

ROOF REFURBISHMENT OF ONE OF THE MOST ICONIC LISTED BUILDINGS IN WALES

by the Mastic Asphalt Council (MAC)

Mastic asphalt is often recognised for its longevity and durability and an application at National Museum Cardiff certainly demonstrates this as the roofing system provided a remarkable 109 years' weatherproof protection before requiring a full roof refurbishment.

Long-standing Mastic Asphalt Council (MAC) member Cardiff Asphalt has carried out a major roof renovation at the museum which houses three million objects across art, archaeology and geology, as well as library and natural history collections - about half of the national collection of Wales. The museum forms part of the wider network of National Museum Wales.

The whole of the first floor is dedicated to Wales's national art collection, from paintings and drawings to sculpture and ceramics. It features one of the best collections of Impressionist paintings in Britain and leading international artists of today.

Mastic asphalt was applied to the museum roof in 1910 when the building was first erected and only patch repairs were carried out since. Mastic asphalt's seamless composition means it can easily be spot repaired, eliminating the need for wholesale replacement for many years.

It was decided to carry out a full roof refurbishment with mastic asphalt to protect the national collection by improving roof watertightness, fire safety and environmental conditions. As part of the renovation works, new chillers have been installed for the air conditioning system to help conserve the national collection and urgent electrical work has also been carried out.

The roof has a surface area of 1,200m² and with a roofing contract value of £132,000, the renovation work was completed in December 2020. Cardiff Asphalt was commissioned to carry out the roof refurbishment on behalf of WRW Construction.



Mastic asphalt was specified once again due to its exceptionally long lifespan, proven performance and suitability for use on listed and heritage buildings. The whole roof was protected with scaffolding and a huge cover to enable Cardiff Asphalt to continue the works, even in adverse weather conditions over the autumn and winter period.

The mastic asphalt system specified was a specially formulated roofing solution that uses advanced polymer technology to provide long term durability, increased fatigue resistance, improved temperature stability and ease of installation. Its low temperature flexibility ensures that the system can be installed in cold weather.

Mastic asphalt's green credentials were also an advantage for this project, as it is carbon neutral and when it has reached the end of its useful life, it can be recycled or used as roof screed. Ten years ago the mastic asphalt sector became the first industry in the world to achieve the CarbonZero standard.

Top quality products, design and workmanship are fundamental to the Mastic Asphalt Council. Mastic asphalt sold in the UK by MAC's manufacturing members is manufactured in the UK and not imported.

Fire safety was another consideration and the high mineral content of mastic asphalt renders it virtually incombustible. Mastic asphalt fulfils all the external fire resistance required for a roof covering and achieves an

EXT.FAA fire rating to BS 476: Part 3 and BroofT4 according to BS EN 13501-5. It has also been tested in accordance with the European standard for external fire exposure to roofs CEN/TS 1187:2012. No significant spread of flame was observed and no flame penetration occurred.

As mastic asphalt is laid in molten form, it is often confused with other types of waterproofing membrane that require naked flame or torch on application. In reality, there is no naked flame at the point of installation and because mastic asphalt is so highly flame resistant, there is little or no potential of fire risk.

Antony Ryan, Director of Cardiff Asphalt, said the company was very proud to have secured a contract of this magnitude in their home city.

"The National Museum Cardiff is an iconic building in Wales and we were extremely privileged to have been selected to carry out this work. The project did have some logistical challenges. For example, access to the roof is difficult and the museum is located in such a busy area of Cardiff that parking and unloading can be problematic.

"Only certain roof areas were available to asphalt at any one time as the museum remained open to visitors from 10am-5pm whilst the roof work was carried out. In addition, the project was very physically demanding as the asphalt needed to be carried or barrowed from the location of the asphalt mixer machine.





“This project also required a great deal of expertise in the installation of mastic asphalt, due to the location of domed areas and high upstands. Mastic asphalt lends itself to this type of project as its flowing characteristics make it ideal for surfaces which are complex or with protrusions,” he continued.

To fulfil the contract, family-run Cardiff Asphalt recruited two new apprentice labourers to expand the team. Cardiff Asphalt has been in operation for over 50 years and Antony Ryan and his wife Sarah took the business over from Antony’s father Tom when he retired.

Antony concludes: “I’ve been a mastic asphalt applicator for 34 years now and the National Museum Cardiff counts as one of the most prestigious contracts I’ve personally been involved in. It perfectly demonstrates our expertise in refurbishing heritage and listed buildings and it’s fantastic that it’s such a landmark in our home city.”

The Mastic Asphalt Council (MAC) is the trade association for the mastic asphalt industry in the UK. Representing more than 90 companies operating in the sector, MAC members include mastic asphalt manufacturers, specialist application contractors and associated suppliers of equipment and services.

All pictures of the National Museum Cardiff