



Mastic asphalt was first laid in 1906 on the Stone Gallery that circles the dome of St Paul's Cathedral.

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A hoist was used to help move materials to the 53m high work platform.

# MAC Project of the Year: St Paul's Cathedral

St Paul's Cathedral, with its world famous dome, is an iconic feature of the London skyline. The largest Cathedral in England, it is the masterpiece of Britain's most famous architect Sir Christopher Wren.

It was recently selected as the venue of a prestigious lunch hosted by the Mastic Asphalt Council (MAC) for architects, specifiers and contractors, as a superb example of the durability of mastic asphalt roofing. Mastic asphalt was first laid in 1906 on the Stone Gallery that circles the Cathedral dome and it provided a remarkable 111 years' weatherproof protection before it required refurbishment last year.

MAC member, Sussex Asphalte secured the contract to replace the asphalt around the Cathedral dome and the project was deemed so successful that it won Project of the Year at the MAC Awards 2018. Earlier in the year, Sussex Asphalte and IKO PLC celebrated another award for the application at St Paul's Cathedral as it was selected as the Best Mastic Asphalt Project at the National Federation of Roofing Contractors' annual UK Roofing Awards.

## Exposure and deterioration

The mastic asphalt refurbishment was carried out on the first of two galleries above the Whispering Gallery that encircle the outside of the dome of

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the Cathedral. At 53 metres high, the Gallery's exposure to the elements and surface deterioration had caused water ingress, subsequently damaging artwork inside the dome. A £200,000 grant was awarded to the Cathedral by the government-sponsored First World War Cathedral Repairs Fund, to protect huge murals by Sir James Thornhill, which depict the life of St Paul.

With the application totalling a surface area of 416m<sup>2</sup>, successful project management, and skilled mastic asphalt installation in accordance with BS 8218:1998, were key to conserving one of the most important architectural structures in

the UK. Works were phased to ensure there was no disruption to public access to the Stone Gallery sections. This was critical, as thousands of visitors from all around the world visit the Cathedral every week and the Stone Gallery forms a key part of the Cathedral's visitor experience with impressive views across London.

The height and highly-sensitive fabric of the building meant that all materials and waste were transported on and off site via three hoists, requiring careful operation and management. Sussex Asphalte's skilled craftsmen replaced the asphalt, which had been originally laid in 1906, with IKO Permaphalt, a specially formulated, polymer-modified mastic asphalt providing exceptionally long-term durability, increased fatigue resistance, enhanced temperature stability, ease of installation and carbon neutral properties.

Applied in a three-coat application at 35mm, the first coat of IKO Permaphalt was applied at 10mm to level out old stone. The second coat was also applied at 10mm and a third coat was applied at 15mm with associated details and solar reflective paint to exposed upstands.

The asphalt was stripped and re-laid in sections to ensure water tightness, as the asphalt provides

a totally seamless installation. Stripping enabled the client to view the condition of the Portland Stone paving beneath the asphalt. During the process a disused stairwell was revealed, which remains as a feature, having been made safe by the contractors. This 'secret staircase' offers a sight of some of the flying buttresses Sir Christopher Wren had designed to be kept hidden and views into the roof space above the quire in which World War II bomb damage and repairs are still visible.

The Stone Gallery includes a central gutter covered by iron grills that were removed, cleaned and refitted on the new asphalt. To ensure the correct width of asphalt was applied, a gutter template was fabricated and used as a guide by the mastic asphalters, requiring skilled, precision work. Other detail work involved adjustments to rainwater outlets to improve drainage, and vertical upstand into a chase, including a double angle fillet around the Galley's circumference, totalling 286 linear metres.

Through excellent project management, the works were completed ahead of schedule. Given the conservation and architectural significance of St Paul's, Sussex Asphalte worked with the Clerk of Works at St Paul's Cathedral to use this project to promote the use of mastic asphalt. They arranged a behind-the-scenes tour of St Paul's Cathedral and a viewing of the mastic asphalt works on the Stone Gallery for a group of architects and surveyors.



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Julian Coulter, Director of Sussex Asphalte said: "This project involved replacing mastic asphalt that was laid over 100 years ago, demonstrating the robustness and longevity of the material, despite its exposed location and having had millions of tourists walk on the Stone Gallery in the intervening years. Mastic asphalt provided the ideal seamless and hard-wearing material.

"Notwithstanding the tremendous success of the project, it was extremely challenging due to the importance and heritage status of the site. Our operatives had to ensure that works did not disturb services taking place in the Cathedral and that the building remained operational during the application.

Julian added: "The opportunity to contribute to its renovation using mastic asphalt on the iconic Stone Gallery was a unique project not only for Sussex Asphalte, but also the mastic asphalt industry as a whole. It is one of the most important projects in the company's 70-year history." III