically. (The total highway maintenance budget covers other significant areas of expenditure including structural work to bridges, street lighting, cyclical maintenance for example grass-cutting, checking traffic signals and the replacement of street furniture, which are excluded from this survey.)

ALARM 2016 is the AIA’s 21st annual survey. Just over 56 per cent of authorities responsible for roads in England and Wales responded.

This report summarises the key findings.

The survey was carried out during January and February 2016. Unless otherwise stated, the findings are based on the financial year 2015/16, ending 31 March 2016. Where these are unavailable, figures for the calendar year 2015 were requested. References to “last year” relate to the financial year 2014/15.

There are four authorities in England, and one in London, which have Private Finance Initiative (PFI) contracts in place to fund and manage their highway maintenance programmes over a 25-year period. These are not included in the survey.
The ALARM survey 2016 includes the findings of both quantitative and qualitative research and the results have been collated and analysed by an independent market research company.

Media and other organisations quoting directly from the report should acknowledge the ALARM survey 2016 as the source.

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Getting closer to the edge

Introduction by Alan Mackenzie, Chairman, Asphalt Industry Alliance

The findings from this year’s ALARM survey paint an unsettling picture, with the cumulative effect of decades of underfunding taking their toll. The quantitative and qualitative data suggests that further decline lies ahead for the local road network on which we all rely.

While the report shows that Welsh and London councils have experienced a slight rise in overall road maintenance budgets, in England these have fallen by 16% on last year, compounded by the fact that the proportion of those budgets spent on the carriageway itself has also dropped across all areas. These trends are reflected in the overall increase in the average annual shortfall per authority – the amount needed to keep the carriageway in reasonable order – which is up by almost 50% from £3.2 million last year to £4.6 million.

However, the amount local authorities need to bring the roads up to scratch remains fairly static for all areas, although it is still an eye-watering £11.8 billion (against £12.2 billion last year).

This indicates that, despite having less funding to maintain our roads, the amount needed to fix the network is remaining constant. In other words local authorities are achieving “more with less” as a result of improved efficiencies.

Local highways teams are facing increasing pressures on resources, both in terms of people and funding, but better processes and a focused approach, as a result of the adoption of Highways Asset Management Plans (HAMPs), is enabling them to act smarter with less money.

Almost all English authorities have now adopted an asset management approach, as recommended by the Department for Transport’s Highways Maintenance Efficiency Programme (HMEP), and this is supporting informed decision-making about how, when and where money is spent. Nevertheless, we must not forget that the combination of sustained underfunding, together with continuing budget shortfalls, will lead to further deterioration.

Proactive long-term planning lies at the heart of good asset management. The vast majority of respondents to the ALARM survey stated that security of funding helps to provide a better and more durable network, with more than 60% agreeing that five years is the optimum term to plan maintenance spending. It is therefore disappointing that the budget figures reported in this year’s survey indicate that central government pledges to spend £5.8 billion, or £976 million a year, between 2015/16 and 2020/21, which were reaffirmed in last summer’s Spending Review, have yet to be felt in practical terms at local authority level.

For the first time this year the survey asked about the move in England towards incentive funding based on self-assessment. This new performance-based strategy is a complete step-change from highways maintenance funding “by right” and will impact capital budgets from the 2016/17 financial year. By 2018/19 it will represent a quarter of the funding available to local highways authorities. To drive efficiencies, councils have to self-assess on asset management, resilience, customer satisfaction, benchmarking and efficiency, and operational delivery. Only 3% of respondents placed themselves in the highest band 3 for 2016/17. So, with all councils needing to reach this band by 2018/19 to maintain current capital funding levels, there is a significant challenge ahead and some do not think they have the resources to achieve this.

Feedback also suggests that increasing emphasis is being placed on prioritising maintenance on key routes, indicated by a drop in the number of roads respondents classed as being in good structural condition – those with 15 years or more of residual life. This is concerning, as it suggests a move towards “managed decline” on parts of the local network. It also explains why the amount spent on reactive maintenance appears to be fairly stable and not falling as one might expect.

This year’s ALARM survey shows that clearing the maintenance backlog remains out of reach for most local authorities. The full effect of longer, wetter winters on poorly maintained roads can take a number of years to be fully realised. This, coupled with increased traffic, an ageing network and prolonged under-investment in our local road network means that its resilience is continuing to be tested.
## Key findings

<table>
<thead>
<tr>
<th>Highway maintenance budgets</th>
<th>TOTAL*</th>
<th>England**</th>
<th>London</th>
<th>Wales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of authorities responding</td>
<td>↑56%</td>
<td>↑61%</td>
<td>41%</td>
<td>↑55%</td>
</tr>
<tr>
<td>Average highway maintenance budget per authority</td>
<td>£16.2m</td>
<td>£19.8m</td>
<td>£9m</td>
<td>£7.8m</td>
</tr>
<tr>
<td>Percentage of highway maintenance budget spent on carriageway</td>
<td>52%</td>
<td>55%</td>
<td>43%</td>
<td>47%</td>
</tr>
<tr>
<td>Average carriageway maintenance budget</td>
<td>£8.4m</td>
<td>£10.9m</td>
<td>£3.9m</td>
<td>£3.6m</td>
</tr>
</tbody>
</table>

### Shortfall

| Total shortfall in annual carriageway maintenance budget | £791m | £623m | £86.7m | £81.2m |
| Average annual carriageway maintenance budget shortfall per authority | £4.6m | £5.3m | £2.7m | £3.7m |
| Estimated time to clear carriageway maintenance backlog | 14 years | 14 years | 16 years | 7 years |
| Estimated one-time catch-up cost | £11.8bn | £10.4bn | £706m | £703m |
| Estimated one-time catch-up cost per authority | £69m | £88.8m | £22.1m | £31.9m |

### Road condition

| Frequency of road surfacing (all road classes) | 57 years | 65 years | 26 years | 59 years |
| Number of potholes filled over past year | 2,190,026 | 1,944,092 | 131,151 | 114,783 |
| Average number of potholes filled per authority last year | 12,807 | 16,616 | 4,099 | 5,217 |
| Average cost to fill one pothole as part of a planned programme | £53 | £47 | £80 | £49 |
| Average cost to fill one pothole as a reactive repair | £64 | £56 | £94 | £64 |
| Total spent filling potholes in past year | £118.4m | £100.6m | £11.4m | £6.5m |

### Compensation claims

| Amount paid in road user compensation claims | £13.5m | £8.9m | £4.1m | £486k |
| Staff costs spent on claims (per year) | £15m | £9m | £2.4m | £3.5m |

* England, London and Wales
** excludes London

↑ Up from ALARM survey 2015
↓ Down from ALARM survey 2015
|= Same as ALARM survey 2015
Highway maintenance budgets

The total highway maintenance budget covers all areas of expenditure including structural work to bridges and cyclical maintenance, for example grass cutting, checking traffic signals and the replacement of street furniture.

The budget allocated for engineering maintenance of the carriageway structure and condition – the surface – is just one part of this total. It is funded by central government – through Transport for London (TfL) in the capital and the Welsh Assembly Government in Wales – and funds allocated are not ring-fenced for highway maintenance; they can be re-allocated to other local services at a council’s discretion.

The survey results paint a mixed picture. In England (excluding London), the reported average local authority 2015/16 budget for highway maintenance saw a decrease of 16% from £23.4 million last year to £19.8 million this year. This was unexpected due to the government’s commitment to £6 billion of funding for local road maintenance over six years, which began this financial year, but appears not to have yet been seen by local authority highways teams.

London respondents, however, indicated a healthy 20% increase in average overall highway maintenance budget for 2015/16 – up to £9 million, from £7.5 million last year. Despite this, feedback suggests this is due to additional borrowing by individual boroughs as funding through TfL has remained consistent over the last few years.

In Wales, the reported average total road maintenance budget has remained in line with last year’s findings at £7.8 million (2014/15: £7.5 million). Further investigations have, however, highlighted a wide range within this average, with a number of councils seeing significant additional funding (both from bidding for additional Welsh Assembly Government funds and prudential borrowing), while others have seen their budgets cut and funds diverted into other areas. The indicated total highway maintenance budget across England (including London) and Wales has decreased by around 10% to £2.8 billion, from £3.1 billion in the previous financial year.

Structural maintenance budget

More than half of the total road maintenance budget was spent on structural maintenance, i.e. the carriageway itself, although all regions recorded a drop in this percentage (England: 55%; London: 43%; Wales: 47%). This was indicated to be because more funds are being used for other capital works such as the construction of new cycle paths, junction improvements and signage. Almost all local authorities (95% of responses) indicated that they spent all of their total allocation.

This indicates that the total structural maintenance expenditure across England and Wales in 2015/16 was £1.5 billion, compared to the estimate of £1.8 billion the previous year (down by 20%).
**Level of over-spending**

The proportion of authorities over-spending their annual maintenance budget has seen a large decrease in England, at just 6% for 2015/16 (compared with 18% last year). Feedback suggests this is due to greater forward planning and increasingly stringent financial controls to ensure authorities remain within budget. In addition the majority of highways departments are able to carry some of their unspent capital maintenance budgets over into the following financial year to allow for a planned programme of activity and better weather in which to deliver best practice.

A similar story has been recorded in Wales with the percentage of authorities overspending decreasing from 25% last year to 18% in this. While the figure for London is consistent with last year at 23% (22% in 2014/15), it is likely that the much lower figure recorded in the capital in 2013/14 (17%) was a result of the beneficial legacy of works carried out for the 2012 Olympics.

**Reactive maintenance**

The average proportion of the road maintenance budget spent on reactive maintenance (that not planned for at the beginning of the year) has remained consistent with last year’s results in England (22% this year, 23% last) and Wales (no change at 34%), while London has seen an increase in that proportion of almost 10% (from 29% in 2014/15 to 32% in 2015/16).

The results acknowledge that there are always unforeseen circumstances which can create an immediate need for reactive maintenance to keep the roads safe and serviceable. It is extremely difficult for councils to predict the percentage of budget required for this kind of work, but it is generally agreed that a provision of 15% could be considered ‘ideal’ – consistent with last year’s findings.

The level of reactive maintenance required is a good indicator of the overall state and resilience of the roads: the better the condition of the road, the less likely the need for unplanned repairs.

"Many roads in our network are coming to the end of their structural life. The days of being able to patch and repair are gone – they need replacing. We need to make the next big investment to improve our roads now."

"There is a bow wave of deterioration coming in the next five to ten years."

These and other quotations are from local authority highways officials.
Highway maintenance budgets continued

**Unforeseen costs**
Over one third of all respondents indicated that they had to cope with unforeseen costs, primarily those areas worst hit by the effects of adverse weather conditions, although all survey areas recorded an increase. Our weather is changing and the trend of wetter winters with more intense downpours continued in 2015/16. Winter is the most severe threat to the condition of our roads as it can cause the formation of potholes and, in time, undermine and compromise the lower, structural layers. If not quickly rectified, this can lead to both costly and time-consuming to repair.

The impact is particularly acute on roads that are poorly maintained as they are likely to be more susceptible to water damage and therefore less resilient.

In England, 32% of authorities reported unanticipated costs (31% last year), while the figure was slightly higher in London at 31% (28% last year). Welsh authorities recording unforeseen costs has increased by more than a quarter from 44% last year, to 60% this.

Although the overall number of authorities having to cope with unforeseen costs has remained stable in England (excluding London), there has been a dramatic reduction in the average additional cost incurred. Last year’s survey showed the cost impact was £5.7 million per authority, while this year’s responses indicate an average of £2.5 million as a result of a comparatively quieter winter in weather terms.

London’s average bill also dropped by more than half to £345,000 (from £810,000 in the 2015 survey) but Wales has seen the average additional cost increase slightly to £513,000 (up from £475,000).

At the time of preparation of this year’s ALARM survey, the full impacts of the storm damage from December 2015 and January 2016 was unknown.

**Longer term funding**
The vast majority of authorities (98% of all respondents) have again stated in this year’s survey that they believe longer term funding aids efficiency and helps to provide a more durable road network. More than 60% quote five years as the optimum term for funding but a significant proportion (31%) think 10 years is the ideal period.

Security of funding over time helps authorities plan with more confidence and drive greater efficiency. It has been demonstrated that planned preventative maintenance resurfacing is 20 times less expensive per square metre than reactive work, such as patching and filling potholes.

**Changes to funding structure**
From this April (2016) a new incentive-based element for highways maintenance funding, introduced by the Department for Transport, takes effect. By the financial year 2018/19 it will represent a quarter of all funding available to local authority
highways teams in England (excluding London) and Wales.

In order to secure this additional funding element, local authorities have had to respond to a 22-stage questionnaire covering asset management, resilience, customer satisfaction, benchmarking and efficiency, and operational delivery. The answers they gave determine which of three bands they are placed in, and therefore how much additional funding they can expect to receive, with band 1 at the lower end and band 3 at the highest end.

The approach, consistent with Highway Maintenance Efficiency Programme (HMEP) principles, aims to promote continual improvement in efficiency and means that councils still in band 1 in 2020/21 would receive no incentive funding at all.

All councils must reach band 3 by 2018/19 if they are to maintain even their current level of funding.

Responses to this year’s ALARM survey suggest that very few authorities place themselves in band 1 (16%), with the majority (81%) in band 2 and just 3% in the highest, band 3.

Driving efficiency

The vast majority of local authorities in England responding to the ALARM survey (England: 98%; London: 83%) are participating in the HMEP, while Wales is developing its own approach, but still based on highway asset management.

Over three quarters (78%) of authorities across all regions have completed their Highway Asset Management Plan (HAMP) and had it formally approved by their individual councils. While more than half report that they refer to their HAMP at least quarterly as a means of influencing their structural maintenance programme, only 57% report that using it has provided quantifiable time and/or money savings.

Collaborative working

Almost all of the local authorities which took part in this year’s survey reported that they were – or were considering – working with other neighbouring local authorities, demonstrating the desire to improve efficiencies by sharing best practice and benchmarking in, for example, procurement and service delivery.

A smaller, but significant, proportion of local authorities in England and London (36% and 42% respectively) reported that they anticipated increasing opportunities to collaborate with Highways England to deliver maintenance activities.

“Asset management is being promoted as the solution to the problem: it isn’t. It will allow us to make better informed decisions about how and where they money is spent but in the end it comes down to the fact that there isn’t enough funding.”

“Asset management does make our money go further but there is still not enough funding to prevent the network from deteriorating.”

“Even if we get to band 3 we will only be getting what we were before – there is no extra money in my view.”
Shortfall

Budget shortfall
The shortfall is the difference between the annual budget that highways departments calculate they require to keep the carriageway in reasonable order and the budget they actually receive.

The reported shortfall in annual maintenance budget has seen a significant increase in England and London.

In England (excluding London) the average shortfall figure has increased by over 40% from £3.7 million last year to £5.3 million this, while the figure in London has more than doubled (from £1.2 million last year, to £2.7 million this) despite an increase in overall road maintenance funding in the capital.

Wales has seen the average shortfall remain the same at £3.7 million.

Feedback suggests that long term underfunding means that the local road network is deteriorating at a faster rate than it can be repaired. Given the age and condition of the network, and the increased volume and weight of traffic, the rate of this deterioration is accelerating.

Addressing the shortfall
Highways departments were asked to estimate how much it would cost to bring their road networks up to scratch (assuming that they had the resources in place to make it practical to do so as a one-off project). This would be the condition from which longer term planned preventative maintenance programmes could then be put into place and is an indication of the cost to remove the ongoing backlog of maintenance work.

The estimate for this one-time "catch-up" cost has seen a 3% decrease to £11.8 billion, but remains in line with the previous two years' findings (£12.2 billion 2014/15; £12 billion 2013/14).

This breaks down as an average of £88.8 million per authority in England; £22.1 million in London; and £31.9 million in Wales. The decrease is interpreted as evidence of efficiency benefits, but is still a drop in the ocean compared with the overall situation.

Maintenance backlog
If adequate funding and resources were in place to get roads back into a reasonable condition, highways departments reported that the estimated amount of time required to carry out such work would be 14 years—up from 13 years.

What is interesting is how this breaks down. England has seen the time increase to an average of 14 years (up from 12 years) and London's average is up to 16 years (from 15 years) – suggesting funding levels are doing nothing to help tackle the backlog of repairs.

In Wales, however, the figure has almost halved, from 13 years last year to 7 years this, possibly a reflection of the additional funding many councils received through the local borrowing initiative.
Road condition

Current structural road condition
All regions reported a drop in the percentage of their network that is in good structural condition – that with 15 years or more residual life. In England the figure is 48% (2014/15: 53%); London 42% (a small fall from 44%) and Wales 43% (49% last year). Conversely, there has been a marked improvement in the percentage of local authority roads reported as being in poor condition (defined as the road having less than five years of remaining life). The figures have dropped to 13% in England; 12% in London and 6% in Wales. This suggests that more of the network is ‘acceptable’, with between five and 15 years life remaining.

The lack of preventative maintenance combined with increased – and more intense – rainfall and increased volume and weight of traffic over recent years has led to increasing concerns over the condition and resilience of the road structure and feedback suggests that much of the network is coming to the end of its structural life.

“The volume and weight of the traffic we are seeing is causing the network to deteriorate faster than the money we have to repair it can cope with.”
Road condition continued

Potholes

Just under three quarters (70%) of authorities responding to the ALARM survey use the guideline depth of 40mm to define a pothole. As the effect of a pothole can vary dramatically depending on its location and the nature of the traffic on the road, depth definition may not always be the only – or most appropriate – means of prioritising repairs.

This year’s survey has shown a reduction in the average number of potholes filled per authority across all areas, although the overall number remains high at around 2.2 million.

The figures for England in 2015/16 show a welcome 20% decrease. In London the drop was 18% while in Wales it was 12%. This decrease is perceived to be due, in part, to the less severe winter weather conditions experienced.

This year’s ALARM survey addressed, for the first time, the difference in cost between filling potholes as part of a planned programme of carriageway repairs and as a reactive repair.

This demonstrated a considerable disparity in costs – with planned works costing an average of 16% less than reactive repairs in England; 24% less in Wales and 15% less in London.

Taking an average cost for filling a pothole across each region, the total amount spent in England (including London) and Wales last year is estimated at slightly over £118 million, a significant decrease on last year’s figure of £144 million.
**ROAD SURFACING FREQUENCY**

<table>
<thead>
<tr>
<th>Frequency (years) of surfacing by road category (average per authority)</th>
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<tr>
<td>Principal</td>
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<tr>
<td>-----------</td>
</tr>
<tr>
<td>England</td>
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<td>London</td>
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<td>Wales</td>
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**UTILITY COMPANY OPENINGS**

<table>
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<th>Number of utility openings in past year (average per authority)</th>
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<tr>
<td>England</td>
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<td>London</td>
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<td>Wales</td>
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**Road surfacing frequency**
Replacing the surface layer at regular intervals maintains an appropriate level of grip, vital for road safety, and helps guard against water ingress and freeze-thaw effects by maintaining a weatherproof seal on the road’s surface.

Taking into account the type of road (principal, non-principal and unclassified) and the level and nature of its traffic, the recommended frequency of road resurfacing ranges from 10 to 20 years.

The survey results indicate that this optimal length of time between resurfacing is only achieved on principal roads in London, where the average time before resurfacing is 18 years (down from 21 years in 2015).

Frequency of resurfacing of principal roads in England has remained stable at 36 years while those in Wales have seen a small change (up 7 years to 49 years).

Both non-principal and unclassified roads have seen larger changes in the length of time between resurfacing.

In England non-principal roads have seen a large increase from 51 years last year to 67 this, while unclassified roads have seen the length of time reduce from 101 years to 93. In London and Wales significant improvements have been recorded in both classes.

The average length of time between resurfacing local roads in England (excluding London) across all road classes is now 65 years, consistent with last year’s figure (64 years). In London it has reduced to 26 years and Wales has remained the same at 59 years.

**Utility company road openings**
Opening a road to create a trench to install or maintain utilities (gas, electricity, water, communications) reduces its structural life, although by how much is open to debate.

Most highway engineers believe the effect of deep trenching reduces road life by at least 30%, and this has been borne out by research. The number of utility openings on local roads in England (including London) over the past year has increased, while Wales has remained effectively the same (4,904 last year; 4,894 this) resulting in a total estimate of 2.53 million (up from 2.2 million last year).

Although the majority of these utility openings (85% based on responses received) are completed in accordance with legislation, it is estimated that an average of 13% of maintenance budgets are spent on the premature maintenance which they necessitate.

“No matter how good the reinstatement, the road will always be weakened by utility openings.”
Road user compensation claims

The average number of claims received by English authorities for compensation for damage to persons or vehicles as a result of poor road condition has seen a marked drop from 544 reported in last year’s survey to 330. A similar pattern has appeared in London (127 last year, 32 in this) and Wales (130 last year, 72 in this). Around 76% of all claims are related specifically to potholes.

The amount paid out in compensation over the last year by English authorities and their insurers was £8.9 million (£20.2 million last year), with Wales also reporting a significant decline (from £702,000 to £486,000). In contrast, London’s payment has doubled to £4.1 million. It is not possible to identify a clear reason for this as the amounts paid out in compensation may also relate to multiple claims made in a previous year or years.

The associated staff costs spent processing claims has declined in England, remained consistent in London and increased in Wales.

The total estimated cost for road user compensation claims of £28.4 million (down 30% from £40.8 million last year) is split between £13.5 million on compensation and £14.9 million on staff costs.

“We have got new processes in place to ensure we are better at challenging dishonest claims.”
About the AIA

Asphalt Industry Alliance

The Asphalt Industry Alliance (AIA) is an alliance of the two principal bodies which represent the suppliers of raw materials used to produce asphalt, as well as asphalt producers and laying contractors: the Mineral Products Association (MPA) and Eurobitume UK. It draws on the knowledge and resources of each association and its members.

The AIA was established in 2000 to increase awareness of the asphalt industry and its activities, and the uses and benefits of asphalt. Asphalt is the generic term used to refer to the range of bitumen coated materials available in the UK that are used in road construction and surfacing. Asphalt also has other, non-road applications such as for airport runways, sports arenas, and parking areas, among others.

Mineral Products Association

MPA Asphalt is part of the Mineral Products Association (MPA) – the trade association for the aggregates, asphalt, cement, concrete, dimension stone, lime, mortar, and silica sand industries. It continues to have a growing membership since its formation and is the sectoral voice for mineral products.

MPA Asphalt represents the interests of its asphalt producer and contractor members through representation and liaison with national and European clients, specifiers, regulators, researchers and standards bodies as well as with trade associations from other countries and related industry sectors. It also funds research into asphalt and its uses and operates the Asphalt Information Service which provides general guidance and information on the use of asphalts in the wide range of their applications.

Eurobitume UK

Eurobitume UK is the trade association of the UK bitumen supply industry and its members produce most of the UK’s bitumen. A large proportion of this is used in the construction and maintenance of bituminous, or asphalt roads, which account for over 95 per cent of all UK roads.

Eurobitume UK is a consultative body formed to promote the technical benefits of bitumen to the construction industry; to provide the industry with information and advice; and to fund research into bituminous products. It also works with contractors and authorities on issues relating to the use and recycling of bituminous materials.

The Association is involved in the development of industry policy on quality assurance and standards relating to issues such as safety, storage and the handling of bitumen as well as the development of specifications and test methods for bitumen.

Pictures
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